



DURATION
4 Months (120 Days)

EMBEDDED SYSTEMS & IOT

COURSE & CAREER GUIDE · 2026

Advanced **Embedded Systems** Program (CESE)

Course Details & Career Growth Guide

Our most comprehensive embedded programme — eleven microcontroller families, RTOS, Python and Embedded Linux.

360 Training Hours

15 Modules

5 Hands-On Projects

Career Roles & Salary Ladder

Placement Support

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Programme Highlights

360 Hours

4 Months (120 Days) of structured, practical training

5 Projects

Hands-on work you can show employers

Certified

Govt.-accredited (NSDC)
+ IPCS

Placement

100% placement assistance & career-readiness

IPCS Global — Since 2008

IPCS Global began in 2008 as a specialised industrial automation training and services provider and has grown into one of India's leading technical and digital skills institutes, with 50+ branches across India and the GCC. Our Coimbatore centre in Peelamedu combines classroom teaching with hands-on labs, and every learner is coached in communication, aptitude and interview readiness alongside technical skills.

18+

YEARS

15,000+

PROFESSIONALS TRAINED

50+

BRANCHES

100%

PLACEMENT ASSISTANCE

About the Embedded Systems & IoT Stream

Embedded systems power everything from smart devices and medical equipment to electric vehicles. Our programmes cover Embedded C, nine microcontroller families, RTOS, Embedded Linux, IoT, automotive protocols and PCB design — with 100% hands-on hardware training.



ISO 9001:2015 Certified

Audited, consistent training quality.



TÜV SÜD Cooperation Partner

Partner of the German testing & certification body.



NSDC Approved Partner

Approved training partner under Skill India.



Inside the IPCS Global Coimbatore training centre.

Why Embedded Systems & IoT, Why Now

The demand behind this programme — and the industries that hire our graduates.

- 1 Electronics is booming in India**
Government incentives for electronics manufacturing, semiconductors and EVs are expanding embedded jobs across design centres and product companies.
- 2 Everything is becoming connected**
Consumer devices, medical equipment, vehicles, appliances and industrial machines all run on firmware — and increasingly connect to the cloud.
- 3 EV and automotive growth**
Electric vehicles and connected cars need engineers skilled in CAN, diagnostics, RTOS and battery management systems.

Where You Can Work

- 1 Consumer electronics & IoT product companies**
- 2 Automotive & EV (OEMs and Tier-1 suppliers)**
- 3 Medical devices**
- 4 Industrial automation & robotics**
- 5 Semiconductor & design services**
- 6 Defence & aerospace electronics**

Three Ways to Build Your Career

Full-Time Job

Join a company with placement support behind you — stability and structured growth.

Job + Freelance

Hold a job while taking side projects to build income and a broader portfolio.

Remote & Global

Embedded skills are in demand in Germany, Japan, the US and the GCC. Many Indian engineers work on global projects from Bengaluru, Chennai, Coimbatore, Pune and Hyderabad design centres.

CAREER PROGRAMME

Advanced Embedded Systems Program (CESE)

Our most comprehensive embedded programme – eleven microcontroller families, RTOS, Python and Embedded Linux.

4 Months (120 Days)

360 Hours

15 Modules

5 Projects

Classroom + hands-on lab

Part A • Course Details

Program Overview

Certified Embedded System Engineer (CESE) is our flagship embedded programme. You master Embedded C, then work hands-on with Arduino, PIC, 8051, ARM, STM32, AVR, MSP430, RP2040 and ESP32, add Python and Raspberry Pi, and finish with FreeRTOS and Embedded Linux device drivers.

DURATION

4 Months (120 Days)

TRAINING HOURS

360 Hours

MODULES

15 Structured Modules

MODE

Classroom + hands-on lab

BATCHES

Weekday • Weekend • Fast-track

CERTIFICATION

Govt.-accredited (NSDC) + IPCS

Who Should Join

- ✓ BE / B.Tech / Diploma in ECE, EEE, EIE, CSE
- ✓ Final-year engineering students
- ✓ Electronics hobbyists turning professional
- ✓ Engineers switching into firmware roles

Eligibility: Diploma or degree in electronics, electrical, instrumentation or computer science.

