Courses@Vidyasagar Academy

The ABCD of our courses –

All our *35+ courses*, are designed for full practical oriented teaching, hands on apparatus courses with basic theory coaching. Vidyasagar Academy and its expert faculties are committed to give you best learning outcome from each and every course!

Batches of every course contains only *10 students* for personal attention. We have fully equipped, air conditioned computerized and research level laboratories, with cozy and comfortable seating arrangement.

Cost effective fees of all courses given below are for offline teaching at Vidyasagar Academy. To join any course online, additional charges like courier charges for delivering kit & study material at your address and personal online teaching charges will be *Rs.4000 extra*.

Duly registered under the National *Skill Development Corporation, Govt. of India, Vidyasagar Academy is ISO 9001 & ISO 29993 certified*. Each course certificate is awarded with these three logos plus the Vidyasagar Academy logo.

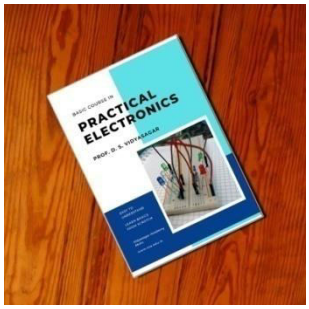
www.vsa.edu.in

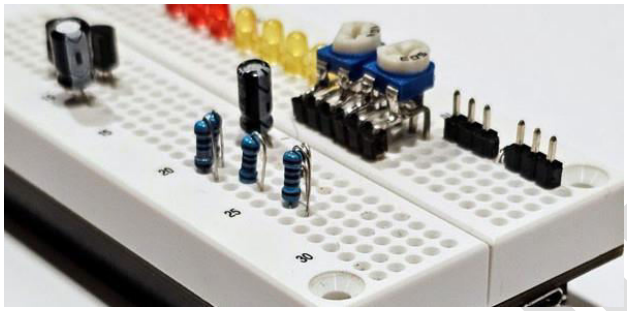
Core Electronics Courses Series

1. Practical Electronics Basic Course

Core Electronics Series

Learn the fundamentals of electronics from scratch, including components identification & testing, circuit designing, building application based circuits. Perfect for beginners aspiring to build a strong foundation.





Course Fees: ₹2400 | For 4th Grade students & above | Duration: 20-25 days

What you will get?

Take home kit • Course Workbook • Complete theory teaching from scratch • Practical Circuit Building • Circuit Simulation on PC • Personal Coaching • Certificate of Training

Separate batches & teaching methods for teachers

Syllabus

Learn the basics first!

Concept of Atom, Concept of Electric Charge, Definition of Conductor & Insulator, Concept of Free Electron, Concept of Potential Difference (PD), Concept of Resistance, Concept of Electric Power, Measurement Scale, Use of Digital Multimeter, Important Symbols, Resistor Color Code Chart, Series & Parallel Combination of Resistors, Concepts of AC & DC, Transistor (NPN & PNP), Pin Configuration of Transistors, Details of Breadboard, Concept of Faraday's Laws of Electromagnetic Induction, Lenz's Law, Study of Transformer.

Practical & Projects

Basic LED & Bulb Dimmer Circuit, Basic Heat Indicator & Alarm Circuit, Street Light Controlling System, Loop Wire Flashing LED Burglar Alarm, Water Level Alarm, Transistorized Sensitive Touch Switch, DC Motor Speed Controlling Circuit, Heat Controlled Fan, Transistor Sound Amplifier Circuit, Transistorized Regenerative Latch Circuit

Software Simulations

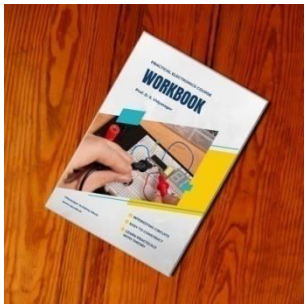
1. **Circuit Wizard** electronics circuit simulation software
2. **Fritzing** software to design breadboard circuits for presentation

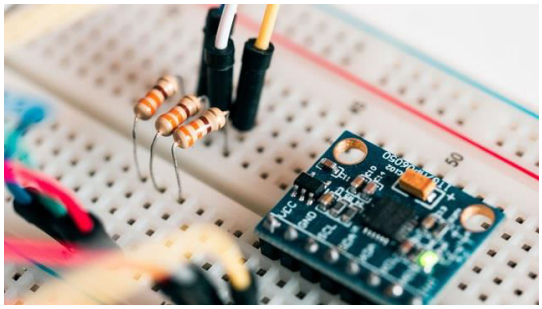
Register now on our website!
https://vsa.edu.in/registration-form/

2. Practical Electronics Advanced Course

Core Electronics Series

Enhance your practical skill with perfect soldering techniques, PCB designing, advanced software simulation, sensor integration, and troubleshooting complex circuits, building large projects. A must for electronics enthusiasts.





Course Fees: ₹3900 | For 4th Grade students & above | Duration: 30-40 days

What you will get?

Take home kit • Course Workbook • Advanced Circuit Building • PCB Designing on PC • Soldering Techniques • Personal Coaching • Certificate of Training

Separate batches & teaching methods for teachers

Syllabus

Learn the basics first!

Concept of Integrated Circuits, Concept of Amplifier, Details of IC 741 as operational amplifier, Details of IC 555 timer, Concept of Silicon Controlled Rectifier (SCR), Concept of Diac and Triac, Concept of Digital electronics – Boolean Algebra – Boolean rules, Commutativity, Associativity, Direct Summing, etc., Concept of Logic Gates – very useful topic for Robotics Courses, Concept of De Morgan's Theorems, Concept of Half Adder & Full Adder, Concept of 4-bit Binary Adder, Concept of Multiplexer & Demultiplexer, Concept of Flip-Flops, Concept of Right/Left Shift Registers – very useful topic for Robotics Courses, Concept of Basic Counter Circuit.

Practical & Projects

Transistorized amplifier, IC 555 Timer as AMV, MMV & BMV, Different applications of IC 555, IC 741 Opamp and its application circuits, Digital circuits: AND, OR, NOT, NAND, NOR & Exclusive OR logic, Half Adder & Full Adder, 4-bit Binary Adder, SCR, Triac, Diac application circuits, simulation circuits of Flip Flops, Electronic Simulation to understand working of Right/Left Shift Registers and Counters

Software to learn

1. **Circuit Wizard** electronics circuit simulation software
2. **Fritzing** software to design breadboard circuits for presentation
3. **LTSpice** – High performance simulation software for accurate measurements

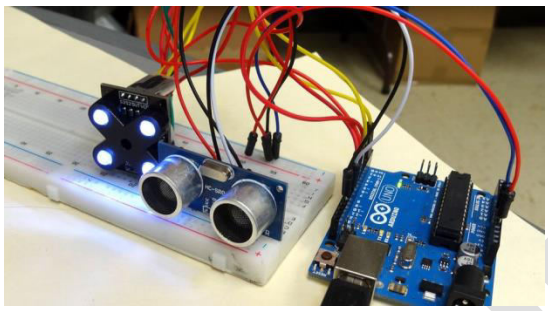
Register now on our website!
https://vsa.edu.in/registration-form/

Embedded Systems & Robotics Series

3. Arduino Robotics Basic Course

Robotics Courses Series

Dive into the basics of Arduino and create robotic circuits that can interact with their environment. Ideal for beginners who want to learn and explore robotics from scratch.



