



SNS COLLEGE OF TECHNOLOGY

(AN AUTONOMOUS INSTITUTION)



Department of Mechanical Engineering

CAD/CAM and Automation

Unit – I

Introduction :
CAD/CAM/CIM



Prepared by

P.Janagarathinam,

Assistant Professor / Mechanical Engineering

SNS College of Technology, Coimbatore



Learning Objectives

- Design, Disciplines
- Definition of CAD
- Definition of CAM
- Definition of CIM
- Need of CAD/CAM/CIM
- Scope of CAD/CAM/CIM



Figure resource : <https://tinyurl.com/yab5ggoe>



Design

- What is Design ?

WIDEWALLPAPERS.NET



Figure resource : <https://tinyurl.com/yab5ggoe>

- Design is the human power to conceive, plan, and realize products that serve human beings, in the accomplishment of any individual or collective purpose.



Design Disciplines

- Applied Arts/Fine Arts:-
 - For aesthetics to objects of function and everyday use
 - For decorative purpose like Paintings, Portraits, etc



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Design Disciplines

- Architecture:-
 - Usually of buildings and other physical structures
 - For aesthetics of objects

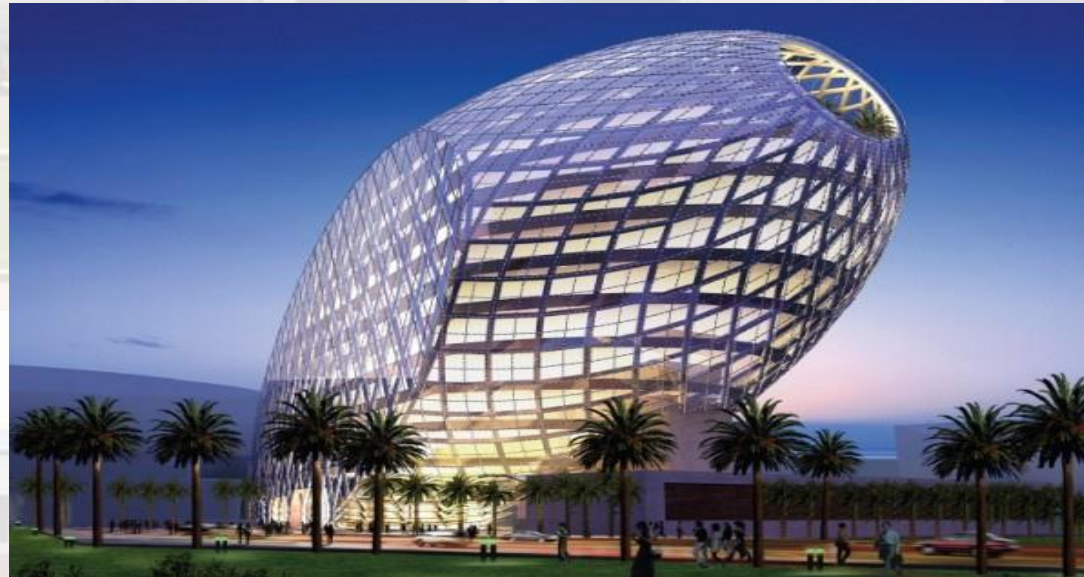


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Design Disciplines

- Fashion:-
 - For aesthetics or natural beauty to clothing and accessories
 - Influenced by cultural and social latitudes
 - For Garments, Texture, etc.



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Design Disciplines

- Gaming Industry:-
 - For content and rules of a game
 - Gameplay, environment, storyline and characters





Design Disciplines

- Engg. Design:-
 - Preliminary design
 - Schematics, diagrams, layouts of the project
 - Detailed design
 - Operating parameters, Test, Materials, Packaging
 - Production planning and tool design
 - Jigs, fixtures, and tooling
 - Production



Design Disciplines

- Mechanical Design
 - For Machines like Lathe, Drill
 - For Turbo-machines like Turbine, Propeller
 - For Automobile like Chassis, Transmission
 - For Components like Gears, Shafts, Joints, etc.

