PinE Training Academy

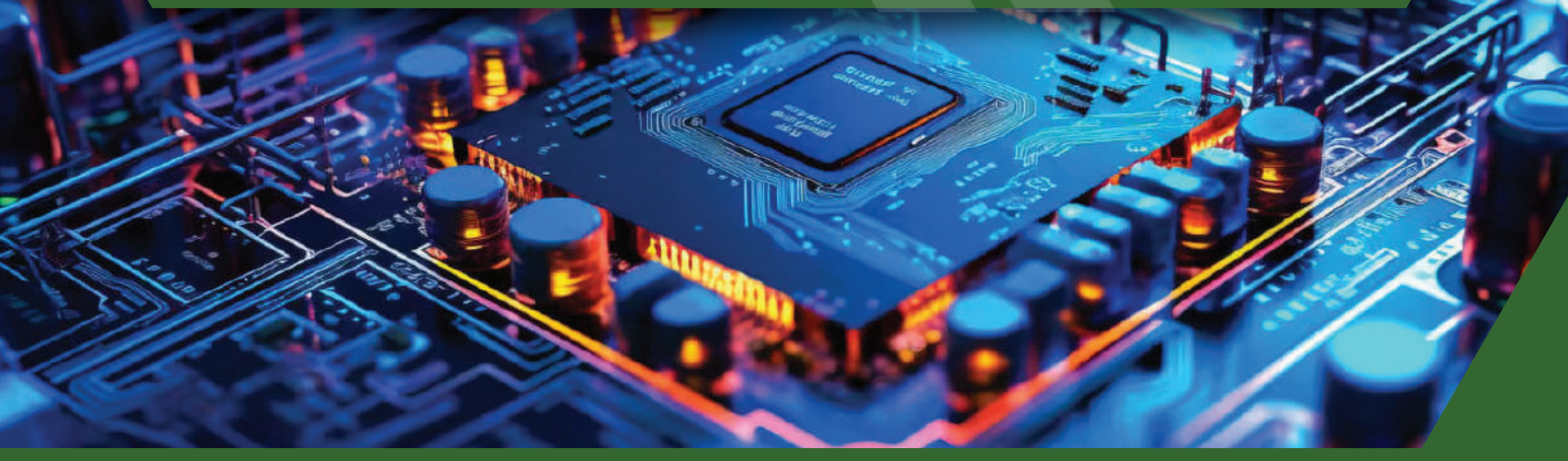
900+
PLACEMENTS

Embedded System

Offline | Hybrid | Online

Academic qualification for this course:

B.Tech /M.Tech with min 70 % through out in ECE /EEE/VLSI



Cadence Tool Lab Support

Placement Assistance

1:1 Mentoring

PinE Training Academy

PinE Training Academy (Training Division of Aujus Technology Private Limited -Enabling VLSI Design) was established in 2014 by technocrats having expertise and vast work experience in the field of ASIC Design, FPGA, DSP, Real-Time Embedded System Design, and Board PCB.
For more info, visit - https://pinetrainingacademy.in/

Hiring Partners

SYNOPSYS® · SignOff semiconductors · cadence® · KEENHEADS · CIRCUIT SUTRA TECHNOLOGIES · Vervesemi · AUJUS TECHNOLOGY · SIEMENS

"At PinE Training Academy, my vision has always been to help electronics students move beyond theoretical learning and **develop the practical skills** required by the industry.

Having worked closely with students and companies for years, **I have seen the gap between academic education and real engineering roles.**

PinE was built to bridge that gap — by providing structured learning, strong fundamentals, and guided career pathways so that **students can confidently step into core engineering careers.**"

- Vaibhav Mishra
(Founder & CEO)

To know more about our CEO, visit https://www.linkedin.com/in/vaibhav-mishra-1b01951/

Top 5 reasons to choose PinE Training Academy

1. 100% Placement Support

PinE provides 100% placement assistance to the eligible trainees of the job-oriented programs and keeps supporting them till they get a job after course completion. Our primary objective is to help electronics engineers successfully build a career in the semiconductor /VLSI Industries. We work closely with various VLSI products & services companies and identify the right opportunities. Most of our students have been successfully placed in reknowned semiconductor companies.