Course Fees: ₹3900 | For 4th Grade students & above | Duration: 25-30 days

What you will get?

Take home kit • Course Workbook • Basic C/C++ Programming on PC • Logical Coding Techniques • Basic Projects Building • Personal Coaching • Certificate of Training

Separate batches & teaching methods for teachers

Syllabus

Learn the basics first!

Basics of C/C++ Programming, datatypes, functions, keywords, variables, built-in functions, preferences in Arduino IDE, built-in function of Arduino, built-in keywords of Arduino, serial monitor and serial plotter in Arduino IDE, user defined functions in Arduino Code, Arduino Direct PORT Register Addressing Techniques short codes, Analog inputs in Arduino, interface of different sensors with Arduino

Practical & Projects

Writing first code of blinking LED and buzzer beeps, Multiple LEDs control, User defined functions, Servo motor controlling, Use of 'for' loop, Interfacing IR sensor with relay switch, Object counting with IR sensor, How to use Serial monitor, Ultrasonic sensor distance measurement, Project of Arduino Calculator with Serial.print option, Project of LED Toggling using Boolean datatype ("running" keyword), Project of displaying analog input data on serial monitor/serial plotter, Project of direct port register addressing system, introduction to "Processing" software interface with Arduino.

Software to learn

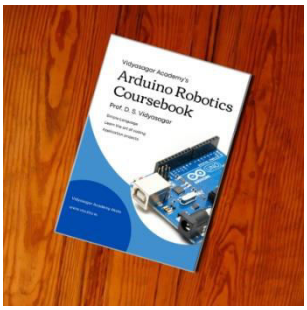
1. **Arduino IDE** compiler to write and execute programs for embedded systems

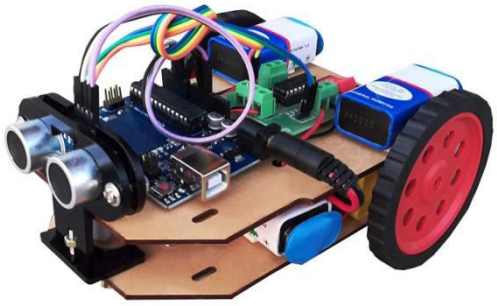
Register now on our website!
https://vsa.edu.in/registration-form/

4. Arduino Robotics Advanced Course

Robotics Courses Series

Take your Arduino skills to the next level with advanced robotic designs and programming techniques, building smarter robots.





Course Fees: ₹4900 | For 4th Grade students & above | Duration: 30-40 days

What you will get?

Extended take home kit • Course Workbook • Advanced Logical Coding Techniques • Advanced Project Building • Personal Coaching • Certificate of Training

Separate batches & teaching methods for teachers

Syllabus

Learn the basics first!

Advanced C/C++, Pointers & Arrays, Real Time Data Logging, Interface of I2C/OLED LCD display modules, real time position reading of servo motor, analogWrite and analogRead in Arduino, PWM techniques in Arduino, Interrupt Service Routine (ISR) in Arduino, interfacing of advanced sensors, robotic trolley controlling,

Practical & Projects

Writing first code of blinking LED and buzzer beeps, Multiple LEDs control, User defined functions, Servo motor controlling, Use of '`for`' loop, Interfacing IR sensor with relay switch, Object counting with IR sensor, How to use Serial monitor, Ultrasonic sensor distance measurement, Project of Arduino Calculator with `Serial.print` option, Project of LED Toggling using Boolean datatype ("running" keyword), Project of displaying analog input data on serial monitor/serial plotter, Project of direct port register addressing system, introduction to "Processing" software interface with Arduino.

Software to learn

1. **Arduino IDE** compiler to write and execute programs for embedded systems
2. "**Processing"** software to convert your Arduino codes into artistic displays

Register now on our website!
https://vsa.edu.in/registration-form/

5. Alvik Robotics Multidisciplinary Course (New)

Robotics Courses Series

A cutting-edge multidisciplinary course combining basic concepts of coding with Physics, Chemistry, Biology and Mathematics and advanced concepts of robotics. Learn the industry standard precise controlling techniques using advanced firmware to solve complex problems. Ideal for those looking to master robotics in industrial and real-world scenarios.

Course Fees: ₹4900 | For 6th Grade students & above | Duration: 25-30 days

Conceptual Coaching of Physics, Chemistry, Biology & Mathematics

What you will get?

Class Kit • Course Workbook • Free e-Resources & Updates • Advanced Coding Techniques • Application based projects coding with concepts of Physics, Chemistry, Biology & Mathematics (PCMB) • Training for concept building in PCMB with fun and practicals with Alvik • Personal Coaching • Certificate of Training

This course is recommended for the student who is weak in PCMB concepts. A must join course to enhance school/college study performance.

Separate batches & teaching methods for teachers

Syllabus

What you will learn?

Introduction to the Alvik platform and its firmware Overview of multidisciplinary applications, Basic coding concepts with Alvik, Application of Physics in Robotics, motion and mechanics, force, torque, and energy, sensors for chemical detection, chemical interactions with Alvik, bio-inspired robotics, biological systems for robotic applications, projects inspired by biological processes, basic mathematical concepts in robotics, basics of Algebra, Geometry, Trigonometry, mathematical models to control robots, Maths based application projects, industry-standard precise controlling techniques, Integrating concepts from Physics, Chemistry, Biology, and Mathematics.

Practical & Projects

Task of designing and coding for a project, project presentation and evaluation.

Software to learn

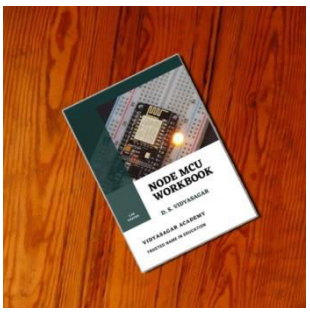
1. **Arduino Lab** compiler to write and execute programs for Arduino Alvik robot
2. **Thonny** compiler to write and execute programs for Arduino Alvik robot

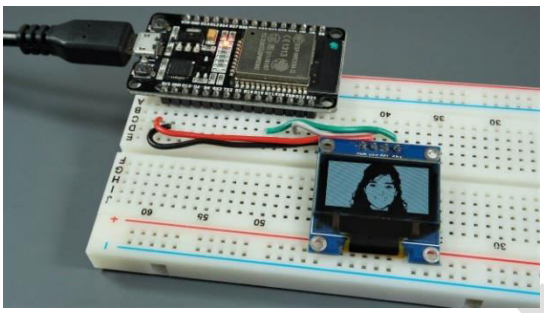
Register now on our website!
https://vsa.edu.in/registration-form/

6. noduMCU IoT based Robotics Course

Robotics Courses Series

Combine IoT with robotics using nodeMCU to build smart, connected systems. Learn to control devices remotely from anywhere in the world through your mobile, PC and website and create innovative projects with advanced applications of Internet of Things (IoT). Build advanced projects on Cloud.






Course Fees: ₹5900 | For 6th Grade students & above | Duration: 25-30 days

Conceptual Coaching of Physics, Chemistry, Biology & Mathematics

What you will get?

Take home kit • Course Workbook • Free Wi-Fi • Advanced Coding Techniques • Higher end Logic • Industry Standard IoT Advanced Projects Building • Personal Coaching • Certificate of Training

Separate batches & teaching methods for teachers

Syllabus

What you will learn?

