



NIST Center of Excellence

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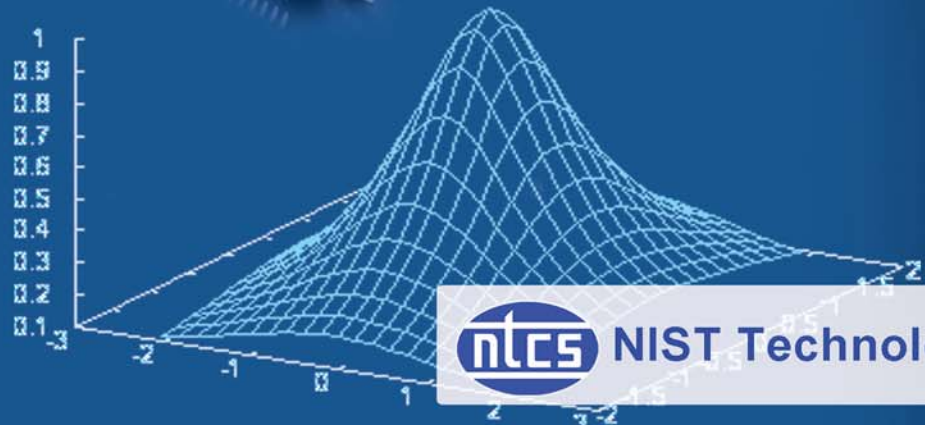
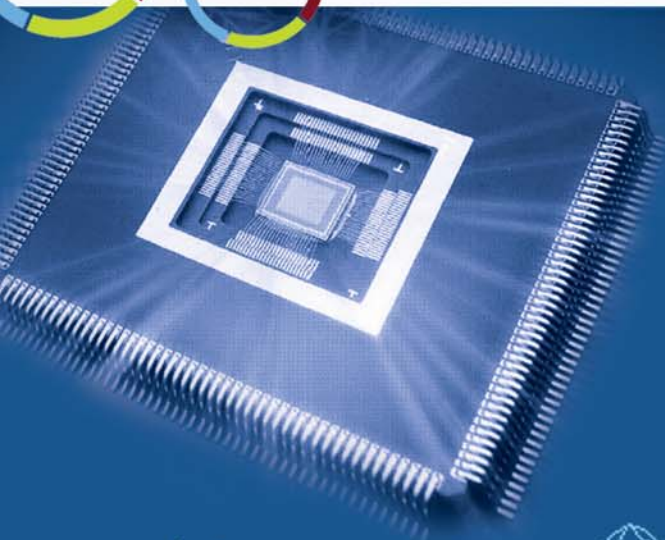
Web: www.nist.edu/nce

NIST Center of Excellence

Offers a Range of Employment Oriented Industrial Courses

Course Highlights:

- ❖ 100 hours Program
- ❖ 4 hours a day-3 days a week
- ❖ Flexible unlimited Lab timings
- ❖ Library resources available
- ❖ Mini projects
- ❖ B.Tech. Project mentoring



NTCS NIST Technology Consulting Services

Electronic Design Automation Software Tools for VLSI/ASIC Design

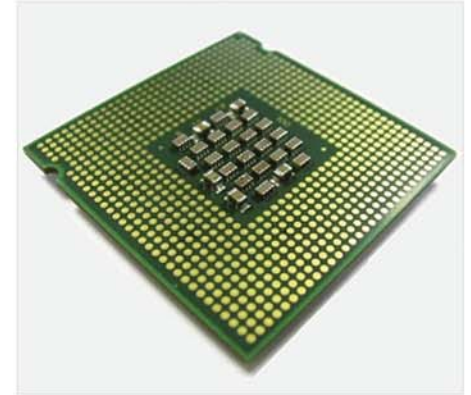
Course Goals

To introduce the latest VLSI Design Technologies and software used in the Electronics/Semiconductor industry. The software and hardware packages which will be introduced in this course are :

- ❖ Xilinx ISE 14.1 for FPGA digital design, DSP design and implementation, Electrical and Instrumentation applications using Spartan/Virtex.
- ❖ Embedded system application using Xilinx EDK, VIVADO and Spartan/Virtex, Z-board
- ❖ Active HDL for VHDL/Verilog digital design and simulation.
- ❖ Tanner tool for IC design.
- ❖ Spice for Circuit Simulation.
- ❖ Introduction to Cadence tool for IC Design.
- ❖ Process Tool for silicon using Silvaco.

Course Contents

- ☞ Overview of VLSI/ASIC design and methodology.
- ☞ Course on VHDL/Verilog, Spice.
- ☞ Architectural overview of FPGA and CPLDs.
- ☞ MOS and CMOS device physics.
- ☞ IC design and fabrication process (Full Custom and Semi-Custom)
- ☞ Cell Library Design.
- ☞ Analog/Mixed signal design methodology.
- ☞ Testing/Mixed signal design methodology.
- ☞ Testing and Verification issues of VLSI Design.



