8 Weeks Training
In
Embedded System
&
Robotics
(With Live Project)
(A Corporate Partner of IIT Delhi)

An Initiative by Industry Experts from Cadence, Atrenta & Patni with qualification from IITs and BITS-Pilani

Training Partners of Cadence Design Systems and Mentor Graphics (Worldwide EDA Giants)
MODULE 1: EMBEDDED SYSTEM OVERVIEW

1. Introduction
2. History of Embedded System
3. Embedded System Design Parameters (GAS)
4. Challenges and Trends in Embedded System
5. Operating System for Embedded System

MODULE 2: OPERATING SYSTEM - LINUX

1. Introduction to LINUX
2. Managing Files & Directories
3. Basic SHELL structure
4. Files System, Process Management System
5. Memory management system
6. OS Services and Kernel Architecture
7. Programming & Debugging using LINUX

MODULE 3: BASIC ELECTRONICS

1. Practical applications of Basic Components
   - Resistance
   - Capacitor
   - Inductor
   - Transistor
   - Power supply
   - Regulator
2. Basic memory structure
3. Hardware Languages (Voltages and Number System)
4. Multi Meter

MODULE 4: DIGITAL ELECTRONICS

1. Design Concepts
2. Introduction to Logic
3. Optimized Implementation of Logic Functions
4. Number Representation and Arithmetic Circuits
5. Combinational-Circuits Building Blocks
6. Flip-Flops, Registers, Counters, and Simple Processor
MODULE 5: MICROCONTROLLER & MICROPROCESSOR

1. Introduction: Microcontrollers and Microprocessors
2. Microcontroller w.r.t Computer (Arch of Comp)
3. RISC & CISC
4. Microcontroller Architecture
5. Memory Organization (in comparison with CPU)
6. Addressing modes w.r.t Instruction set
7. Programming in Assembly and C
8. Hands on Keil uVision Compiler and Flash Magic
9. Special Function Registers
10. Addressing Modes
11. Instruction Set
12. Timers and Counters
13. Interrupt Handling
14. Serial Communication
15. Serial Communication with diff Baud Rates Tx and Rx

MODULE 6: INTERFACINGS AND IMPLEMENTATIONS

1. LED, Keypad, 7-Segment, LCD interfacing
2. Various types of Sensors
3. DC geared motors
4. Stepper motor
5. Motor Driver (H-Bridge)
6. Basic Op-amp Circuits (Comparators)
7. Designing line detecting sensors
8. ADC/DAC
9. PWM Rx and Tx

MODULE 7: INTRODUCTION TO ROBOTICS AND BASICS OF ROBOT CONSTRUCTION

1. Anatomy of a Robot
2. Overview of controller-less Robots
3. Robot construction material
4. Actuators and Control Drivers

In this session, participants will be introduced to the world of robotics; different robot construction materials and construction techniques will be investigated and compared

MODULE 8: PCB DESIGNING

1. Circuit Simulation
2. Schematic Designing
3. Net Listing
4. Auto routing
5. Multi-layer PCB Designing
6. Layout Designing
1. Getting Started with ARDUINO
2. Installation Guide and introduction with ARDUINO environment
3. Language Reference (Structure, Variables and functions)
4. LED blinking and LED Dimming using ARDUINO (agenda of PWM)
5. Sampling ANALOG INPUT to the ARDUINO
6. Interfacing Temperature Sensor
7. Interfacing Relays and Servo motor
8. Working and interfacing with SHIFT REGISTER
9. Getting some NOISE Effects from ARDUINO - Time play some Audio
10. Temperature Logger
11. 7-Segment Display interfacing and application using Shift register
12. Speed control of a ROBOTIC car using PWM channel in ARDUINO
13. Digital Clock using ARDUINO
14. Distance Sensor for calculating the distance of obstacle (Ultrasonic Device and Sharp Distance sensor)

MODULE 10: PROJECT WORK

1. Project Study
2. Document submission & Evaluation of Project

PROGRAM DETAILS

Batches Commence on : 1st May, 2012
Total Seats : 30 Students / Batch
Duration : 8 Weeks || 3 Days/Week || 3 Hours/Day
Fees : Rs 9000/- (Inclusive of Service Tax)
BENEFITS FOR THE STUDENTS

• Helps you in understanding the practical and industrial applications of academic curriculum

• Build your knowledge to develop innovative projects during their final year of engineering

• Enhances the Skill-Set in your resume for better placement prospects within the semiconductor industry

• Helping build knowledge and expertise for the aspirants of higher studies abroad to face the stiff competition from students of other countries

• Build your confidence through hands on exposure to various tools & technologies

DKOP TEAM

• Manu Lauria:
  
  
  o Experience: More than 22 years in the Industry with 18 years in the Semiconductor industry at Cadence Design Systems and 4 years at ONGC. Rich experience in EDA software tools development - responsible for many products from concept to reality. Was part of the core leadership team of Cadence's Noida Center for 13 years. Has managed or been part of teams that developed products in the areas of Synthesis, Simulation, Custom IC Design, Rule checking, Model Development & Web based component/design management.