Introduction to IoT and NodeMCU, nodeMCU and ESP8266 module, setting nodeMCU environment, setting Wi-Fi configuration of nodeMCU, introduction to sensors and actuators for IoT-based robotics, interfacing sensors (temperature, humidity/motion), using mobile apps and web interfaces, building a web server on NodeMCU for direct control, introduction to Blynk/MQTT for IoT projects, setting up cloud accounts and connecting devices to the cloud, storing and retrieving data on cloud servers, real-time alerts and notifications on mobile, IoT based projects.

Practical & Projects

This course will cover 10 different interesting and challenging projects using nodeMCU and kit material.

Software to learn

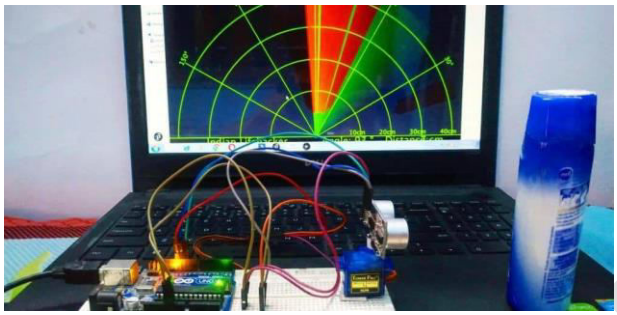
1. **Arduino IDE** compiler to write and execute programs for nodeMCU.
2. **Fritzing** software to design nodeMCU based breadboard circuits for presentation.

Register now on our website!
https://vsa.edu.in/registration-form/

7. "Processing" Software Programming Course

Robotics Courses Series

Explore the power of visual programming using "Processing" software with Arduino robotics circuits and projects to create interactive art and design applications. This course is a perfect blend for the learners of Arduino Robotics and for the creative coders who want to build industrial standard application projects.



Course Fees: ₹4900 | For 6th Grade students & above | Duration: 20-25 days

Class Kit • Course Workbook • Application based advanced projects combining Arduino & "Processing" software • Personal Coaching • Certificate of Training

Separate batches & teaching methods for teachers

Syllabus

What you will learn?

Introduction to Processing software, installation and setup of Processing IDE, exploring the Processing programming environment, understanding basic syntax and structure in Processing, drawing basic shapes and creating animations, working with colors and gradients, integrating Processing with Arduino for robotics projects, serial communication between Arduino and Processing, building interactive art and design projects using Arduino sensors, using Processing to visualize sensor data in real-time, creating advanced projects with Processing and Arduino, working with external libraries in Processing, creating industrial-standard interactive applications, and final project showcase combining Processing and Arduino.

Practical & Projects

Drawing geometric shapes and animations in Processing, creating a bouncing ball simulation, interactive mouse and keyboard-based drawing tool, displaying real-time sensor data from Arduino in Processing, controlling an LED with Processing and Arduino, creating a temperature and humidity monitoring visualization, building an interactive robotic arm control interface with Processing, designing a musical keyboard with Arduino and Processing, simulating a radar system with real-time visualization, developing an interactive game using Processing and Arduino.

Software to learn

1. **Arduino IDE** compiler to write and execute programs.
2. **"Processing"** software to write different codes interfacing with Arduino for decorative display on the computer monitor using "Processing".

Register now on our website!
https://vsa.edu.in/registration-form/

IoT & Raspberry Pi Courses Series

8. Python Programming Language Course

IoT & RPi Courses Series

Master the Python and microPython programming together in this course for diverse industry standard applications, from data science to IoT and robotics, with hands-on projects & real-world logical coding.

Course Fees: ₹2300 | For 5th Grade students & above

Duration: 20-25 days

Free WiFi • Course Workbook • Complete theory teaching from scratch • Practical training on PC • Basic & Advanced Coding Techniques • Personal Coaching • Certificate of Training

Separate batches & teaching methods for teachers

Syllabus

What you will learn?

Introduction to Python, features and applications of Python, installing Python and setting up IDEs, exploring IDLE, installing and using PyCharm Community Edition, installing Anaconda and using Spyder, understanding Python syntax, variables and data types, input and output functions, arithmetic and logical operators, control structures including if-else conditions and loops (for and while), nested conditions and loops, working with lists, tuples, dictionaries, and sets, string manipulation and functions, creating and using custom functions, understanding parameters, arguments, and return values, importing and using Python libraries such as math and random, error handling using try-except-finally blocks, file handling for reading and writing data, basic projects such as a calculator app, attendance tracker, and quiz application, introduction to object-oriented programming (OOP), creating classes and objects, exploring inheritance and polymorphism, basic graphical user interfaces (GUI) with tkinter, and an introduction to data visualization with libraries like matplotlib.

Practical & Projects

Hello World program with user input, basic calculator program, finding the largest of three numbers using if-else, multiplication table generator using loops, checking if a number is prime, reversing a string, counting vowels and consonants in a string, sorting a list of numbers, creating a simple student grade management system, generating a random password, simulating a basic dice roll game, creating a number guessing game, reading and writing to a file, building a simple quiz application, creating a basic GUI-based calculator using tkinter.

Software to learn

1. **IDLE** (Integrated Development and Learning Environment) to write, debug, and execute Python programs.
2. **PyCharm IDE** to write, debug, and execute Python programs.
3. **Anaconda Distribution with Spyder IDE** for writing, debugging, and executing Python programs.

Register now on our website!
https://vsa.edu.in/registration-form/

9. Raspberry Pi 3/4 IoT based Course

IoT & RPi Courses Series

Learn to develop industry application type advanced IoT systems and robotics projects using the powerful Raspberry Pi 3/4. Students with good knowledge of Python and microPython can learn this course very easily.

Course Fees: ₹12900 | For 6th Grade students & above | Duration: 20-25 days

Take home kit • Course Workbook • Free Wi-Fi • Logical Coding Techniques • Industry Standard IoT Projects Training • Personal Coaching • Certificate of Training

Separate batches & teaching methods for teachers

Syllabus

What you will learn?

Introduction to RPi 3/4 hardware and setup, installing and exploring the RPi OS, introduction to IoT and its applications, connecting RPi to WiFi and the internet, GPIO pin configuration and basic interfacing, Python programming for RPi GPIO control, interfacing sensors and actuators with RPi, working with MicroPython on RPi for efficient IoT coding, implementing real-time IoT projects using RPi and Python, setting up a RPi-based home automation system, designing industry-standard IoT applications, and final project development and presentation.

Practical & Projects

Setting up RPi with RPi OS and initial configuration, writing Python code to control GPIO pins, interfacing an LED and button with RPi, building a temperature and humidity monitoring system with a DHT11 sensor, controlling devices remotely via MQTT protocol, creating a simple web server on RPi for IoT control, setting up a RPi-based surveillance camera system, implementing a cloud-based data logger using RPi, building a RPi-powered smart irrigation system, designing a complete home automation system using RPi.

Software to learn

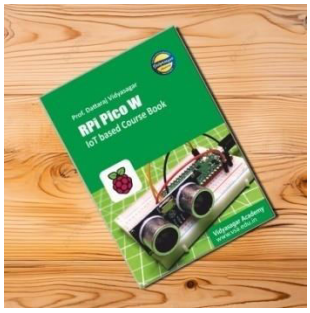
1. **Thonny IDE:** A beginner-friendly Python IDE pre-installed on RPi.
2. **Geany IDE:** A lightweight and fast text editor with IDE features, perfect for advanced Python.

