CADD and MAT LAB

	L	T/P/D	C
B.Tech. III Year II Sem.			
Course Code: **ME605PC**	**0**	**0/3/0**	**2**

Pre-Requisites:

- Familiarity with a programming language (Matlab or BASIC).
- Elementary ordinary differential equations.
- Elementary linear algebra.
- Basic principles of descriptive geometry.

Course Objectives: The objectives are:

- to acquaint the student with some of the terminology in this very new field and relate it to the basic engineering process of design,
- to provide an introduction to the basic analytical fundamentals that are used to create and manipulate geometric models in a computer program,
- to introduce the student to full-scale CAD software systems designed for geometric modeling of engineering components and systems (attention will be directed at both drafting and full 3-D modeling systems),
- to provide experience in using the CAD tools to develop a simple project of reasonable complexity, and
- to provide a brief survey of methods for integrating these tools into a comprehensive design system that incorporates advanced database management concepts.

Course Outcomes:

- Students should be able to apply computer methods for solving a wide range of engineering problems.
- Students should be able to use computer engineering software to solve and present problem solutions in a technical format.
- Students should be able to utilize computer skills to enhance learning and performance in other engineering and science courses.
- And finally, students should be able to demonstrate professionalism in interactions with Colleagues, faculty, and staff.

CADD LAB

(Perform Any Six Exercises from Each Laboratory)

List of exercises Using Software Capable of Drafting and Modeling

1. Study of capabilities of software for Drafting and Modeling – Coordinate systems (absolute, relative, polar, etc.) – Creation of simple figures like polygon and general multi-line figures.
2. Study of script, DXE & IGES Files.
3. Drawing of a Title Block with necessary text and projection symbol.

4. Drawing of curves like parabola, spiral, involute using B spline or cubic spline.
5. Creations of Shafts, rounds, Chamfers and slots
6. Representation of dimensioning and tolerances scanning and plotting.
7. Drawing of front view and top view of simple solids like prism, pyramid, cylinder, cone, etc, and dimensioning.
8. Drawing sectional views of prism, pyramid, cylinder, cone, etc,
9. Drawing of front view and top view and side view of objects for the given pictorial views (eg. V-block, Simple stool, Objects with hole and curves).
10. Drawing isometric projection of simple objects.
11. Creation of 3-D models of simple objects and obtaining 2-D multi-view drawings from 3-D model.
12. Assembling of part models using constraints

MATLAB

1. Write MATLAB commands to analyze arithmetic, logical and Boolean operations.
2. Write MATLAB commands to analyze vector operations and magic matrix's.
3. Write a MATLAB program to demonstrate if and else if statement for comparing Two numbers.
4. Analyze the following operations in MATLAB.
   a) Colon operator b) Line Plotting c) 2D plotting
5. Write MATLAB code to observe Regression and Polynomial functions.
6. Generate an array of random numbers between 1 to 100. Arrange them in
   (a) Ascending and descending order
   (b) Pick the numbers divisible by 2 using suitable commands.
7. Write a program to multiply 3X3 matrix and obtain inverse of the resultant matrix.
8. Generate an array of random numbers between 1 to 50 and
   (a) Convert them into binary numbers
   (b) Normalize the numbers between 0 and 1 using suitable formula
9. Write a MATLAB program to generate second order system.
10. 3D surface map for the following function $g = Xe^{-(x^2+y^2)}$
11. Write a MATLAB program to obtain smallest and largest values of integers.
12. Write a MATLAB program to obtain smallest and largest of floating point numbers.