• Sandeep Gupta:
  
  o Qualification: M.Tech. in Computer Applications from IIT Delhi and M.Sc. Mathematics from IIT Delhi
  
  o Experience: More than Eighteen years in Semiconductor industry with Thirteen years in Cadence Design Systems. Have worked in the R&D of HDL Simulation tools and Virtuoso platform. Highly experienced in developing Software for Engineering Applications in addition to EDA tools. Proficient in C,C++, Perl, TCL-Tk languages as well as HDLs like VHDL, Verilog & SystemVerilog.
• Devender Khari:
  o **Qualification:** *M.E. Computer Science* from BITS, Pilani and *B.Tech in Computer Engineering* from Shivaji University.
  o **Experience:** More than 11 years of experience in software and EDA industry with 8 years in Cadence Design Systems. Have worked in the R&D of **OrCAD suite** of tools, **Allegro Design Editor** and **Virtuoso Composer**. Expert in developing Software for Engineering applications as well as Web Technology and Mobile based applications. Proficient in C, C++, PHP, .NET and JAVA Languages.

• Chandrakant Sakharwade:
  o **Qualification:** *M.Tech.* in Advanced Electronics from *IIT Chennai* (1978) and *B.Tech.* in Electronics & Communication Engineering from *Visvesvaraya Regional College of Engineering* (1976)
  o **Experience:** More than 31 years of professional experience. Have worked as Engineering Manager with increasingly responsible positions in Engineering Design, Project Management and Engineering Management in *Telecom, Embedded Systems, Electronic Component Databases (Content), and Electronic Design Automation (EDA) and Product Engineering Services* domains. Applied engineering principles for successful development of multiple products and content. Have worked at *Patni Computer Systems, Cadence Design Systems, Aspect Development, C-DOT & Tata Institute of Fundamental Research*.

• Ajay Sharma:
  o **Qualification:** *M.Sc.* In Electronic Science from *Electronic Science Department, Kurukshetra University*(2003)
  o **Experience:** 6+ years of Research Experience in the field of **ASIC Design.** Spent 3 years in research on **Smart Sensor ASICs** at *SRL, University of Warwick, UK.* Contributed in the whole flow from Circuit Design to Tapeout. Handled MIT (Ministry of Information Technology) initiative project, SMDP-II, at *NIT, Jalandhar* for year and a half. Played an instrumental role in taking designs from Circuit to Layout. Guided Masters and Bachelors Projects.

• Ravi Bhardwaj:
  o **Qualification:** *B.Tech.* In ECE from *LPU*
  o **Experience:** Started his career at DKOP Labs as Assistant Design Engineer. Handling multiple projects in VLSI Design and FPGA.

• Abhishek Goel:
  o **Qualification:** *B.Tech* in Electronics and Communication Engineering from *MMU*
- **Experience**: 2+ years of experience in Embedded System and Robotics. Handling multiple projects in Embedded and Robotics

- **Jatin Garg**:
  - **Qualification**: *B.Tech* in Electronics and Communication Engineering from **MMU**
  - **Experience**: Started his career at DKOP Labs as an Embedded Engineer. Handling multiple projects in Embedded and Robotics

- **Vinit Saddyan**:
  - **Qualification**: *B.Tech* in Electronics and Communication Engineering from **MMU**
  - **Experience**: Started his career at DKOP Labs as an Embedded Engineer. Handling multiple projects in Embedded and Robotics

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### PARTNERSHIPS

**IIT DELHI CORPORATE PARTNER**

DKOP is selected as Corporate Partner of IIT Delhi for R&D, Innovation & Training

**CADENCE DESIGN SYSTEMS**

DKOP is Certified Training Partner of Cadence for whole of North India

**MENTOR GRAPHICS CORPORATION**

DKOP is Vanguard Partner and HEP (Higher Education Program) Partner of Mentor Graphics Corporation.

**AGNISYS**

DKOP is Spark Higher Education Program partner of Agnisys. DKOP students are given live projects from Agnisys to work and deliver in tight deadlines.