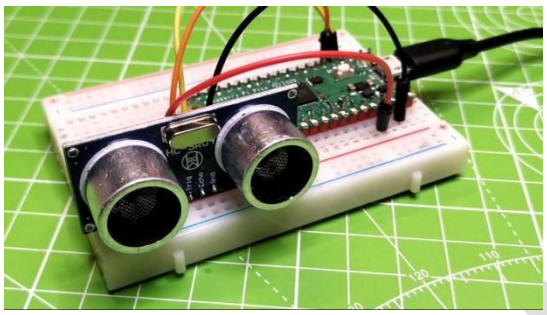
Register now on our website!
https://vsa.edu.in/registration-form/

10. RPi Pico W IoT based Programming Course

IoT & RPi Courses Series

Focus on compact IoT based industrial standard application projects with RPi Pico W, integrating sensors, motors and communication protocols of WhatsApp, Gmail – with different mail protocols like SMTP, POP, etc. The student will also learn basics of Website and Server Side Scripting in this course.





Course Fees: ₹4900 | For 6th Grade students & above | Duration: 20-25 days

Take home kit • Course Workbook • Free Wi-Fi • Free e-Resources & Updates • Industry Standard compact IoT Projects • Logical Coding Techniques • Mobile Integration Training for IoT support • Personal Coaching • Certificate of Training

Separate batches & teaching methods for teachers

Syllabus

What you will learn?

Introduction to RPi Pico W hardware and setup, installing microPython firmware on Pico W, using Thonny IDE for MicroPython, understanding IoT concepts and applications, GPIO pin configuration and interfacing with sensors and actuators, working with communication protocols like Wi-Fi and Bluetooth, sending automated messages via WhatsApp, Telegram, and Gmail using Pico W, understanding email protocols such as SMTP and POP, interfacing RPi Pico W with IoT cloud platforms for data logging, building compact IoT projects with real-time monitoring and control, basics of website development for IoT applications, introduction to server-side scripting for IoT, web-based dashboards for IoT systems, industrial-standard IoT applications, final project with hardware, software and communication protocols.

Practical & Projects

Setting up Raspberry Pi Pico W with MicroPython, blinking an LED using GPIO pins and Thonny IDE, reading sensor data and displaying it on the serial monitor, sending temperature and humidity updates via WhatsApp using CallMeBot API, sending email with Gmail and SMTP protocol, creating a simple web server with Raspberry Pi Pico W, data logger for sensor values using IoT cloud platforms, basic IoT-based home automation system, integrating mobile app controls for an IoT project using Raspberry Pi Pico W.

Software to learn

1. **Thonny IDE:** A beginner-friendly Python IDE pre-installed on RPi.
2. **Geany IDE:** A lightweight and fast text editor with IDE features, perfect for advanced Python.

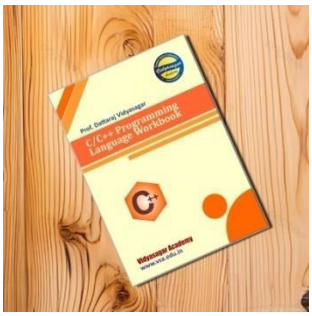
Register now on our website!
https://vsa.edu.in/registration-form/

Power Coder Courses Series

11. C/C++ Programming Language Course

Power Coder Courses Series

Build a strong foundation in programming with C and C++ for advanced system level and embedded applications. Essential for all programmers, to become a power coder.



Course Fees: ₹2300 | For 5th Grade students & above

Duration: 20-25 days

Free Wi-Fi • Course Workbook • Complete theory teaching from scratch • Practical training on PC • Basic & Advanced Coding Techniques • Personal Coaching • Certificate of Training

Separate batches & teaching methods for teachers

Syllabus

What you will learn?

Introduction to programming concepts, installation and setup of code editors like Code::Blocks and Dev-C++, understanding the structure of a C program, basic syntax and data types in C, input/output operations using `printf()` and `scanf()`, control structures including `if-else`, `switch`, `for`, `while`, and `do-while` loops, arrays and strings in C, functions and parameter passing, pointers and dynamic memory allocation, file handling in C, introduction to object-oriented programming (OOP) concepts in C++, classes and objects in C++, inheritance and polymorphism, operator overloading in C++, exception handling in C++, introduction to data structures like stacks and queues using C++, building system-level applications with C/C++, and final project development showcasing real-world application.

Practical & Projects

Writing a basic C program to display "Hello, World!", creating a calculator using switch statements, finding the largest and smallest numbers in an array, reversing a string without using library functions, writing and reading data to/from a file, demonstrating the use of pointers with arrays, creating a simple class and object in C++, implementing single and multiple inheritance in C++, overloading operators in C++, building a mini-library management system using C++.

Software to learn

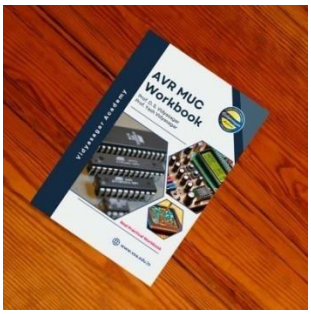
1. **Code::Blocks:** A free, open-source, and user-friendly IDE for C and C++ programming, offering advanced debugging and project management features.
2. **Dev-C++:** A lightweight, fast, and portable IDE for C and C++, equipped with an integrated compiler and tools for building system-level applications.

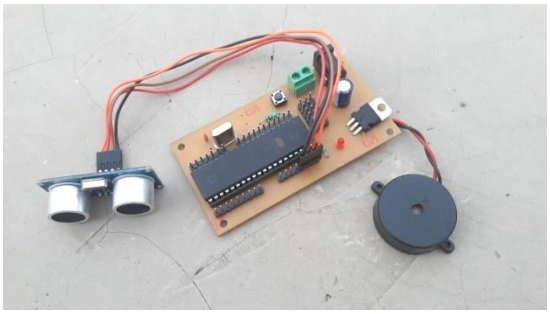
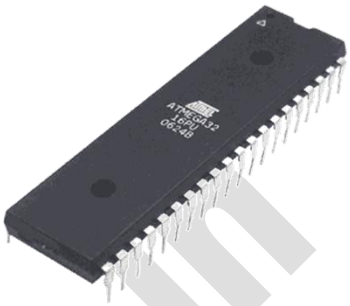
Register now on our website!
https://vsa.edu.in/registration-form/

12. AVR Robotics Basic Course

Power Coder Courses Series

Begin programming AVR microcontrollers, focusing on their architecture and robotics applications. Ideal for beginners in microcontroller programming.



Course Fees: ₹4900 | For 6th Grade students & above | Duration: 20-25 days

Take home kit • Course Workbook • Basic Embedded System C/C++ Programming Techniques • Basic Project Building • Working with different sensors • Personal Coaching • Certificate of Training

Separate batches & teaching methods for teachers

Syllabus

What you will learn?

Introduction to AVR microcontrollers and their architecture, development environment for AVR, installing AVR Studio software, writing and uploading programs to AVR using USBasp, understanding GPIO pins and basic input/output operations, interfacing LEDs and switches with AVR, working with different sensors such as temperature, IR, and ultrasonic sensors, controlling DC motors and servo motors using AVR, basic concepts of timers and interrupts in AVR programming, building simple robotics projects, introduction to SPI and I^2C communication protocols, debugging and testing AVR-based projects using simulation tools, project combining sensors, actuators.