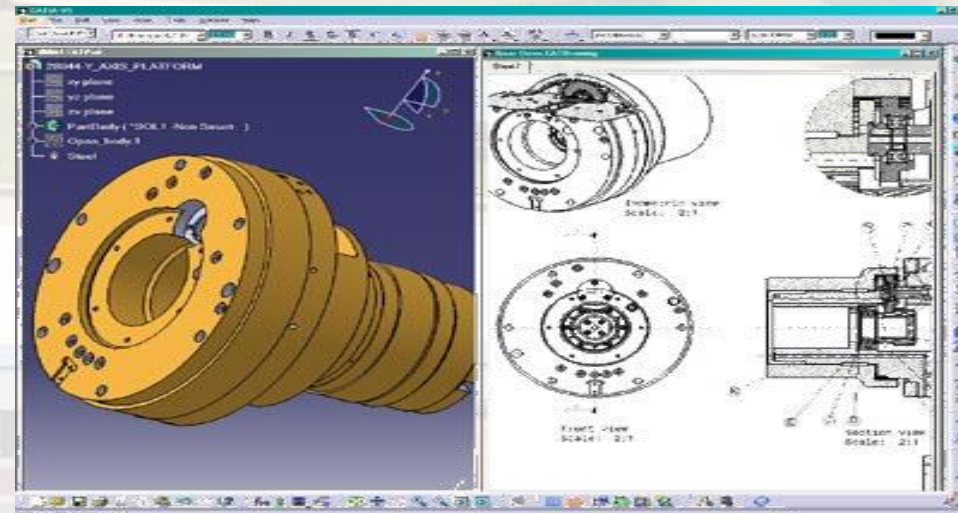


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Computer Aided Design

- Use of computer systems to assist in creation, modification, analysis and optimization of a design
- Computer assistance, while a designer converts his or her ideas