Course Fees :

For Students: **Rs. 8,000/-**

For Industry sponsored candidates: **Rs. 10,000/-**

Prerequisites

Students are expected to know the fundamentals of analog and digital circuits.

Students should have completed at least 4th Semester of BPUT.

NB: The course has four modules on PSpice, Verilog/VHDL, Xilinx, and Tanner. The students can do the course on individual model also.

Cadence VLSI Certification Course

Course Highlights

- ❖ World class curriculum - enables graduates to be "industry-ready"
- ❖ Leverage best-in-class Cadence technologies and access to ecosystem partners
- ❖ Provides an incremental training approach leading up from VLSI basics to industry-relevant skills
- ❖ More than 200 hours of Theory + Labs + Tool Training
- ❖ Course can run on weekend also

Course Details

General Courses: Introduction to the Linux Operating systems, Scripting, Editing

Digital Courses: Theory + Labs + Tool Training

- ☞ Implement, practical digital functional blocks using the Verilog language
- ☞ Coding HDL, Modeling HDL, RTL and gate level verification/simulation, creating timing constraints and running RTL synthesis, testing and Design for Testability (DFT), and top-down design methodology

Analog Courses: Theory + Labs + Tool Training

- ☞ Introduction to practical working knowledge of the fundamental design and techniques
- ☞ Create and edit schematics for use with the suite of Cadence simulation and layout tools
- ☞ Verilog in and Spice in translators to generate netlists and symbols
- ☞ Place instances, wire schematics, use hierarchical design, run netlist creation and simulation, add rules using the Constraint Editor, create inherited connections, and generate layout instances from the schematic

Soft Skills Training: Interview, Communication, Presentation and Team Interaction skills

NB: Students will be trained to participate in Cadence Design Contest and there is a chance to win prize worth of Rs.1.5 Lakhs



Course Fees :

For Students: **Rs. 12,000/-**

For Industry sponsored candidates: **Rs. 20,000/-**

Embedded System

Course Goals

To introduce the latest Embedded Technologies and software. The students will be introduced to ARM based applications, real time operating system, VxWorks, Android Programming etc.

Course Contents

- ☞ Introduction To Embedded System: Introduction, Features, Current trends and challenges, Hard and Soft Real Time Systems.
- ☞ Programming Concept: Review of C Programming, Embedded C programming, Embedded Systems Design, Implementation and Testing.
- ☞ ARM Based Application Development : ARM Processor Basics, Programmer's Model, ARM Instruction Set, Thumb Instructions, Programming ARM with C
- ☞ Concepts Real Time Operating System: RTOS Programming, Components of RTOS, Task Management, Inter Task synchronization, Inter Task Communication, Interrupt Handling, Pitfalls for Real-Time Software Developers
- ☞ Tornado and VxWorks: Tornado, Cross Development, Tornado host IDE, CrossWind Debugger, Debugger Tool Bars, Starting and stopping a debugger, WindView Software Logic Analyzer, Tornado Target Server, VxWorks: A partner in the Real-time Development Cycle, VxWorks facilities, Multiple Tasks, Inter task Communication (semaphore, Message Queues, pipes), Network Intertask communication, POSIX Shared Memory
- ☞ Android Programming: Android Platform, Architecture Basics, Interface Design, Resources, Database (sqlite),. Location tracking, Google Map on Android.Facebook Access from Android.



Prerequisites

6th Semester and above Students having basic knowledge of microprocessor and programming concepts

Course Fees :

For Students: **Rs. 8,000/-**

For Industry sponsored candidates: **Rs. 10,000/-**

Graphical System Design using LabVIEW

Course Goals

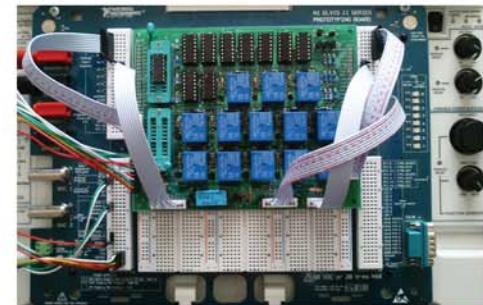
This course will mainly introduce the students to write algorithms , logic programs and create complex applications in different fields of engineering like Industrial control , mechatronics , Advanced Communication system , Digital and image processing and other advanced fields and use various associated hardware to gain a hands on experience of acquiring complex industrial data and create efficient algorithms using graphical programming language and gain real time practical experience.