Practical & Projects

Blinking an LED using AVR microcontroller, reading input from a push button and toggling an LED, controlling a DC motor using GPIO pins, interfacing a temperature sensor and displaying readings, designing an obstacle-avoiding robot using ultrasonic sensors, generating PWM signals to control a servo motor, using a timer to create a digital stopwatch, interfacing an IR sensor for line-following robot functionality, sending and receiving data using UART communication, building basic home automation system using AVR MUC.

Software to learn

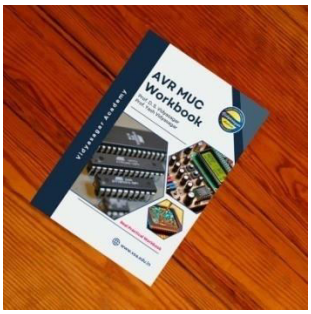
1. **AVR Studio (Atmel Studio):** An integrated development platform for AVR microcontroller programming, offering powerful debugging tools and simulation capabilities.
2. **ProgISP:** usbASP interface protocol .hex file loader

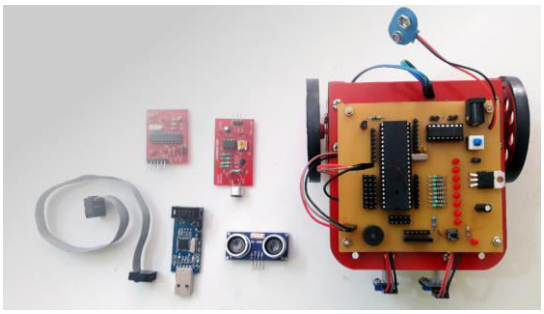
Register now on our website!
https://vsa.edu.in/registration-form/

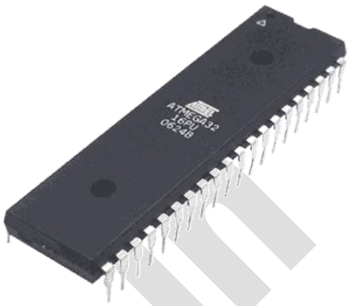
13. AVR Robotics Advanced Course

Power Coder Courses Series

Advance your AVR programming skills with complex robotics applications, hardware interfacing, and efficient coding techniques.







Course Fees: ₹3300 | For 7th Grade students & above | Duration: 20-25 days

Extended take home kit • Course Workbook • Advanced Embedded System C/C++ Programming Techniques • Advanced Project Building • Personal Coaching • Certificate of Training

Separate batches & teaching methods for teachers

Syllabus

What you will learn?

advanced programming techniques using AVR Studio, advanced timer and interrupt programming, interfacing multiple sensors for real-time robotics applications, implementing analog-to-digital conversion (ADC) for sensor data processing, controlling stepper and servo motors for precise robotic movements, exploring advanced communication protocols like I²C, and UART in depth, creating multi-functional robots with multiple sensor-actuator combinations, using power management techniques for efficient robotics systems, working with real-time data acquisition and logging, debugging and optimizing AVR code for performance, building advanced robotics projects.

Practical & Projects

Configuring and controlling multiple LEDs using GPIO ports, generating precise PWM signals to control a servo motor, implementing ADC for real-time sensor data processing, creating a temperature-controlled fan system using AVR, programming and controlling a stepper motor, designing a maze-solving robot using IR sensors, integrating an ultrasonic sensor for distance measurement in obstacle-avoiding robots, sending data to and receiving commands from a PC via UART, establishing communication between two AVR microcontrollers using I2C protocol, building a robotic arm controlled by multiple sensors and actuators.

Software to learn

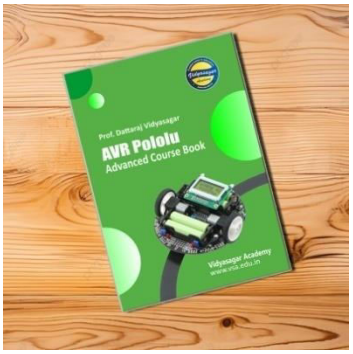
1. **AVR Studio (Atmel Studio):** An integrated development platform for AVR microcontroller programming, offering powerful debugging tools and simulation capabilities.
2. **ProgISP:** usbASP interface protocol .hex file loader

Register now on our website!
https://vsa.edu.in/registration-form/

14. AVR Pololu Advanced Course

Power Coder Courses Series

Learn to harness the power of Pololu Robot with AVR controllers for high-precision robotics projects and automation tasks.



Course Fees: ₹6000 | For 12th Grade students & above | Duration: 25-30 days

Class kit ● Course Workbook ● Advanced Embedded System Programming with PID Techniques ● Advanced Project Building ● Personal Coaching ● Certificate of Training

Separate batches & teaching methods for teachers

Syllabus

What you will learn?

Introduction to Pololu robots, configuring Pololu robots with AVR controllers, advanced AVR programming for robotics, understanding motor drivers and interfacing with Pololu robots, implementing PID *(Proportional-Integral-Derivative)* control for high-precision movement, advanced PWM techniques for motor speed and direction control, integrating multiple sensors such as IR, ultrasonic, and encoders for enhanced automation, building and testing high-precision robotics projects like line-following robots with PID optimization, obstacle-avoiding robots with smooth navigation, and robotic arms with precise movement control, application based projects.

Practical & Projects

Configuring Pololu motor drivers with AVR microcontrollers, implementing basic motion control with PWM signals, designing a line-following robot with PID control, integrating an encoder for precise motor feedback and control, using ultrasonic sensors for obstacle detection and avoidance, building a robot arm with precise movement using PID optimization, establishing communication between multiple Pololu robots using UART, designing a maze-solving robot with Pololu controllers, implementing I2C communication for multi-sensor integration, creating a high-speed line follower with smooth navigation.

Software to learn

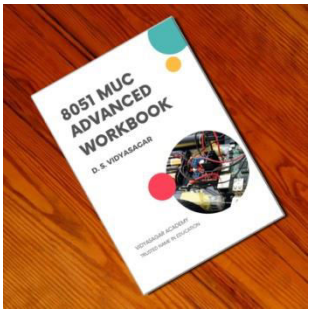
1. **AVR Studio (Atmel Studio):** An integrated development platform for AVR microcontroller programming, offering powerful debugging tools and simulation capabilities.

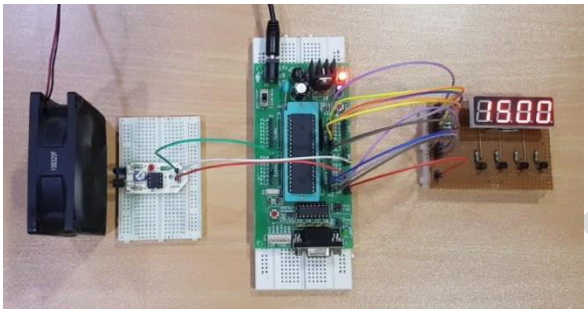
Register now on our website!
https://vsa.edu.in/registration-form/

15. 8051 Microcontroller Basic Course

Power Coder Courses Series

Get introduced to the advanced 8051 (AT89C51/52) microcontroller and learn to program basic robotics and industrial standard basic automation projects.