and knowledge, into a mathematical and graphical model represented in a computer

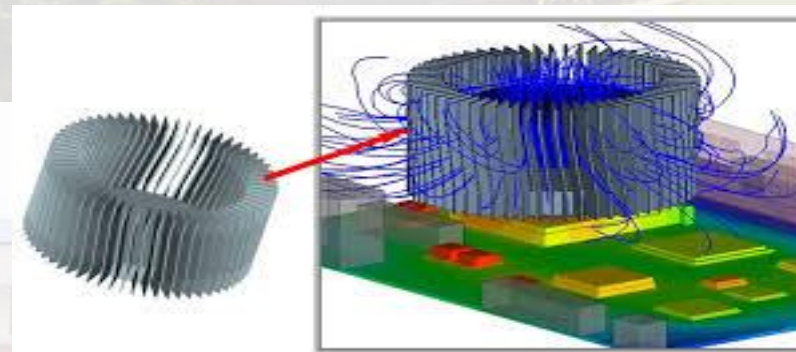
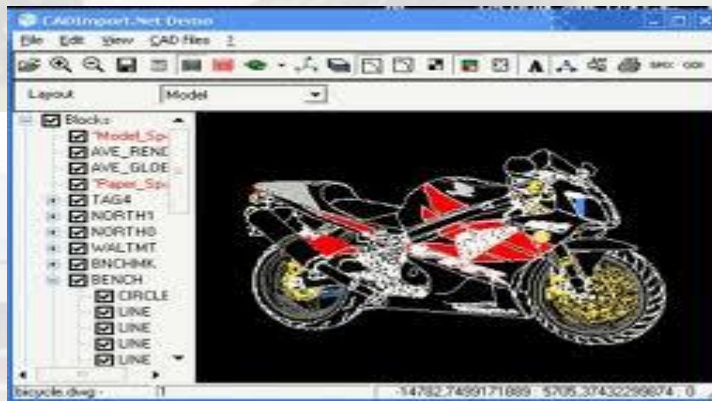
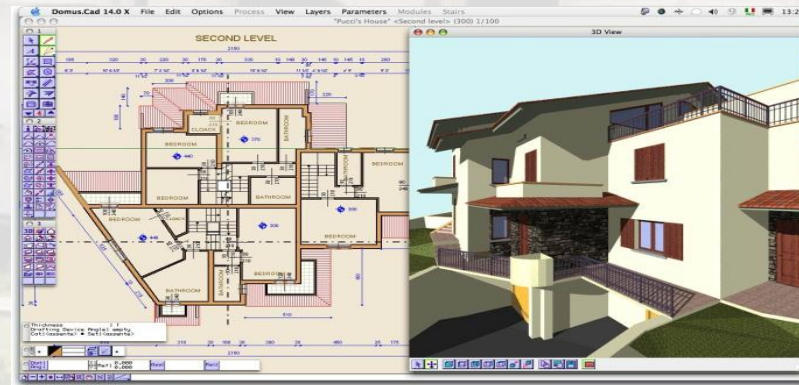
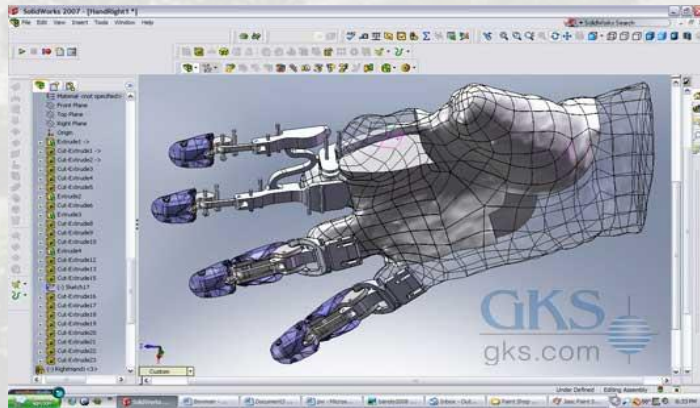
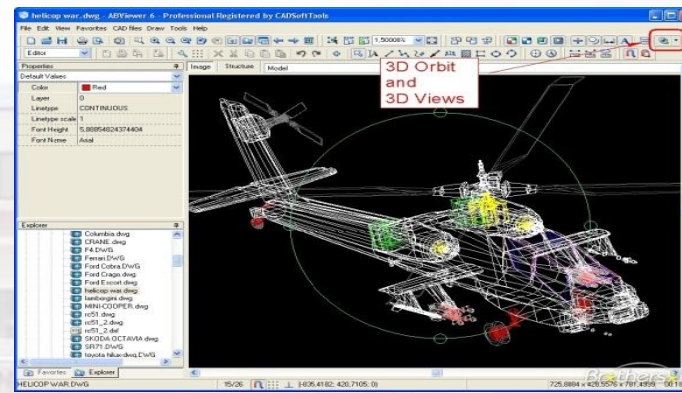