What You'll Be Able To Do

- ✓ Write clean, efficient Embedded C
- ✓ Program 9+ microcontroller families
- ✓ Interface sensors, displays, motors and protocols
- ✓ Build real-time applications with FreeRTOS
- ✓ Write basic Linux device drivers
- ✓ Design and simulate PCBs for your projects

The Full Syllabus

15 modules, 360 hours, delivered in three phases that each build on the last.

01 · FOUNDATION

Modules 1–3 · 80 Hours

Embedded C, electronics and PCB basics.

02 · MICROCONTROLLERS

Modules 4–11 · 175 Hours

Hands-on with nine controller families and all key interfaces.

03 · ADVANCED

Modules 12–15 · 105 Hours

Python, Raspberry Pi, FreeRTOS and Embedded Linux.

01	Embedded C Programming	40 Hrs
02	Basic Electronics for Embedded Systems	20 Hrs
03	PCB Design & Circuit Simulation	20 Hrs
04	Arduino Microcontroller	20 Hrs
05	PIC Microcontroller	25 Hrs
06	8051 Microcontroller	20 Hrs
07	ARM Microcontroller	20 Hrs
08	STM32 Microcontroller	35 Hrs
09	AVR Microcontroller	15 Hrs
10	MSP430 Microcontroller	15 Hrs
11	RP2040 / ESP32 Microcontroller	25 Hrs
12	Python Programming for Embedded & IoT	25 Hrs
13	Raspberry Pi Embedded Systems	25 Hrs
14	RTOS with STM32 (FreeRTOS)	25 Hrs
15	Embedded Linux & Device Driver Development	30 Hrs

Total Training Duration

360 Hours

Module-by-Module Topics

MODULE 01**40 Hrs****Embedded C Programming**

- Data types, operators & control flow
- Arrays (1D/2D), strings & functions
- Pointers, structures & unions
- Memory concepts & bit manipulation
- Writing modular, reusable firmware

MODULE 02**20 Hrs****Basic Electronics for Embedded Systems**

- Basic electrical: voltage, current, power
- Basic electronics: R, L, C, diodes, transistors
- Digital systems: gates, flip-flops, counters
- Reading datasheets & schematics

MODULE 03**20 Hrs****PCB Design & Circuit Simulation**

- Schematic capture
- PCB layout basics
- Proteus simulation

MODULE 04**20 Hrs****Arduino Microcontroller**

- Arduino architecture & IDE
- Digital/analog I/O
- Sensor projects

MODULE 05**25 Hrs****PIC Microcontroller**

- LED, switch, 7-segment (1d-8d) & keypad
- LCD, relays & motors
- ADC, timers (0/1/2), PWM & interrupts
- MPLAB X & XC8

MODULE 06**20 Hrs****8051 Microcontroller**

- 8051 architecture
- Keil programming
- Timers, serial & interrupts

MODULE 07**20 Hrs****ARM Microcontroller**

- ARM Cortex-M architecture
- Registers & peripherals
- CMSIS basics

MODULE 08**35 Hrs****STM32 Microcontroller**

- STM32CubeIDE & HAL
- GPIO, timers, ADC, PWM
- UART, SPI, I2C & DMA
- Interrupt-driven design

MODULE 09**15 Hrs****AVR Microcontroller**

- AVR architecture
- Register-level programming

MODULE 10**15 Hrs****MSP430 Microcontroller**

- Low-power design
- Peripherals & sleep modes

MODULE 11**25 Hrs****RP2040 / ESP32 Microcontroller**

- Dual-core RP2040 & PIO
- ESP32 Wi-Fi & Bluetooth
- IoT connectivity

MODULE 12**25 Hrs****Python Programming for Embedded & IoT**

- Python fundamentals
- MicroPython
- Data logging & automation

MODULE 13

25 Hrs

Raspberry Pi Embedded Systems

- Raspberry Pi OS & GPIO
- Camera & sensors
- Pi as IoT gateway

MODULE 14

25 Hrs

RTOS with STM32 (FreeRTOS)

- Tasks, scheduling & priorities
- Queues, semaphores & mutexes
- Real-time design patterns