Course Fees: ₹5300 | For 6th Grade students & above | Duration: 25-30 days

Take home kit • Course Workbook • Basic Embedded System C/C++ Programming Techniques • Basic Project Building • Personal Coaching • Certificate of Training

Separate batches & teaching methods for teachers

Syllabus

What you will learn?

Introduction to MUC in embedded systems, architecture of the 8051 MUC, Pin configuration and internal blocks of the AT89C51/52, Basics of Embedded C/C++ programming for MUC, Writing and compiling code for the 8051 MUC, Introduction to timers, counters, and interrupts, Configuring and using GPIO pins for input/output operations, Understanding interfacing concepts for sensors and actuators, Interfacing LEDs, push buttons, and 7-segment displays, Reading analog signals using ADC modules, Controlling actuators like DC motors and relays, light-sensitive automation project, Creating a basic temperature-controlled system using sensors, common errors in 8051 programming and how to resolve them, Using debugging tools and techniques, project for evaluation.

Practical & Projects

Light-sensitive automatic lamp control system, Temperature-controlled fan system using a temperature sensor, Digital thermometer with a 7-segment display, Traffic light control system using LEDs and timers, Password-protected door lock system using a keypad and relay, Basic stepper motor control for rotational motion, Automatic water level indicator with buzzer alert, DC motor speed control using PWM, Simple LED blinking pattern controlled by push buttons.

Software Simulations

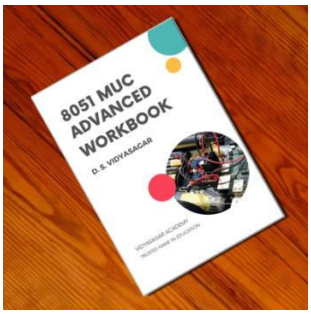
1. **KeiluVision5:** Compiler to write and execute programs
2. **ProgISP:** usbASP interface protocol .hex file loader

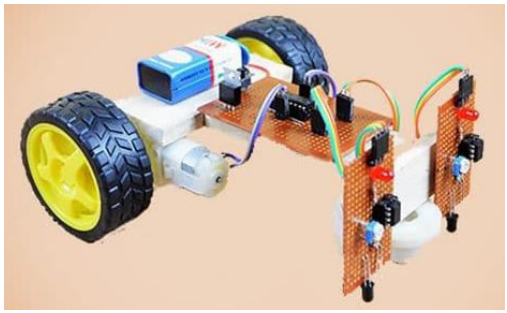
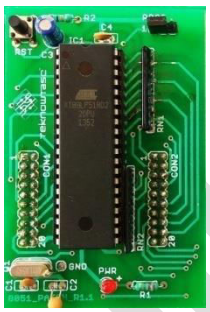
Register now on our website!
https://vsa.edu.in/registration-form/

16. 8051 Microcontroller Advanced Course

Power Coder Courses Series

Master advanced 8051 programming techniques to handle complex robotics and embedded system applications with precision industrial standard.



Course Fees: ₹3300 | For 7th Grade students & above | Duration: 20-25 days

Extended take home kit • Course Workbook • Advanced Embedded System C/C++ Programming Techniques • Advanced Project Building • Personal Coaching • Certificate of Training

Separate batches & teaching methods for teachers

Syllabus

What you will learn?

Advanced architecture and peripherals of 8051 MUC, Enhanced features of AT89C51/52 for advanced applications, timers and interrupts, 16x2 LCD display interface, Advanced GPIO configurations for multiple input/output devices, stepper motors interface, UART for serial communication and data transfer, ultrasonic and PIR interface, obstacle-avoiding robots using ultrasonic sensors, line-following robots with IR sensors and logic gates, PWM signals for speed and brightness control, real-time clock (RTC) interfacing with 8051 MUC, keypad-controlled applications, EEPROM data storage and retrieval, Final project design and implementation integrating multiple modules.

Practical & Projects

obstacle-avoiding robot using ultrasonic sensors, line-following robot with precise turn control, LCD-based digital clock using RTC module, Password-protected lock system with 16x2 LCD display, Speed-controlled DC motor using PWM, Multi-level water tank monitoring system with LCD display, Stepper motor-based robotic arm control, Weather monitoring system using temperature and humidity sensors, Serial communication-based data logger using UART, EEPROM-based secure data storage system.

Software Simulations

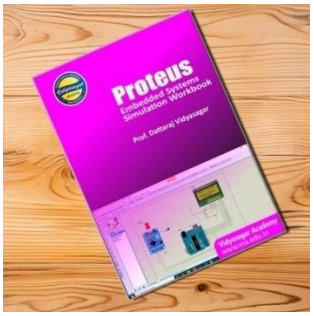
1. **KeiluVision5:** Compiler to write and execute programs
2. **ProgISP:** usbASP interface protocol .hex file loader

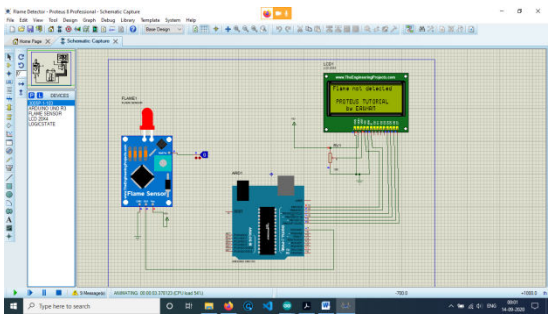
Register now on our website!
https://vsa.edu.in/registration-form/

17. Proteus Embedded System Simulation Course

Power Coder Courses Series

Use Proteus (a high end simulation software) to simulate, design and debug Electronic circuits, Arduino robotics circuits and Raspberry Pi circuits. It is perfect blend of courses designed for testing projects without hardware constraints.





PROTEUS
CAD CONNECTED

Course Fees: ₹3900 | 6th Grade students & above who have basic programming knowledge of Electronics, Arduino and RPi | Duration: 15-20 days

Course Workbook ● Installation of Proteus Crack ● Understanding Library Functions ● Installing third party libraries ● Drawing Simulation Circuits ● Generating .hex files ● Importing supporting files for simulation ● Personal Coaching ● Certificate of Training

Separate batches & teaching methods for teachers

Syllabus

What you will learn?

Introduction to Proteus software, Installation and setup, third-party libraries, library functions and components in Proteus, Drawing simulation-ready electronic circuits, Designing Arduino-based circuits and importing .hex files, Simulating RPi circuits and importing supporting files, Generating and testing .hex files for microcontroller-based projects, Adding and managing third-party libraries for additional components, Understanding simulation logs and outputs, multi-device communication protocols (I2C, UART, SPI), Simulating sensor-based systems using Proteus, Final project design and simulation.

Practical & Projects

Blinking LED simulation using Arduino in Proteus, Simulating a temperature monitoring system with LM35 sensor, motor control circuit using L293D motor driver, Simulation of a traffic light system with timers, Interfacing 16x2 LCD with Arduino in simulation, Serial communication simulation between Arduino and PC, digital thermometer using DS18B20 sensor, obstacle-avoiding robot using ultrasonic sensor, Raspberry Pi-based GPIO control system, PWM-based DC motor speed control system.