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Manufacturing

- What is Manufacturing?

Process of production of objects from metals or non-metals, with or without application of force, with or without application of heat, with or without use of machines, joining or removing of excess material.



Manufacturing Processes

- Chemical Process
- Mechanical Process as Bending
- NC/CNC Process as Turning, Facing
- Casting
- Molding
- Forming
- Machining
- Joining
- Rapid manufacturing



Computer Aided Manufacturing

- Use of computers systems to plan, manage and control the operations of a manufacturing plant through either direct or indirect computer interface with plant's production resources
- Manufacturing support applications –Use of computers in process planning, scheduling, shop floor control, work study, tool design, quality control etc

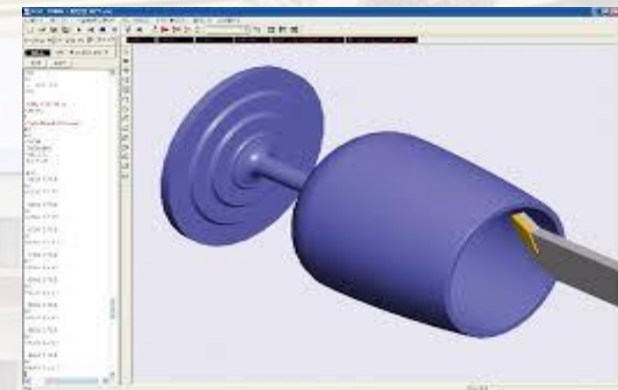
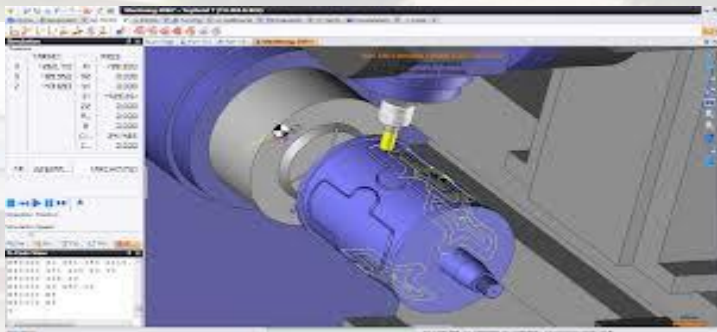
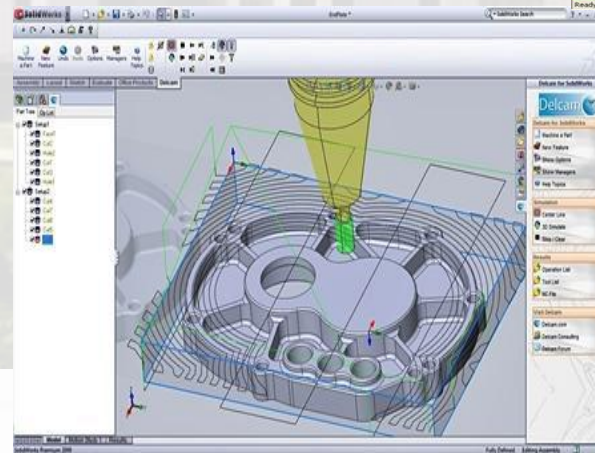
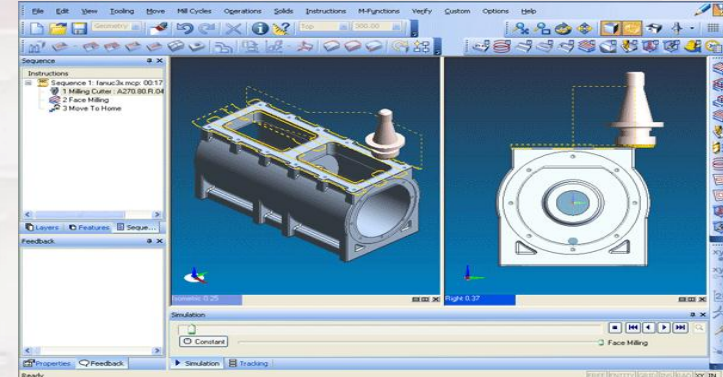
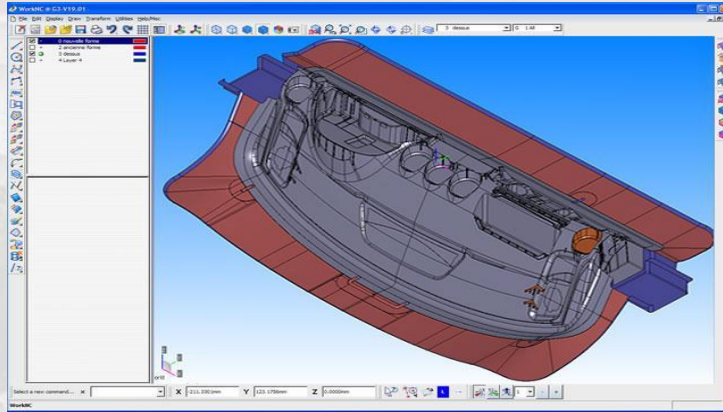


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Computer Integrated Manufacturing

- A process of integration of CAD, CAM and business aspects of a factory. It attempts complete automation with all processes functioning under computer control