MODULE 15

30 Hrs

Embedded Linux & Device Driver Development

- Linux boot process
- Cross-compilation
- Character device drivers
- GPIO & I2C drivers

Advanced Embedded (CESE) - Part A

Tools, Projects & Assessment

Tools & Technologies You'll Use

Embedded C / GCC

Arduino IDE

MPLAB X (PIC)

Keil µVision

STM32CubeIDE

Proteus

Oscilloscope & multimeter

Git

MSP430 LaunchPad

Raspberry Pi

ESP-IDF

FreeRTOS

Linux toolchain

Projects You'll Build

1 Smart home controller on ESP32

2 Data logger with STM32 + SD card

3 Multi-task RTOS application

4 Raspberry Pi camera/IoT gateway

5 Linux GPIO device driver

How You'll Be Assessed

1

Module Assessments

Practical and theory checks at the end of each module.

2

Project Reviews

Trainer review of your mini projects and final project.

3

Certification

Issued on meeting assessment and attendance criteria.

Certification: Government-accredited (NSDC) certificate + IPCS Global course certificate + Internship Certification.

PART B • CAREER GROWTH

Where Advanced Embedded (CESE) Can Take You

Job roles, a realistic growth ladder with salary ranges, and the skills to keep growing.

Roles You'll Be Ready For

1

Embedded Software / Firmware Engineer

Writes firmware for microcontroller-based products.

2

Embedded Hardware Engineer

Designs and tests circuits and boards.

3

Embedded Test / Validation Engineer

Tests firmware and hardware against requirements.

4

IoT Developer

Builds connected devices and cloud links.

5

Device Driver / Linux Engineer

Develops drivers and board support.

6

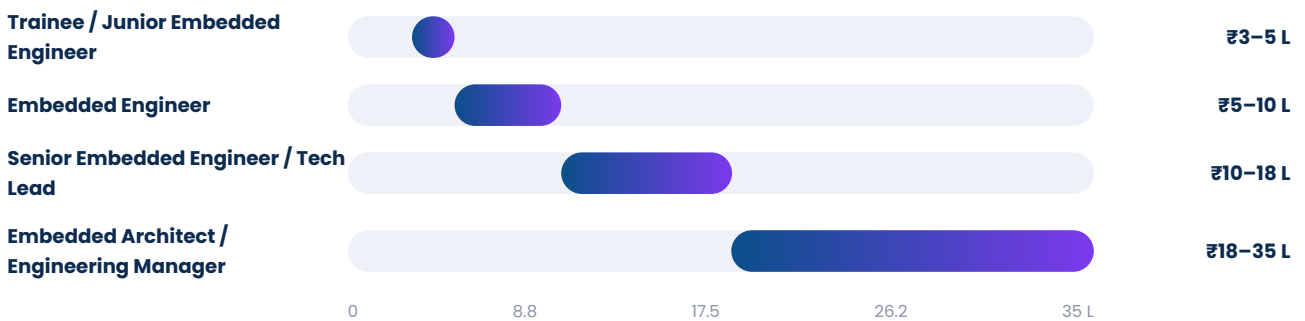
Field Application Engineer

Supports customers using electronic components.

■ Your Growth Ladder

STAGE 01 0–2 YRS	Trainee / Junior Embedded Engineer Write and test firmware modules.	₹3 – 5 LPA
STAGE 02 2–5 YRS	Embedded Engineer Own firmware for products and features.	₹5 – 10 LPA
STAGE 03 5–8 YRS	Senior Embedded Engineer / Tech Lead Architect firmware and lead teams.	₹10 – 18 LPA
STAGE 04 8+ YRS	Embedded Architect / Engineering Manager Own platforms and product engineering.	₹18 – 35 LPA

■ Annual Salary Range (CTC) — ₹ Lakh per annum



Indicative ranges for India in 2026. Lower end: Tier-2 cities such as Coimbatore and smaller firms; upper end: metros and larger companies; GCC and overseas packages are typically higher. Guidance only, not a salary guarantee.