Software Simulations

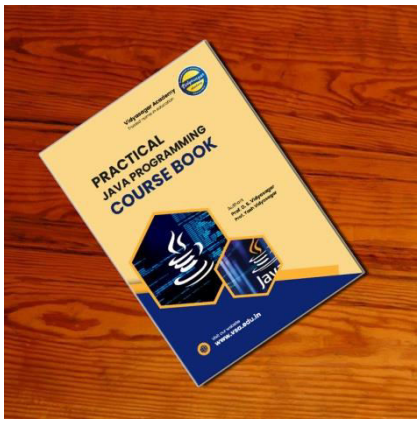
Proteus Design Suite (Professional version or cracked version), Arduino IDE, Keil uVision for ARM and 8051 programming, Python IDE for Raspberry Pi simulations, Atmel Studio

Register now on our website!
https://vsa.edu.in/registration-form/

Industry Automation Courses Series

18. Java Programming Language Course

Learn Java for building versatile applications, from mobile apps to robotics integration, with practical hands on apparatus. Suitable course for advanced learners after completing our basic courses.



Course Fees: ₹6900 | 12th Grade students & above

Duration: 15-20 days

Free Wi-Fi • e-Course Workbook • Learn Java from Scratch • Practical Coding Sessions on PC Debugging and Troubleshooting Skills • Object-Oriented Programming Simplified • Hands-On Projects for Portfolio Building • Personal Coaching • Certificate of Training

Separate batches & teaching methods for teachers

Syllabus

What you will learn?

Introduction, Setting up Java development environment (JDK, IDEs), Java syntax and structure, Data types, variables, and operators in Java, Control flow statements (if-else, loops, switch case), Functions and methods in Java, OOP concepts (classes, objects, inheritance, polymorphism, encapsulation, abstraction), Exception handling and debugging, File handling and data storage, Introduction to GUI programming using JavaFX/Swing, Building multi-threaded applications, Basics of networking in Java (socket programming), API integration and external library usage, Java for embedded systems and robotics integration, mini projects, Final project for portfolio building and evaluation.

Practical & Projects

Writing and running basic Java programs, Creating and using Java classes and objects, Implementing inheritance and polymorphism in Java, Handling exceptions and debugging errors, Reading and writing files in Java, Creating a GUI application using Java Swing, Connecting Java applications to a database using JDBC, Developing a multi-threaded Java application, Implementing socket programming for basic networking, Building a mini Java-based game.

Software Simulations

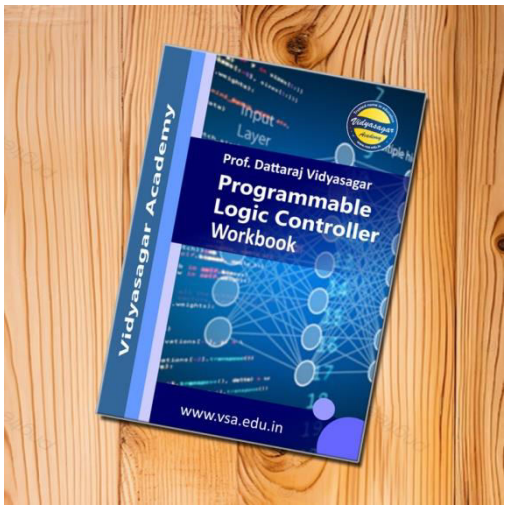
Java Development Kit (JDK), Eclipse IDE, IntelliJ IDEA, NetBeans IDE, Android Studio for mobile app development, MySQL Workbench for database integration, Apache Tomcat for web application deployment, Processing IDE for Java-based robotics and IoT applications.

Register now on our website!
https://vsa.edu.in/registration-form/

19. PLC Basic Course

Industry Automation Series

An introductory course on Programmable Logic Controllers (PLCs) for industrial automation and control applications. It will create a great confidence in you to face campus interviews at engineering levels.



Course Fees: ₹19,900 | 12th Grade students & above
Duration: 25-30 days

Class Kit • e-Course Workbook • Introduction to Industrial Automation Concepts • Ladder Logic Programming • Simulation and Debugging of PLC Programs • Applications in Manufacturing and Automation • Developing Skills for Industry 4.0 • Personal Coaching • Certificate of Training

Separate batches & teaching methods for teachers

Syllabus

What you will learn?

Introduction to Programmable Logic Controllers (PLCs), components and working, industrial automation and control applications, Types of PLCs and their industrial usage, PLC hardware components (CPU, I/O modules, power supply), configuring a PLC system, Ladder Logic Programming, simple ladder logic programs, Understanding timers and counters in PLC programming, Interfacing sensors and actuators with PLC, Introduction to HMI (Human-Machine Interface), Debugging and troubleshooting PLC programs, PLC applications in manufacturing and automation, Hands-on simulation of basic industrial processes, Introduction to Industry 4.0 and smart automation, Developing confidence for campus interviews and industrial job roles.

Practical & Projects

Writing and running basic Java programs, Creating and using Java classes and objects, Implementing inheritance and polymorphism in Java, Handling exceptions and debugging errors, Reading and writing files in Java, Creating a GUI application using Java Swing, Connecting Java applications to a database using JDBC, Developing a multi-threaded Java application, Implementing socket programming for basic networking, Building a mini Java-based game.

Software Simulations

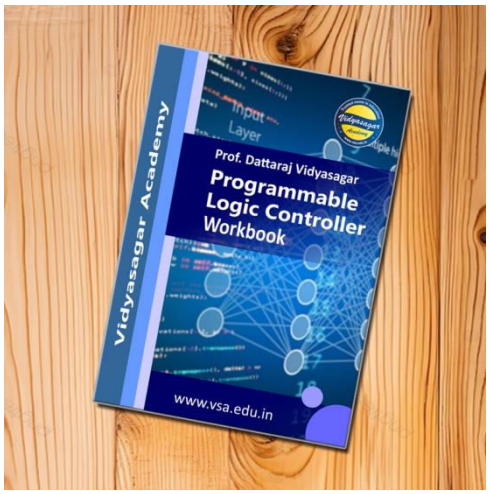
Siemens TIA Portal Basic, Allen-Bradley RSLogix 500, Mitsubishi GX Developer, Omron CX-Programmer Basic, Schneider Electric Zelio Soft, Factory I/O for basic industrial process simulation, Codesys for basic ladder logic programming, EasyPLC for beginner-level PLC simulations, Modbus Simulator for communication testing, WinProLadder for simple PLC programming exercises.

Register now on our website!
https://vsa.edu.in/registration-form/

20. PLC Advanced Course

Industry Automation Series

This course delves into complex automation concepts, teaching advanced programming, control strategies, and industrial systems integration. Gain expertise to tackle sophisticated automation tasks and elevate your skills for professional growth.



Course Fees: ₹24,900 | 12th Grade students & above

Duration: 30-40 days

Class Kit • Hands-on Training with Different PLC Systems • Advanced Interface of PLCs with Sensors and Actuators • Industrial Communication Protocols *(MODBUS, PROFIBUS, Ethernet/IP)* • Advanced Debugging and Troubleshooting Techniques • PLC Networking and Distributed Control Systems • Industry 4.0 and Smart Automation Applications • Campus Interviews Training • Personal Coaching • Certificate of Training

Separate batches & teaching methods for teachers

Syllabus

What you will learn?