2. VLSI courses delivered by industry experts

PinE Training Academy is a leading VLSI and Embedded training institute that delivers industry-standard, high-quality VLSI programs. Our courses are designed by experienced industry experts, aligned with real job opportunities and long-term career growth in the semiconductor sector. We continuously update our VLSI curriculum to match the latest industry trends.

3. Excellent Teaching Methodology

Our training methodology is unique, enabling students to master even complex technologies in a short time and build true expertise. Around 70% of the course is dedicated to hands-on labs, mini projects, and a final project. These programs help you develop the in-demand technical skills needed to secure a job in the semiconductor industry.

4. 1:1 Support

PinE Training Academy provides 1:1 mentoring and round-the-clock online support Trainees also get 24/7 lab access to strengthen their technical skills and can join group discussions to learn and share insights. In addition, business communication sessions and mock interviews help build the professional skills needed to succeed in the workplace.

5. Flexible Payment & Financial Support

- Merit-Based Scholarship Program
- Interest-Free Monthly Installments
- Education Loan from NBFC Partners
- Auto-Debit Facility

EDA Partner

cadence

Get trained on Cadence industry grade tools and showcase your knowledge confidently in your interviews.

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1. Hardware Digital Design

- Project 1: Hardware Design of 4-bit Sign Calculator and Implementation.
- Calculator Components like: Adder, Subtractor, Multiplier, Divider, Comparator, Mux, Demux, Encoder, Decoder, 2s Complement, etc.
- Project 2: Hardware Design of a 4-way traffic light control system and implementation.
- Traffic Light Components: Latch, SR Latch, JK latch, JK FF, DFF, TFF, counters (Synchronous, Asynchronous, UP- Down, Odd –Even, Mod, Johnson & Ripple, Shift Registers (SISO, SIPO, PISO & PIPO)

2. Introduction of Analog Flow

- Introduction of network elements and their properties.
- Understanding the fundamentals of KCL, KVL, Source Transformation, Resistance equivalent, Star to Delta and Delta to star transformation, and their numerical.
- Understanding of Theorems like Thevenin, Norton, Superposition, and Maximum Transfer Theorem, and their numerical applications.
- Understanding of RC circuit with different sources.
- Introduction of Electronic Device circuit.
- Semiconductor material and its properties, Basic information of Doping, Diffusion, Conductivity, Mobility of material and more.
- Working of the Diode and its numerical values based on the application.
- Introduction of Bipolar Junction Transistor and its region of operation in terms of numerical values.
- Circuit designing on tools and analysis like DC analysis, Power analysis, Transient analysis, Temperature effect, Corner frequency and more.

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- MOS fabrication steps and the difference between MOSFET and BJT.
- MOSFET properties and their numerical values.
- Circuit designing on tools and analysis like DC analysis, Power analysis, Transient analysis, Temperature effect, Corner frequency and more.

3. Basics of Electronics Components

- Introduction to Embedded Systems
- Embedded System and its applications
- Design Parameters of an Embedded System and its significance
- Embedded System Design Flow.
- Analog and Digital Design Basic.
- Analog Signal Processing.
- Current/ Voltage concepts
- Resistors
- Capacitors
- Inductors
- Circuit Theory
- Diodes
- Transistors
- FET
- Op-Amps (LM324/358 , ULN 2803/2003)
- Oscillators (555)
- Switches
- Relays
- 7-segment
- 14/16 segment
- Motors
- Basic Electronics Components Testing
  - Breadboard
  - Multimeter
  - CRO

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4. Microcontroller & Microprocessor

