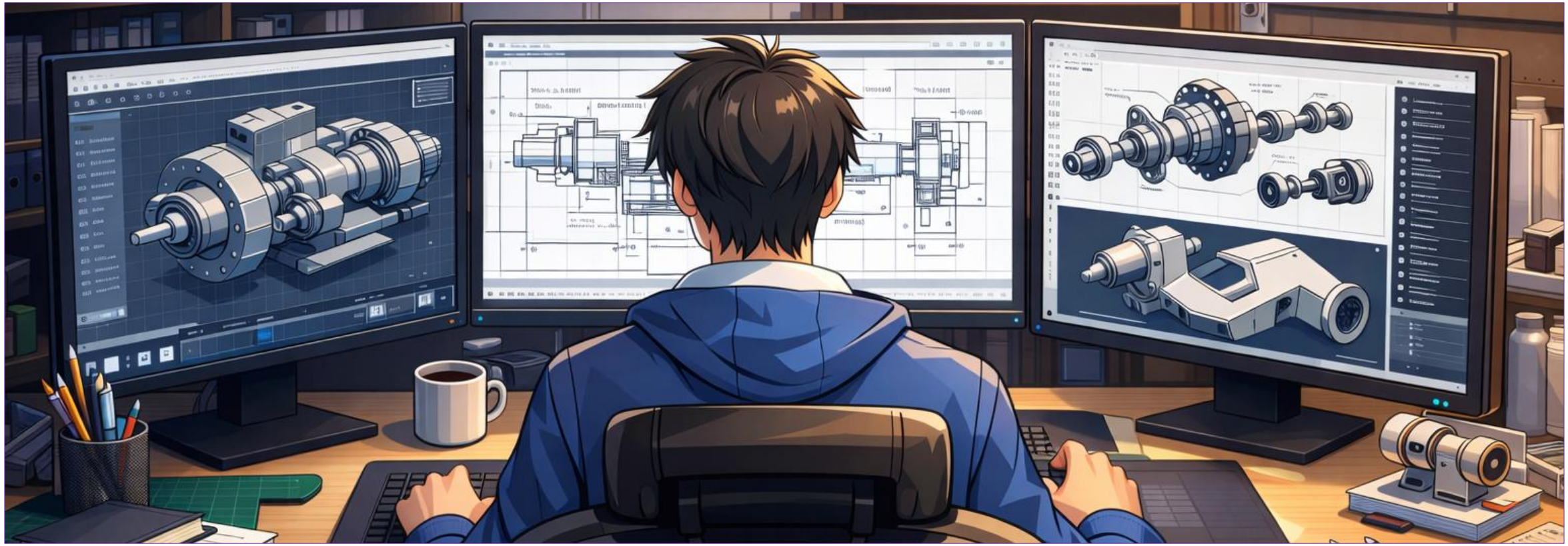
FRM 010 ENGINEERING DRAWING BY COMPUTER

LECTURE NO.1 (Spring 2026) [0th level Inter-disciplinary Programs]

Dr. Yahya Abdelhameed Amer



LECTURE RULES

"Great things come from hard work and perseverance. No excuses."

KOBE BRYANT

COURSE SPECIFICATIONS

- Course code-title: **FRM 010 – Engineering Drawing by Computer**
- **0th level** in Inter-disciplinary Programs
- Course duration: **One semester**
- Course type: **Compulsory**
- **2** credit hours, **3** contact hours [1 Lecture + 2 Laboratory]
- Total grades: **100** [10 Student activity, 30 Midterm 1, 20 Midterm 2, 40 Practical exam]
- Minimum rating for success: **D Rating** [GPA 1.00, 64% > Grades > 60%]
- Course pre-requisite: **FRM 009** - **Engineering Drawing**
- Lecture scheduled on **Thursday** in **Q408 Hall**, fourth floor