Advanced PLC architecture and hardware components, Understanding different PLC brands and their programming environments, Writing complex ladder logic programs, Structured text and function block programming, Advanced timer and counter applications in PLC, Analog and digital signal processing in PLCs, Interfacing multiple sensors and actuators with PLC, Industrial communication protocols *(MODBUS, PROFIBUS, Ethernet/IP)*, Data logging and SCADA system integration, Designing PLC-based process automation systems, Advanced troubleshooting and debugging techniques, Safety standards and fail-safe programming in PLC, PLC networking and distributed control systems, Hands-on experience with different PLC systems, Real-time project development for industrial automation, Training for campus interviews and industrial job placements.

Practical & Projects

Programming an advanced conveyor belt system with multiple sensors, Developing a PLC-based automated liquid filling system, Implementing a real-time traffic management system using PLC, Designing a PID control system for temperature regulation, Simulating a multi-stage industrial automation process, Creating a real-time PLC-based motor control system, Interfacing a PLC with SCADA for remote monitoring, Implementing an emergency shutdown system using PLC safety logic, Debugging and optimizing complex PLC programs, Final industrial automation project showcasing PLC integration with real-world applications.

Software Simulations

Siemens TIA Portal, Allen-Bradley RSLogix 5000, Schneider Electric EcoStruxure Machine Expert, Mitsubishi GX Works, Omron CX-Programmer, Codesys for IEC 61131-3 programming, Factory I/O for industrial automation simulation, WinCC for SCADA system integration, Modbus Poll for industrial communication testing, MATLAB Simulink for PLC-based control system modeling.

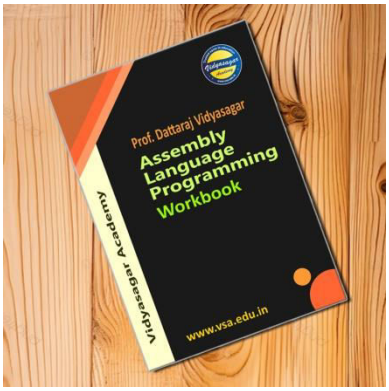
Register now on our website!

https://vsa.edu.in/registration-form/

21. Assembly Language Programming (ALP) Course

Industry Automation Series

Understand the practical approach of the core of microcontroller programming with low-level Assembly Language Programming for efficient hardware utilization. Learn Assembly Language Programming with 8051, AVR and even Arduino platforms.



Course Fees: ₹14,900 | Real coders who are good at embedded system programming | Duration: 25-30 days

Class Kit • e-Course Workbook • Coaching of Assembly Language from Scratch • Advanced Methods of Microcontroller Programming • Strong Foundation for Embedded Systems • Personal Coaching • Certificate of Training

Separate batches & teaching methods for teachers

Syllabus

What you will learn?

Introduction to Assembly Language Programming, Understanding Microcontroller Architectures (8051, AVR, Arduino), Register-Level Programming and Bit Manipulation, Instruction Set and Addressing Modes, Stack, Memory, and Interrupt Handling in Assembly, Writing and Debugging Assembly Code, Optimizing Code for Speed and Memory Efficiency, Interfacing Peripherals using Assembly (LEDs, Switches, Motors, Displays), Timers, Counters, and Serial Communication in Assembly, Practical Applications of ALP in Embedded Systems, Assembly and C Mixed-Language Programming, Hands-on Projects for Efficient Hardware Utilization, Personal Coaching, Certificate of Training.

Practical & Projects

Writing and running a basic "Hello World" program in Assembly, LED blinking using direct register access in Assembly, Interfacing a push-button with an 8051 microcontroller, Generating time delays using Timers in Assembly, Implementing UART serial communication in Assembly, Interfacing a 16x2 LCD with Assembly code, Controlling a DC motor using Assembly in AVR, Analog-to-Digital Conversion (ADC) in Assembly, Interrupt handling and priority setting in 8051 Assembly, Writing an optimized Assembly program for a real-time embedded system.

Software Simulations

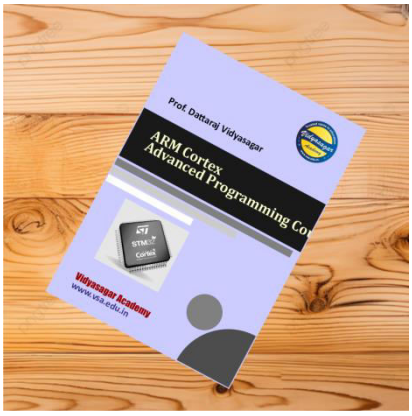
Keil uVision for 8051 Development, AVR Studio (Atmel Studio) for AVR Microcontrollers, Arduino IDE with Assembly-Level Programming, Proteus for Microcontroller Simulation, MPLAB X IDE for PIC Assembly Programming, Hex Editor for Machine Code Analysis, GDB Debugger for Low-Level Debugging, Easy68K Simulator for Learning 68K Assembly Concepts, GNU Assembler (GAS) for Cross-Platform Assembly Coding, AVRDUDE for Direct Microcontroller Flashing.

Register now on our website!
https://vsa.edu.in/registration-form/

22. ARM Cortex Advanced Programming Course

Industry Automation Series

Learn to program ARM Cortex processors for high-performance computing, robotics, and automation tasks. Neatly designed course as per the recommendation of large scale companies for hiring eligible candidates. Get guaranteed job after completing this course.



Course Fees: ₹15,000 | Real coders who are good at embedded system programming | Duration: 50-60 days

Class kit • Free WiFi • e-Course Workbook • ARM Cortex Programming from Scratch • Practical Training on Advanced Processors • ARM Architecture and Peripherals • Multitasking and Embedded System Optimization • Aligned with Industry Standards • Build Expertise Recommended by Large-Scale Companies • Personal Coaching • Certificate of Training • Guaranteed Job Assistance

Separate batches & teaching methods for teachers

Syllabus

What you will learn?

Introduction to ARM Cortex Programming, Overview of ARM Cortex Processors, Understanding ARM Architecture, Applications of ARM Cortex in Robotics and Automation, ARM Cortex Architecture and Peripherals, Cortex-M Series vs. Cortex-A/R Series, PWM and Timer Configuration, Analog-to-Digital (ADC) and Digital-to-Analog (DAC) Conversion, Advanced Coding Concepts for Embedded Systems, Writing Device Drivers, Implementing Interrupt Service Routines (ISR), DMA (Direct Memory Access) for High-Speed Data Transfer, Motor Control and Robotics Applications, Signal Processing with ARM Cortex, Data Acquisition and Sensor Fusion

Practical & Projects

Robotic Arm Control, Industrial Automation Controller, High-Speed Data Acquisition System, Developing and Deploying ARM Cortex Projects, Code Review and Debugging Techniques, Industry-Ready Skills and Certification, Industry Standards for ARM Programming, Certification Exam Preparation, Project Presentation and Evaluation, Resume Building and Interview Guidance.

Software Simulations

Keil MDK-ARM, STM32CubeIDE, PlatformIO, GNU ARM Embedded Toolchain, Eclipse IDE with ARM Plugin, IAR Embedded Workbench, ARM Development Studio, Atollic TrueSTUDIO, Code Composer Studio, CMSIS-Pack Manager, FreeRTOS, CubeMX for STM32 Configuration, J-Link Debugger Software, OpenOCD (Open On-Chip Debugger), Tera Term (for UART communication), Visual Studio Code with ARM Cortex Extensions.

Register now on our website!
https://vsa.edu.in/registration-form/

For still more advanced courses,

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