■ Skills to Add Next

- ✓ Embedded Linux & Yocto
- ✓ RTOS internals
- ✓ ARM Cortex-M in depth
- ✓ Debugging with JTAG & logic analysers
- ✓ C++ for embedded

■ Certifications to Target

- ✓ NSDC-aligned embedded certification
- ✓ ARM accredited engineer (later career)
- ✓ Embedded Linux training
- ✓ MISRA C awareness

■ Upgrade Path at IPCS Global

1 Automotive Embedded System Design Program

2 PCB Design Program

■ Your First 12 Months After the Course

1

Month 0–1 • Get Visible

Polish your resume and portfolio; apply through the IPCS placement cell's drives.

2

Month 1–3 • First Role

Join as a Trainee / Junior Embedded Engineer.

3

Month 3–6 • Get Certified

Earn one certification from the list above.

4

Month 6–12 • Specialise

Pick a specialisation and own a project, system or channel.

How We Train & Certify

Technical skill gets you noticed — presentation, confidence and communication get you hired.
Career-readiness runs alongside the syllabus, not after it.

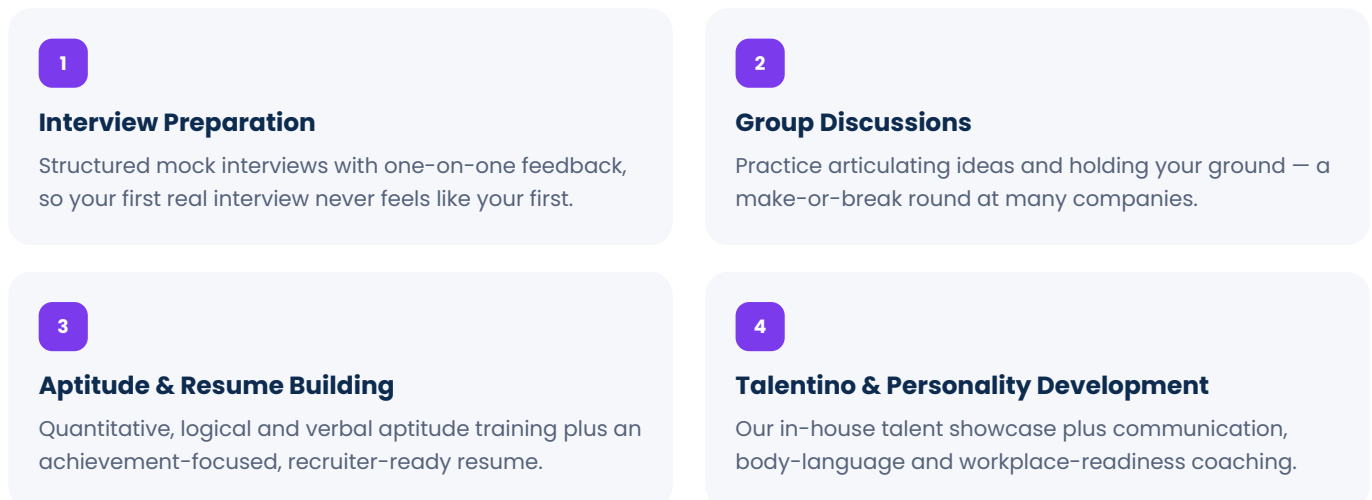
Our Learning Method



Your Certifications

- Government-Accredited Certification**
 IPCS Global is an NSDC approved training partner. On successful completion you receive a government-accredited certificate that validates your technical and practical skills.
- IPCS Global Course Certificate**
 Issued by an ISO 9001:2015 certified institute on successful completion of assessments and projects.
- Internship Certification**
 Documents your hardware projects and lab work — verifiable experience for your resume.

Career-Readiness Track



How IPCS Global Gets You Hired

Every learner goes through a structured career-readiness track alongside the course, supported by our dedicated placement cell.

1

Dedicated Placement Cell

Interview drives, industry referrals and follow-up until you are placed – not just until the course ends.

2

Resume & Portfolio

One-on-one sessions to build a recruiter-ready resume and a project portfolio that proves your skills.

