COMPUTER LAB

INTRODUCTION

The computer system laboratory is fully equipped with modern computers to facilitate the students for performing complex computations & modeling. The laboratory contains 27 high speed computer systems. In the systems the following softwares have been installed for the students.

- Autocad V-2007
- Solid Edge 16
- Matlab 2010
- Borland C++ Compiler
- Master Cam 3.0

COURSE OBJECTIVE & PRE-REQUISITES

The major goals of this course are

- To model different mechanical elements on various softwares like Auto Cad & Solid Edge and their 3D modeling & analysis on the softwares like Matlab.
- To learn the basics of Matlab and the implementation of FEA methods to solve the complex problems.
- To write C++ programmes ranging from very short programmes to the more elaborative ones.

Since one of the ultimate goal of this programme is to teach how to write the large & reliable programmes that will enhance the programming & modeling approach of the students. Students are then trained to implement these programming & 3D modeling techniques on the practical level e.g., to model the mechanical part of an engine like valves, crankshaft etc.
SOFTWARES DETAIL

• **AUTOCAD V-2007**

AutoCAD is a CAD (Computer Aided Design or Computer Aided Drafting) software application for 2D and 3D design and drafting. AutoCAD 2007 has improved 3D modeling, which meant better navigation when working in 3D. Moreover, it became easier to edit 3D models. AutoCAD 2007 introduced parametric functionality and mesh modeling.

• **SOLID EDGE 16**

Solid Edge is a 3D CAD parametric feature solid modeling software. It runs on Microsoft Windows and provides solid modeling, assembly modelling and drafting functionality for mechanical engineers. Solid Edge is a direct competitor to Pro/ENGINEER, SolidWorks and Autodesk Inventor.

• **MATLAB 2010**

MATLAB (matrix laboratory) is a numerical computing environment and fourth-generation programming language. Developed by MathWorks, MATLAB allows matrix manipulations, plotting of functions and data, implementation of algorithms, creation of user interfaces, and interfacing with programs written in other languages, including C, C++, and Fortran. MATLAB is intended primarily for numerical computing, an optional toolbox uses the MuPAD symbolic engine, allowing access to symbolic computing capabilities. An additional package, Simulink, adds graphical multi-domain simulation and Model-Based Design for dynamic and embedded systems.

• **BORLAND C++ COMPILER**

Borland C++ is a C and C++ programming environment (that is, an integrated development environment) for MS-DOS and Microsoft Windows. It was the successor to Turbo C++, and included a better debugger, the Turbo Debugger, which was written in protected mode DOS.
• **MASTER CAM 3.0:**

Master Cam is one of the oldest developers of PC-based computer-aided design / computer-aided manufacturing (CAD/CAM) software. They are one of the first to introduce CAD/CAM software designed for both machinists and engineers. Mastercam, CNC Software’s main product, started as a 2D CAM system with CAD tools that let machinists design virtual parts on a computer screen and also guided computer numerical controlled (CNC) machine tools in the manufacture of parts:

**RESEARCH**

We feel that advanced programming & modeling benefits from a certain breadth of topics, and we have been aiming to cover that breadth in a particular way that we want to continue to explore. In terms of computational analysis methods, our interest ranges from hard combinatorial and geometric optimization problems to coupled problems handling. All of these problems will be studied under a variety of conditions and objectives. In terms of mode of operation, we feel that it is important to be part of a research effort already in the modeling phase, carry all the way through the abstraction and solution phase to the phase of implementing and experimenting. We are aware of the danger inherent in such an approach. Too much breadth certainly comes with a lack of depth, and too little breadth leads to a lack of cross-fertilizing experience. Our goal is to balance both in a way that allows us to do fundamental research and application development at the same time, and not disregard the area in between.