LECTURE # 2

CAD/CAM COURSE

TOPIC

EVALUATION OF CAD/CAM SYSTEM

DAWOOD COLLEGE OF ENGINEERING &
TECHNOLOGY- KARACHI

EVALUATION OF CAD/CAM SYSTEM

- There are number of CAD/CAM systems available in the market

- The selection of right kind of CAD/CAM system for a given application is a tedious task

- e.g. System for generating animation movies requires higher graphic capabilities & for FEA, higher computational capabilities are required

- Evaluation measure of a CAD/CAM system is necessarily application dependent

DAWOOD COLLEGE OF ENGINEERING & TECHNOLOGY- KARACHI

EVALUATION OF CAD/CAM SYSTEM- CONTD

CAD/CAM system can be evaluated in three major sections

1. System Unit Components

2. Modeling Techniques

3. Design/Drafting and documentation techniques

EVALUATION OF CAD/CAM SYSTEM- CONTD

1. SYSTEM UNIT COMPONENTS:

- The system to be used for CAD/CAM applications must have the components, which are required for the desired CAD/CAM applications

- Following points may be considered for system unit components

1.1 Hardware

➢ Hardware must be compatible with the software to be used

DAWOOD COLLEGE OF ENGINEERING & TECHNOLOGY- KARACHI

EVALUATION OF CAD/CAM SYSTEM- CONTD

➢ The hardware configuration for a CAD/CAM system must be finalized only after knowing the configuration required for desired software e.g. higher value of RAM & processor are required for software involving elevated calculations. Monitors with large screens are required for drafting & modeling applications

1.2 Operating System

➢ The most important aspect of evaluation is the user-friendliness of operating system

EVALUATION OF CAD/CAM SYSTEM- CONTD

➢ Operating system must provide the easiest user interface

1.3 *Vendor Support & Services*

➢ A vendor must organize training, field service, and technical support as fast as possible

➢ The less the maintenance cost , better is the system

DAWOOD COLLEGE OF ENGINEERING & TECHNOLOGY- KARACHI

EVALUATION OF CAD/CAM SYSTEM- CONTD

2. MODELING CAPABILITIES

- One of the most essential evaluation parameter of CAD/CAM software is its modeling capability
- CAD/CAM systems with versatile, easy to learn and use, modeling techniques are given priority over the others

2.1 Modeling Techniques

➢ The System must facilitate the modeling of various types like wire frame, surface and solid modeling with desired modeling techniques like feature based or parametric

DAWOOD COLLEGE OF ENGINEERING & TECHNOLOGY- KARACHI

EVALUATION OF CAD/CAM SYSTEM- CONTD

➢ The type of modeling technique must be selected for the intended use of the models e.g. surface modeling is required for sheet metal analysis

2.2 Modeling Entities

➢ A software is evaluated for no. of options available to generate geometric entities

➢ Ease of generating assemblies will enhance the acceptability of CAD/CAM system

DAWOOD COLLEGE OF ENGINEERING & TECHNOLOGY- KARACHI

EVALUATION OF CAD/CAM SYSTEM- CONTD

2.3 Editing Features

➢ Geometric editing features must be available to combine and manipulate the model for the final component

➢ There are different approaches which help in editing the features much faster and efficiently

➢ Parametric and feature based modeling approach provide efficient editing and manipulating capabilities

DAWOOD COLLEGE OF ENGINEERING & TECHNOLOGY- KARACHI

EVALUATION OF CAD/CAM SYSTEM- CONTD

2.4   Coordinate Systems

➢ Geometric models are created either in absolute coordinates (fixed zero) or incremental coordinates (floating zero), hence these options must be facilitated by a typical CAD/CAM system

➢ CAD/CAM system must allow flexible selection of the coordinate systems

DAWOOD COLLEGE OF ENGINEERING & TECHNOLOGY- KARACHI

3. Design, Drafting & Documentation Tool

The models so generated with the modeling capabilities of the CAD/CAM system are subsequently used for design, drafting and documentation

3.1 Design Applications

➢ Selection depends upon the kind of analysis or design which is required to be performed on the geometric model

DAWOOD COLLEGE OF ENGINEERING & TECHNOLOGY- KARACHI

EVALUATION OF CAD/CAM SYSTEM- CONTD

➢ These applications include design analysis (assembly, kinematics and dynamic analysis, stress analysis, vibration analysis, thermal analysis and magnetic analysis) or manufacturing analysis (part programming, process planning, robot programming) etc.

➢ A commercial software generally masters in a specific field like motion analysis or FEM etc.

EVALUATION OF CAD/CAM SYSTEM- CONTD

➢ The integration of design application software with the database is a important point to be reviewed

➢ The design system should not require too many manual calculations at the input level

➢ The steps of analysis or design must be easy and logical (the steps of analysis include assembly procedure, FEM analysis, joint definitions etc)

DAWOOD COLLEGE OF ENGINEERING & TECHNOLOGY- KARACHI

EVALUATION OF CAD/CAM SYSTEM- CONTD

3.2 Drafting Applications

➢ The generation of production drawing must be associative with the central database

➢ The production drawings generated from the analyzed model must be enriched with other information

3.3 Documentation

➢ Integration of CAD and CAM application through proper documentation is an essential and desirable task

➢ Efficient documentation for application like CAPP is required

➢ The documentation of a design or drawing may be required in different format. Hence is a system these formats must be incorporated