Savitribai Phule Pune University

Integrated Circuit and Information Technology Pvt. Ltd.,
ISO 9001 : 2008 CERTIFIED

Certificate Course in Embedded System Design

Topic	No. of hours
Programming Languages for Embedded Systems and Concepts • Object oriented design • Study of Advanced C Concepts • Object oriented concepts • Software development life cycle SDLC • Embedded Systems • Understanding of product development life cycle as per industry standards • Embedded GUI: Concept understanding of Embedded GUI • Board support package • BSP: Concept understanding of BSP	245 hrs
Real Time Operating Systems • RTOS Concepts • 8051 Microcontroller based RTOS Configuration • PIC Microcontroller based RTOS Configuration • ARM Chip based RTOS Configuration	50 hrs
Embedded System Programming • C++ • Core Java • Embedded Java • Understanding different architectures of embedded Java • (J2ME, Personal Java, Embedded Java, JADEs LEAP) • Understanding of Embedded Java Tools • Application development	95 hrs
Linux Basics + Operating System + Device Drivers • Processor Architecture, process scheduling, Memory management • Inter process communication • Linux internals • Systems programming in Linux • Shell scripting • File API, process API • Multithreading, driver development	200 hrs
8/16/32 bit microcontroller and interfacing	105 hrs

• Study of architecture • Interfacing concepts for new devices • Assembly language Programming • Embedded C programming • ARM processor • 32 bit architecture introduction • Instruction set ARM Assembly language Programming • Embedded C programming, and Application development	
Embedded System Hardware Design • Study of data sheets • Selection of components • Power supply design • Microcontroller based application hardware design	40 hrs
Embedded Systems Protocols - RS232, I2C, SPI, CAN • RS232 protocol using 8051, PIC and ARM • I2C protocol with devices like RTC, EEPROMS,Thermal sensors using 8051, PIC and ARM • SPI protocol with Serial ADC,slave micro controllers using 8051, PIC and ARM • CAN protocol and it's implementation through PIC microcontroller	50 hrs
Case studies for Standard Chips used in industry for above Protocols	20 hrs
Communication and Soft Skills Development	15 hrs
Project Works	120 hrs
Total	**900 hrs**