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### DKOP PLACEMENTS

Companies where we have placed our students

**ST MICROELECTRONICS, GREATER NOIDA**

Kavita Sharma, Banasthali Vidyapeeth

**CADENCE DESIGN SYSTEMS, NOIDA**
Sorabh Dung, LIT, Lovely Professional University
Ruchi Mittal, CDAC
Rachna Raj, Banasthali University
Saloni Goel, Banasthali University
Sachin Kumar, LIT, Lovely Professional University
Jupinder Kaur, LIT, Lovely Professional University
Manvi Goel, Banasthali University
Balveer Singh Koranga, GB Pant Engineering College, Pauri, Uttaranchal

MENTOR GRAPHICS, NOIDA
Vikas Tomar, ITM, Gurgaon
Jitendra Aggarwal, Amity University, Noida

AGNISYS, NOIDA
Sandeep Thakur, Lovely Professional University
Amit Kapoor, SSIET, Dera Bassi
Nitin Ahuja, BSAITM, Faridabad

NSYS, DELHI
Nidhi Gupta, M.P.C.T., Gwalior
Prishkrit Abrol, DAVIET, Jalandhar
Pankaj Talwar, LCET, Ludhiana
Richa, Banasthali University
Mamta Rana, Jiwaji University

CIRCUITSUTRA TECHNOLOGIES, NOIDA
Parvinder Pal Singh, Lovely Professional University

DKOP LABS, NOIDA
Rahul Kumar, Rai University
Pushpinder Singh, SVIET – Banud
Amitav Banerjee, UPTU
Nirmal Singh, UPTU

Hariom Pandey, UPTU

Sumit Gupta, Thapar - Patiala
Sumit Kumar, Thapar - Patiala

Akhilesh Singh, Jiwaji University

Ajay Gupta, Jiwaji University

Mohammed Sharique, Jiwaji University

Smriti Gurung
Subeg Singh
Binipal Wadhwa
Hasan Karkara

Note: Our competitors also hire our graduates!

RECOMMENDATIONS

1. Mr Jitin Sahni
   Manager, HR & Recruitment
   Freescale Semiconductors, Noida

2. Mr. Harish Pandey
   Marketing Head
   AMDL, Bangalore

3. Mr. Upender Bhati
4. Mr Anupam Bakshi  
   CEO, AgniSys  
   Noida

5. Mr Umesh Sisodia  
   CEO, CircuitSutra Technologies Pvt Ltd  
   Noida

6. Mr Sanjay Chakravarty  
   VP, ITAAS Inc  
   Noida

7. Dr. S.N. Saran  
   Director  
   GNIT, Greater Noida

**DKOP TOUCHED FOLLOWING COLLEGES**

We have conducted on-campus programs (Workshops/Trainings/Conferences) at following colleges:

1. LOVELY PROFESSIONAL UNIVERSITY, PHAGWARA
2. GREATER NOIDA INSTITUTE OF TECHNOLOGY, GREATER NOIDHA
3. NIT, JALANDHAR
4. VISHWESHVARYA INSTITUTE OF ENGINEERING & TECHNOLOGY, DADRI
5. LIET (LAXMI DEVI INSTITUTE OF ENGINEERING & TECHNOLOGY), ALWAR
6. SHEKHAWATI ENGINEERING COLLEGE
7. ST. MARGARET ENGG. COLLEGE, NEEMRANA
8. ITM, BHILWARA
9. YMCA, FARIDABAD
10. BANASTHALI VIDYAPITH
11. CHITKARA INSTITUTE OF ENGG & TECH, RAJPURA
12. DAV INSTITUTE OF ENGG & TECH, JALANDHAR
13. KUMAON ENGINEERING COLLEGE, DWARAHAT
14. GB PANT ENGG COLLEGE, PAURI
15. INSTITUTE OF TECHNOLOGY, PANTNAGAR
16. SACHDEVA COLLEGE OF ENGG, MATHURA
17. COLLEGE OF ENGG, ROORKEE
18. JSS, NOIDA
19. JIIT, NOIDA
20. BS ANANGPURIA, FARIDABAD
21. GRAPHICS ERA UNIVERSITY, DEHRADUN
22. MITRC, ALWAR
23. SIDDHI VINAYAK, ALWAR
24. NC COLLEGE OF ENGG, PANIPAT
25. BITS, BHIWANI
26. SRI SUKHMANI INSTITUTE, DERABASSI
27. SVIET, BANUD
28. LUDHIANA COLLEGE OF ENGG & TECH
29. DESHBHAGAT ENGG COLLEGE
30. SSIET, PATTI
31. RAI UNIVERSITY, FARIDABAD
32. COLLEGE OF ENGG & TECH, KAPURTHALA
33. RIET, JAIPUR
34. ITS, GREATER NOIDA