- CPU Architecture
- Risc and CISC
- Von Neumann and Harvard
- Microcontroller family introduction
- Semiconductor memory
- Instruction Set
- Configuration with Peripherals Microprocessor vs Microcontroller CISC vs RISC
- Overview of the Architecture of 8051
  - Processor Core and Functional Block Diagram
  - Description of memory organisation
  - Overview of ALL SFR's and their basic functionality
- Low-level Programming Concepts
  - Addressing Modes
  - Instruction Set and Assembly Language (ALP)
  - Developing, Building and Debugging ALPs
- Middle Level Programming Concepts
  - Cross Compiler
  - Embedded C Implementation, prog. * Debugging
  - Differences from ASNSI-C
  - Memory Models
  - Library reference
  - Use of #pragma directive
  - Functions, Parameter passing and return types
- On-Chip Peripherals
- Ports: Input/output
- Timers & Counters
- Interrupts, UART

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- External Interfaces
  - LEDS
  - Switches (Momentary type, Toggle type)
  - Seven Segment Display: (Normal mode, BCD mode,
  - Internal Multiplexing & External Multiplexing)
  - LCD (4-bit, 8bit, Busy Flag, Custom Character Generation)
  - Keypad Matrix
- Protocols
  - I2C (EEPROM), SPI (EEPROM)

5. C Programming

- Abstract Data Types (ADT)
- DATA Structures and C
- Arrays in C
- Array as ADT
- One-Dimensional Array
- Array as parameters
- Two-Dimensional Array
- Structures in C
- Unions in C
- Structure as Parameters
- Pointers in C
- Allocation of storage and scope of variables
- Recursive Definition and Processes
- Factorial Function
- Fibonacci Sequence,
- Recursion in C
- Hashing: Hash Function

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6. Embedded C

- Basics
- Why C in Embedded
- ANSI Standard
- Datatypes and Constants
- Simple & Formatted I/O
- Memory Usage
- Operators & Expressions
- Flow Control
- Loops
- Functions
- Recursive Functions
- Call Back Functions
- Implications on Stack
- Library vs. User-defined function
- Storage Classes
- Scope and Life
- Automatic, Static, External, Register
- Memory(CPU / RAM)
- Dynamic Memory Allocation
- Malloc(), Calloc(), Realloc(), Free()
- Farmalloc (), Farcalloc()

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7. Interfacing with peripherals

- Timers
- Interrupts
- Watchdog timer
- RTC
- PWM
- ADC
- DMA
- I2C
- SPI
- LCD
- Stepping Motors
- Push Buttons
- Memories
- Latch Interconnections
- Sensors

8. Embedded Concepts and Real-time Exposure

- Development Tools and Environment
- Make Utility
- Industry Coding Standards
- Object / Executable File Format
- Debugger
- Introduction to Compiler & Assembler

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9. Computer Architecture

- Basic Computer instructions
- Instruction Design & format
- Computer arithmetic's
- Microprogrammed Controller
- Memory organisation
- Input & Output System
- Pipelining

10. Embedded Programming

- Register Level Programming
- Low-Level Device Driver
- Multi Core Processor & Its working
- Config Processor
- ISQ
- ISR
- Upper Half
- Bottom Half
- Help the driver write
- Insert in Running OS
- Linux for device driver: Char, Parallel Port, Serial Port, Block Device Driver

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11. Real-Time Operating System (Optional)

- Different types of Operating systems
- RTOS basics – Linux as Real Time
- RTOS Introduction (Hard Real Time, Soft Real Time)
- Latency in Linux, Priority Inheritance
- Linux 2.6 features for real-time
- 2.6 Kernel Compilation
- RT LINUX patching
- Linux RTPREEMPT Patches
- Configuring the Kernel with RT-PATCH
- Implementation of Real Time application
- Linux real-time API
- Measuring and comparing scheduling latency in standard Linux and in RT-Linux with the latest RT patches
- Porting RT-Linux to ARM and application development
- Help to understanding concept of
  - Multithreading
  - Multiprocessing
  - Inter Process
  - Inter Thread
  - Process