3

Aptitude & GD Training

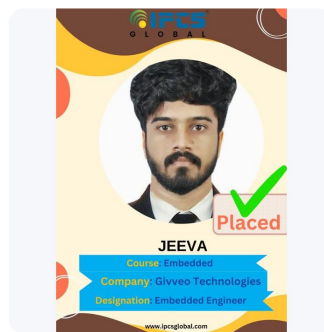
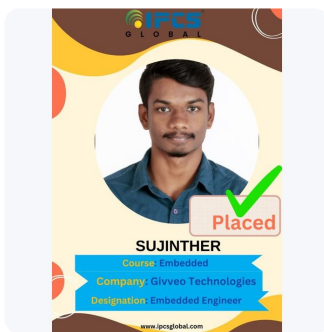
Quantitative, logical and verbal aptitude plus group discussion practice.

4

Mock Interviews

Simulated technical and HR panels so the first real interview never feels like the first.

Recent IPCS Coimbatore Placements



A selection of recent placements across IPCS Global Coimbatore programmes.

Global opportunity: Embedded skills are in demand in Germany, Japan, the US and the GCC. Many Indian engineers work on global projects from Bengaluru, Chennai, Coimbatore, Pune and Hyderabad design centres.

Why IPCS Global



18+ Years of Training Excellence

A track record since 2008, refined across 15,000+ professionals trained.



ISO 9001:2015 Certified

Audited, consistent training quality — every batch, every time.



Recognised Partnerships

TÜV SÜD cooperation partner and NSDC approved training partner.



Dedicated Placement Cell

Industry tie-ups, interview drives and follow-up until you are placed.



Real Labs, Real Projects

Industry-grade equipment and live projects — proof of work, not just a certificate.



50+ Branches, One Standard

Across India and the GCC, with weekday, weekend and fast-track batches.

Meet Our Coimbatore Team



Trainers, mentors, counsellors and placement coordinators at IPCS Global Coimbatore — working with every learner from the first class to final placement.

Frequently Asked Questions

Quick answers to the questions learners and parents ask us most. For anything else, call or visit the Coimbatore branch.

Q. Do I need prior experience to join?

Most programmes start from the fundamentals. Each programme lists its eligibility — our counsellors will confirm the right starting point for your background.

Q. Are classes held online or in the classroom?

Classroom + hands-on lab. Talk to our counsellors about the best option for your programme.

Q. What batch timings are available?

We run weekday, weekend and fast-track batches, so students and working professionals can both find a schedule that fits.

Q. Is placement guaranteed?

We provide 100% placement assistance — resume building, aptitude and GD training, mock interviews and interview drives through our dedicated placement cell. Final selection depends on each learner's performance, attendance and interview results.

Q. What certificate will I receive?

Government-accredited (NSDC) certificate + IPCS Global course certificate + Internship Certification.

Q. Can I attend a class before enrolling?

Yes. Book a free demo session to meet the trainers, see the labs and experience a live class before you decide.

Q. What are the course fees?

Fees depend on the programme and batch type. Please contact the Coimbatore branch for the current fee structure and any available offers.

Q. Can working professionals join?

Yes. Weekend and fast-track batches are designed for people who are working or studying alongside the course.

LET'S START THE CONVERSATION

Your Career in **Embedded Systems & IoT** Starts Here

Book a free demo class, meet the trainers and see the labs — our counsellors will help you pick the right programme and batch.

Visit Us

Address #12, 2nd Floor, Swathi Towers,
Sowripalayam –
Masakalipalayam Road, Opp.
GRG Matriculation School,
Periyar Nagar, Peelamedu,
Coimbatore, Tamil Nadu –
641004

Get In Touch

Phone +91 80860 96664
Email bmcbe@ipcsglobal.com
Web www.ipcsglobal.com
Batches Weekday · Weekend · Fast-track

Book Your Free Demo Session Today

Walk in, call or write to us — meet the trainers, see the labs, and get counselling on the right course and batch before you enrol.

How to Enrol

1

Contact Us

Call, WhatsApp or walk in to our Peelamedu centre.

2

Free Demo

Attend a live class and see the labs.

3

Choose a Batch

Weekday, weekend or fast-track.

4

Enrol & Start

Simple, guided enrolment.