Highlights of some of the real time application tools used in this training are as follows:

- ❖ USB Daq 6009, C-Daq , My Daq with interfacing
- ❖ Compact-Rio based on FPGA Processor
- ❖ Analog and Digital circuit design and simulation using Elvis and Elvis-sim
- ❖ Online image acquisition and processing using NI vision module
- ❖ Motion control using NI Robotic vehicle
- ❖ ARM based SV Rio

Course Contents

- ☞ Introduction to Labview
- ☞ Advanced Labview environment
- ☞ Design style using Modular programming
- ☞ Loops and structure
- ☞ Arrays and clusters
- ☞ Graphs and chart
- ☞ strings and files
- ☞ Elvis programming and related Hardware
- ☞ Robotic Module Programming
- ☞ Vision module programming and interfacing



Course Fees :

For Students: **Rs. 8,000/-**

For Industry sponsored candidates: **Rs. 10,000/-**

Prerequisites

Student should complete 4th semester preferably from EIE,EEE, ECE discipline

NB: The course will lead to NI Labview certification program

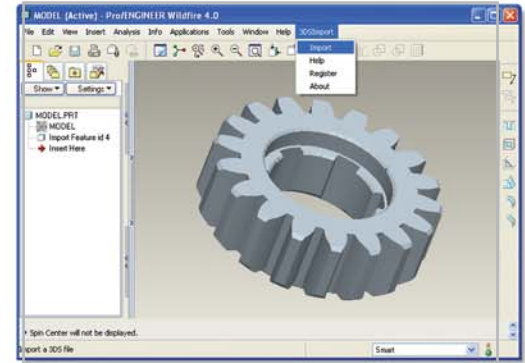
CAD-CAM using Pro-E

Course Goals

Creo is a fully parametric CAD program. This means that the geometry of features (e.g., holes, slots) on a part have to be fully specified in terms of size, shape, orientation, and location. This specification allows the user to write equations (i.e., relations) which describe how features on individual parts or multiple parts should relate to each other. In this course along with the CAD designing student will also learn how to interface this with CNC for Manufacturing. The focus areas are as follows:

Course Contents

- ☞ **Introduction to Creo :** What is Parametric modeling, Working with or without Intent manager, Different File extensions in Pro-E, Setting up working directory, Current session files, Pro-E options.
- ☞ **Sketcher:** Working with and without intent manager, Sketch dimensioning, Auto dimensioning, modify, Geometric tools, Constraining, regenerate drawings, sketch view.
- ☞ **Part Modeling :** Feature creation, Potrusion & cut(Extrude, Revolve, Sweep, Blend, Blend Vertex, Use quilt) Solid, Thin, Rib, Shell, Pipe, Tweak base feature like draft, offset, flatten quilt etc., Hole Dress up feature fillet, chamfer.
- ☞ **Surface Design :** Datum curves, Datum point, Datum plane, Datum Co-ordinate system, Sketch base features, Extrude, Revolve, Sweep, Blend, Flat, Offset, Copy, Copy by trim, Advance surface creation, New, Merge, Trim, Extend, Transform, Draft, Area offset, Draft offset, Use quilt(conversion of surface to solids)
- ☞ **Drafting:** Introduction to drafting, With /without templates, formats, placing views, Placing dimension, Calling up Different model, Tolerances, Notes, Bill of materials etc.



Prerequisites

Some prior exposure to Basic Engineering Drawing and working knowledge of computers is desired.

Course Fees :

For Students: **Rs. 8,000/-**

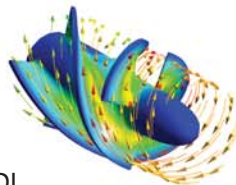
For Industry sponsored candidates: **Rs. 10,000/-**

ANSYS

Course Contents

ANSYS is commercial finite-element analysis software with the capability to analyze a wide range of different problems. ANSYS solves governing differential equations of elasticity, fluid flow, heat transfer, and electro-magnetism. ANSYS can solve transient problems as well as nonlinear problems. The focus areas are as follows:

- ☞ What is Ansys? About ANSYS, ANSYS Basics, Starting ANSYS, ANSYS Workbench Environment, The GUI, Graphics and Picking, The database and files, saving Files, Exiting ANSYS, File Types.
- ☞ Introduction of ANSYS
- ☞ Solid Modeling
- ☞ Basics of Meshing with ANSYS
- ☞ Nodes & Element types, Boundary Conditions & Material Properties
- ☞ Analysis
- ☞ Solvers, Post-Processing
- ☞ Modal Analysis
- ☞ FEM case Studies
- ☞ Industry problems
- ☞ 1-D & 2-D Analysis using ANSYS APDL



Prerequisites

Some prior exposure to Basic Engineering Drawing, Finite Element Analysis and working knowledge of computers is desired.

Course Fees :

For Students: **Rs. 8,000/-**

For Industry sponsored candidates: **Rs. 10,000/-**

CNC Manufacturing

Course Contents

Companies are integrating computers into engineering and manufacturing environments as rapidly. At the heart of advanced manufacturing is CNC machining and the computer applications that maintain the design and manufacturing process. This program builds the basic ability and understanding for employment opportunities in CNC manufacturing.

Converting the ideas into reality by using latest CAM software like Master-CAM.

- ☞ Master - CAM
- ☞ CNC Fundamentals
- ☞ CNC Technologies
- ☞ Advanced CNC – Lathe
- ☞ Advanced CNC – Mill
- ☞ 3D Printer
- ☞ 3D Scanner
- ☞ Lieos Software



Prerequisites

Student should have complete 4th semester of B.Tech. Degree in Mechanical Engineering.

Course Fees :

For Students: **Rs. 8,000/-**

For Industry sponsored candidates: **Rs. 10,000/-**