12. Linux Internals (Optional)

- Introduction
  - Kernel Architecture
  - Application
  - Shell and Services

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  - System Calls
  - Error Handling
- Library
  - Linker and Loader
  - Static Dynamic Library
- Process Management
  - Process Control Block
  - Process Creation and Exit
  - Process Scheduling Policies
  - Process Limits
  - Process Priorities
  - Foreground & Background Processes
  - Race Condition
  - Synchronization
  - Copy-on-write
  - Process time values
  - Daemon Process
- Interrupts
  - PrProcess Interrupt
  - Rise of Signal
  - Catching signal
  - Signal action
- File Management
  - Files and File Attributes
  - File Descriptor
  - File I/O
  - Duplicating File & File Descriptor
  - File Control operations
  - File types
  - Protection
  - Inode

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- Inter Process Communication & Synchronisation
  - Pipe
  - Fifo
  - Message Queue
  - Shared Memory
  - Client – Server properties
  - Semaphore
- Threads
  - Creation
  - Termination
  - Synchronization
  - Attributes
- Memory Management
  - Paging
  - Reentrancy
  - Segmentation
  - Virtual Memory
  - Memory Protection
  - Memory Sharing

13. IOT (Optional)

- IoT Applications in different domains
- IoT Use cases in Consumables, Smart Cities and Industrial IoT
- How large is the IoT Market in different domains?

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14. Object-Oriented Programming with C++

- Overview
- Characteristics
- Function Overloading
- Scope Resolution Operator
- Classes in C++
- Access Specifiers
- Constructor, Destructor
- Static members, Functions
- Friend Classes, Friend Functions
- Operator Overloading
- Data Conversions
- Inheritance, Polymorphism
- Exception Handling, Templates
- Input and Output Streams

15. Components of IOT (Optional)

- What are things, nodes, and end devices
- Sensors and Actuators
- What is Sensor & Actuator?
- Sensor properties.
- Types of sensors and how to select
- Gateway, communication medium
- Cloud, servers
- Analytics, machine learning, and artificial intelligence.
- Layers of the IoT platform

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16. Let's create Things (Optional)

- What will be the role of the end devices
- Things to consider when choosing the right development platform
- Processing power
- Number of peripherals
- Development environment
- Cost, availability,
- Power consumption

17. Hands-on Project

- Blinking Led's
- Fading LED intensity using PWM.
- Operating the relay and buzzer.
- Operating the relay and buzzer from a mobile Bluetooth terminal/UART.
- Transmitting the string to the UART/Bluetooth terminal in the mobile.
- Driving the motor clockwise and Anti-clockwise using the motor driver.
- Controlling the speed of the motor using a motor driver.
- Controlling Led's from the DIP switch or D-PAD.
- Displaying a message on the LCD.
- Fetching input from the ADC channel and sending data to the LCD.
- Reading data from EEPROM (Arduino internal) and sending it to the UART.

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18. ARM (Optional)

- Introduction
- Core Features
- Version History
- Data Flow Model
- Registers
- CPU Modes
- Memory Organisation
- Interrupts
- Pipelining
- ARM Assembly Language Programming
- Addressing Modes
- ARM 7 Instruction Set (20/80% -rule of assembly language)
- Usage of Keil IDE
- Demonstrating ARM ISA
- Demonstrating THUMB ISA
- ARM Embedded C language Implementation
- Exposure to an ARM7 CPU Core Based Microcontroller
- LPC2114-ARM7 Based Microcontroller from Philips Semiconductors
- On-Chip System Peripherals
- Bus Structure (AMBA)
- Memory Map
- Phase Locked Loop
- VPB Driver
- Pin Connect Block
- On-ChipUser Peripherals
- General Purpose I/0 : Demo using switch & LED
- Vectored Interrupt Controller (VIC)
- External Interrupts: Demos

Note- The Institute has full right to select the modules as per the requirement of the industry and also depend on the duration of the batch without affecting the course fees

Course Information

New batch starts every

January | April | July | October

Course Duration

- Offline - **6 months**
- Hybrid - **10 months**
- Online - **12 months**

Course Fees

The fees will vary for different modes-online, hybrid and offline and can range between INR 50k - 60k + tax

Scholarship

The scholarship will be given based on the entrance test.

Score 90% or above - **40% scholarship**
Score 75% or above - **20% scholarship**

Prerequisite for Entrance Test: Basic Knowledge of Analog & Digital Design Fundamentals

PinE Training Academy

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