CIM

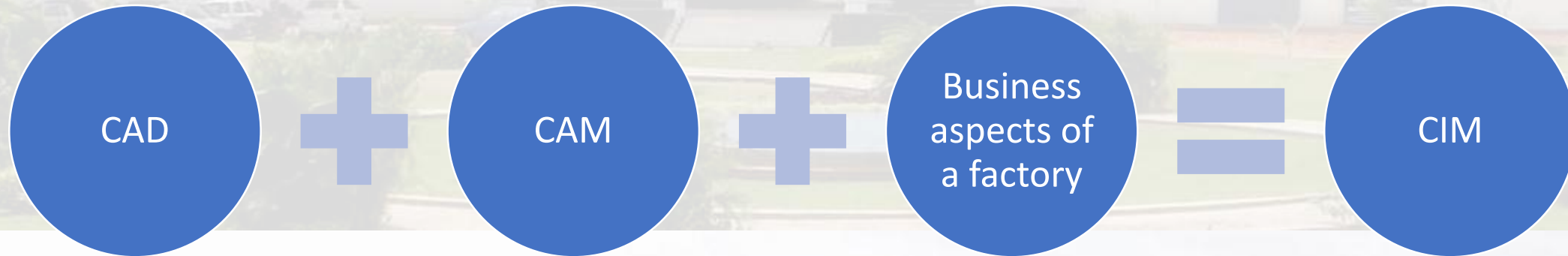


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Scope of CAD/CAM/CIM

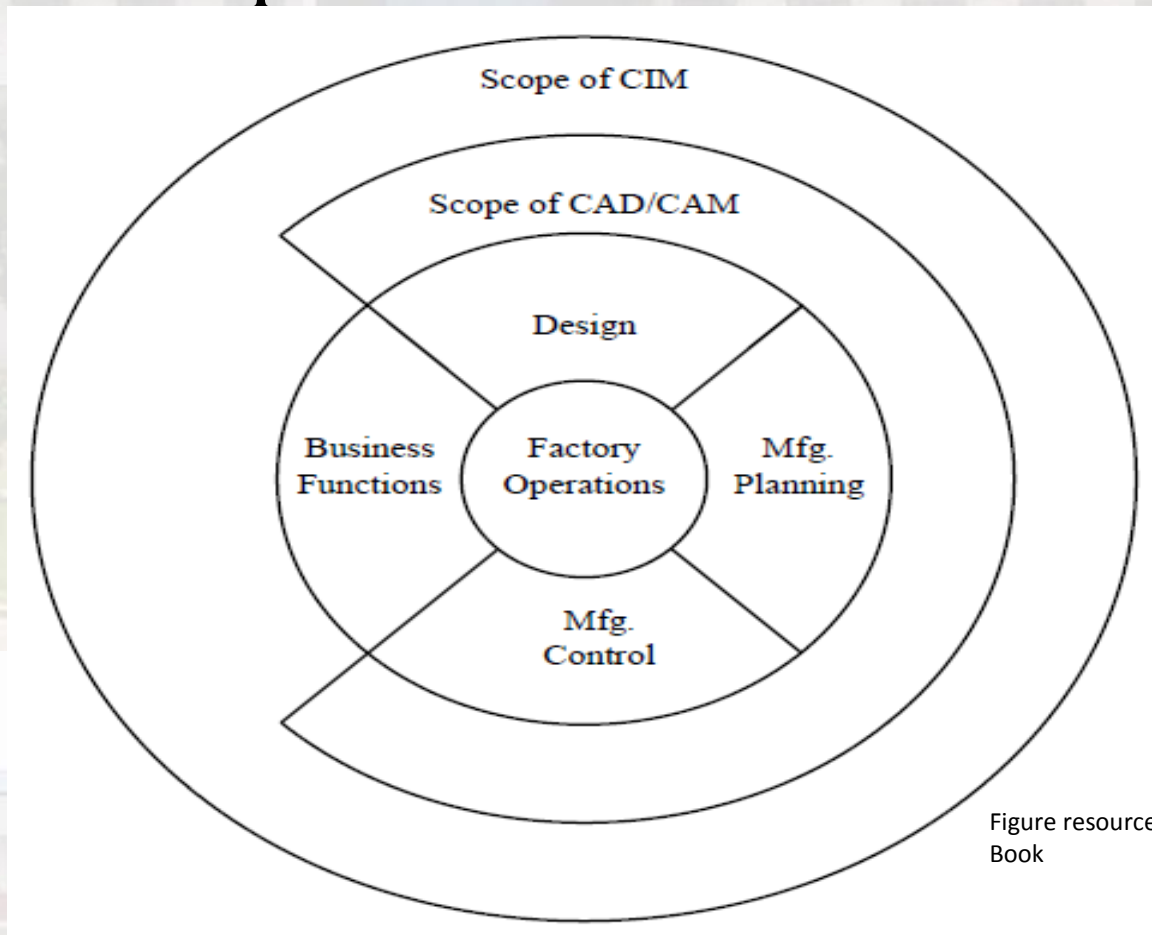


Figure resource : Introduction to CAD CAM CIM Book



Origins of CAD

- The first source of CAD resulted from attempts to automate the drafting process
- These developments were pioneered by the General Motors Research Laboratories in the early 1960s
- CAD became more widely used after 1970 because of technological advancements
- CAD allowed users to design products much quicker without the production of an actual product
- Beginning in the 1980s Computer-Aided Design programs reduced the need of draftsmen significantly
- Their affordability and ability to run on personal computers also allowed engineers to do their own drafting work



Uses of CAD

CAD IS USED TO DESIGN A VARIETY OF DIFFERENT PRODUCTS FOR A VARIETY OF FIELDS SUCH

- ARCHITECTURE
- ELECTRONICS
- AUTOMOTIVE ENGINEERING
- INDUSTRIAL DESIGN
- MACHINERY
- VISUAL ART
- MEDICAL DESIGN



SAQ

1. What is CAD?
2. What are the application of CAD ?
3. What is CAM?
4. What are the application of CAM ?
5. What is meant by the concept of CAD/CAM?
6. What is CIM?
7. What is need of CAD/CAM/CIM ?
8. What is scope of CIM ?



• THANK YOU