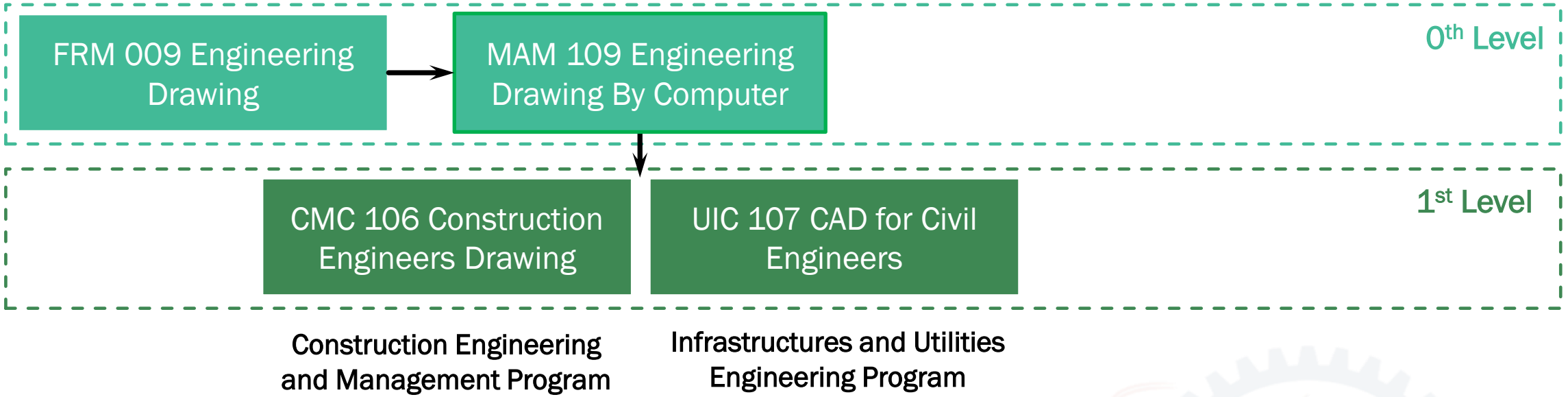
COURSE SPECIFICATIONS

- **Course Contents:**

- Introduction to computer aided drawing and its benefits,
- Graphics/CAD: visualization, sketching, and geometric construction of components.
- Industry standard for drawing and Layout and creation of 2D working industrial drawings.
- Illustrate CAD drawing construction techniques, and application of graphical communication using the alphabet of lines, orthographic projection, section views, and auxiliary views.
- 3D drawing of mechanical components.
- Creation of assembly and detail mechanical components.

COURSE SPECIFICATIONS

- **Course Map:**



INTRODUCTION TO COMPUTER AIDED DRAWING

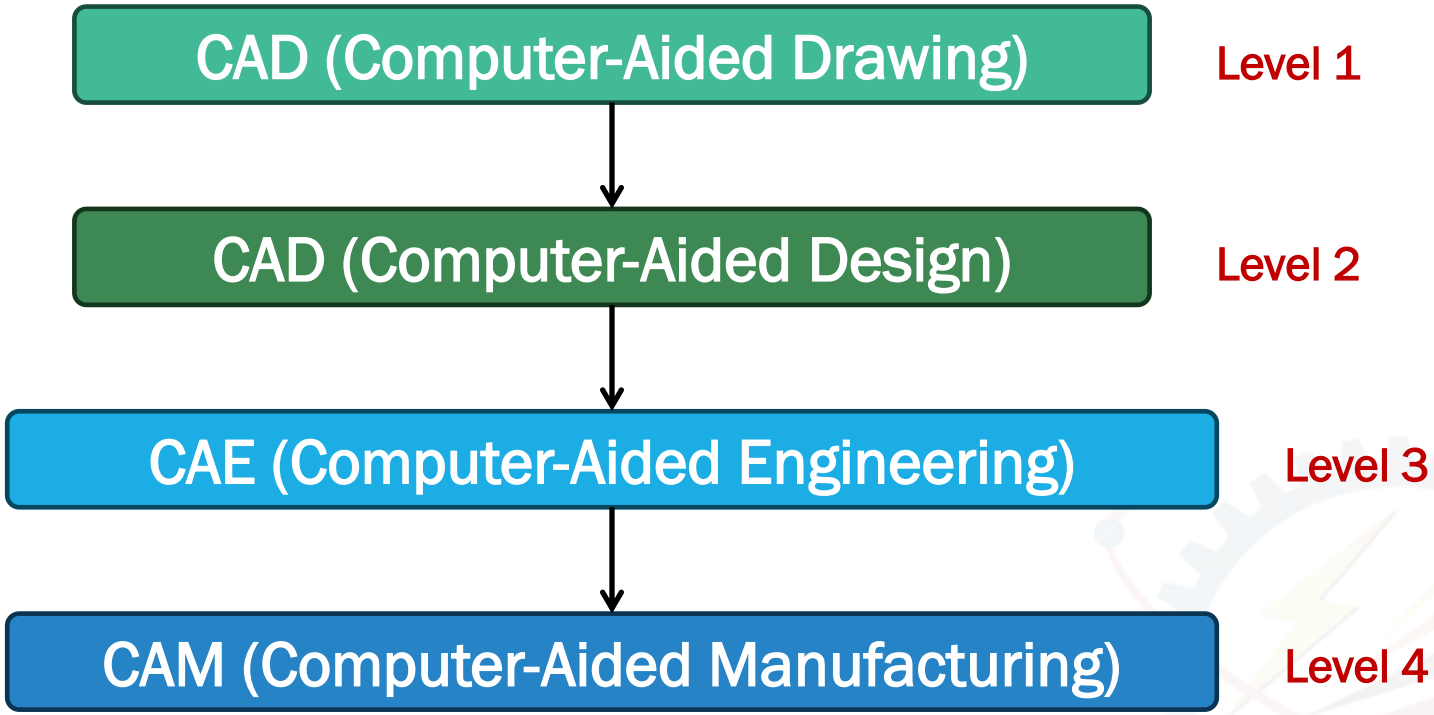
- Basic Definitions:

- **Computer-aided drawing/drafting (CAD)** is a technique where engineering drawings are produced with the assistance of a computer and, as with manual drawing, is only the graphical means of representing a design.

- ***Computer-aided design (CAD)*** is a technique where the attributes of the computer and those of the designer are blended together into a problem-solving team. It normally refers to a graphical system where components and assemblies can be modelled in 3D covering those functions attributed to the areas of modelling and analysis.

INTRODUCTION TO COMPUTER AIDED DRAWING

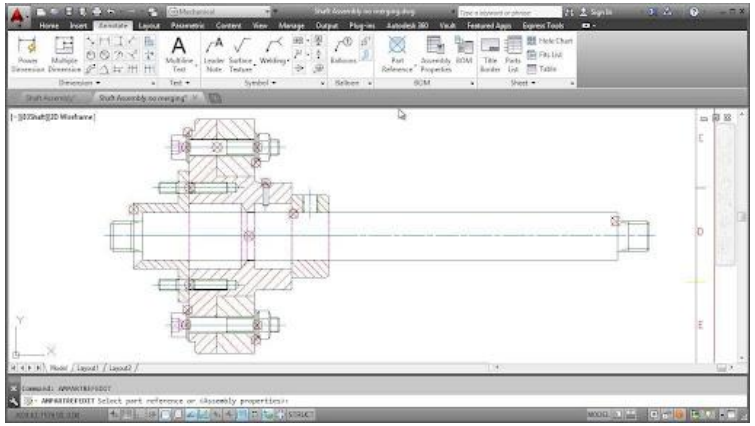
- Computer Aiding Levels in Engineering Applications:



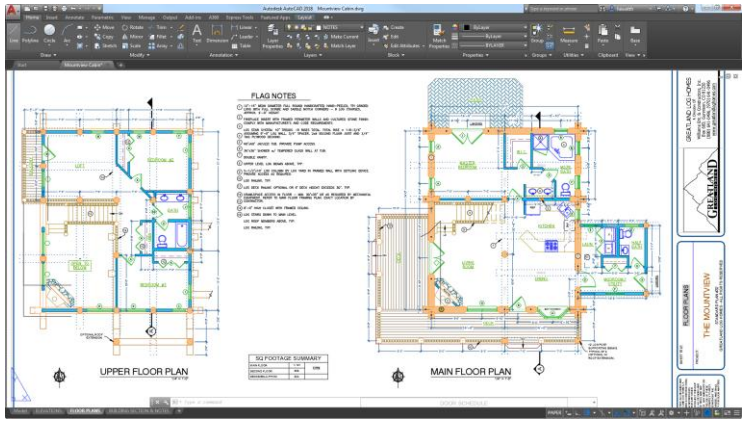
INTRODUCTION TO COMPUTER AIDED DRAWING

- Computer Aiding Levels in Engineering Applications:

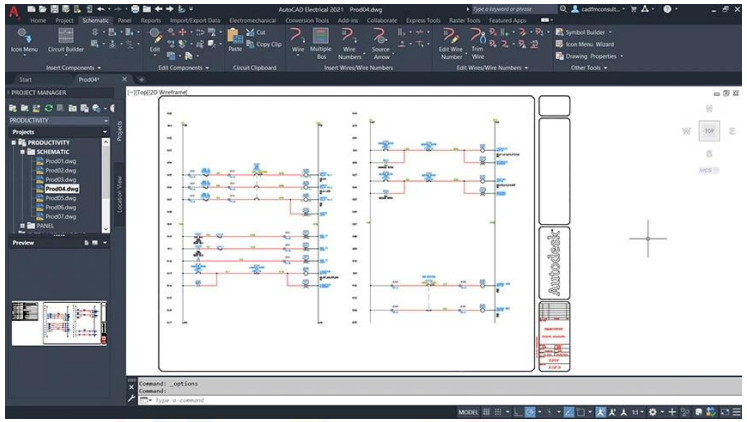
CAD (Computer-Aided Drawing) Level 1



CAD in Mechanical Engineering



CAD in Civil Engineering

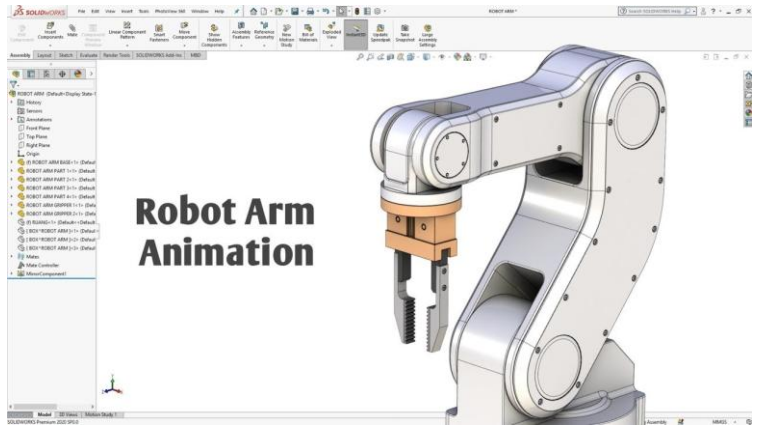


CAD in Electrical Engineering

INTRODUCTION TO COMPUTER AIDED DRAWING

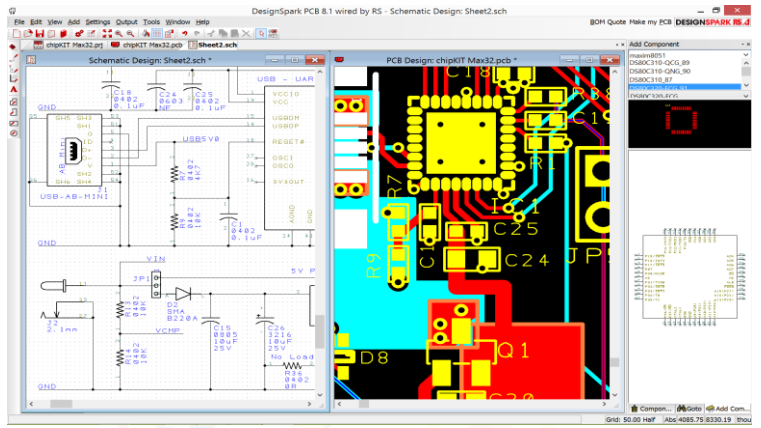
- Computer Aiding Levels in Engineering Applications:

CAD (Computer-Aided Design) Level 2



CAD in Mechanical Engineering

CAD in Civil Engineering

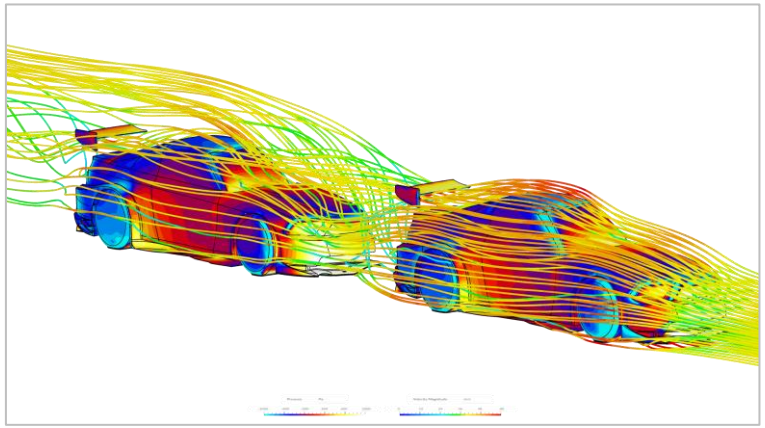


CAD in Electrical Engineering

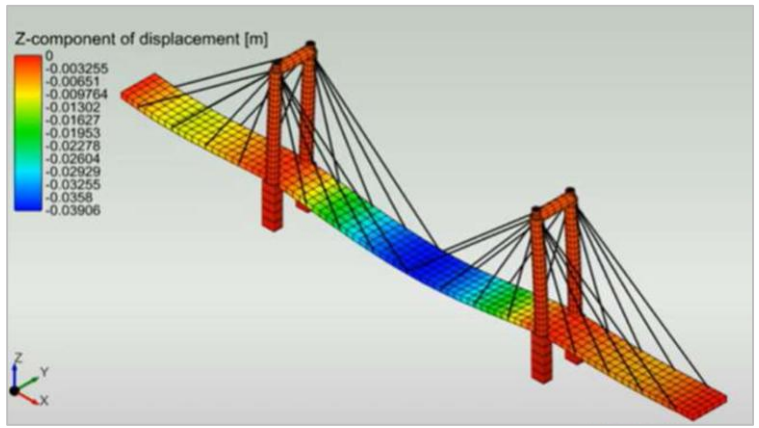
INTRODUCTION TO COMPUTER AIDED DRAWING

- Computer Aiding Levels in Engineering Applications:

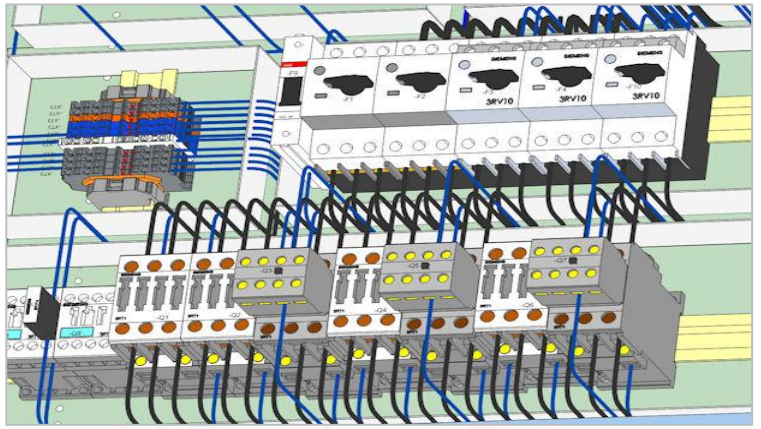
CAE (Computer-Aided Engineering) Level 3



CAE in Mechanical Engineering



CAE in Civil Engineering

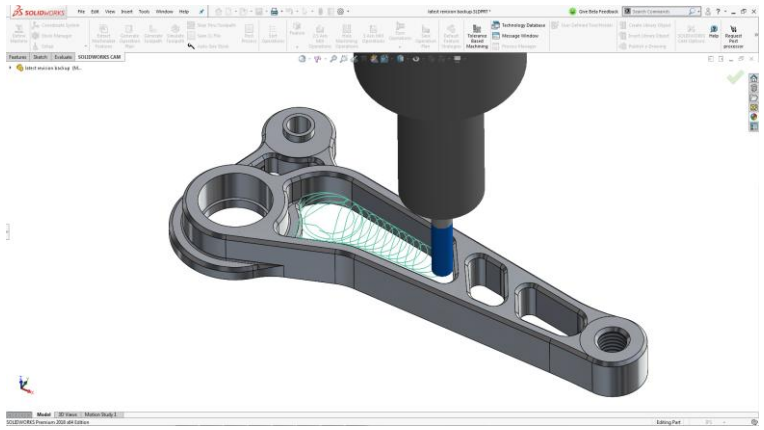


CAE in Electrical Engineering

INTRODUCTION TO COMPUTER AIDED DRAWING

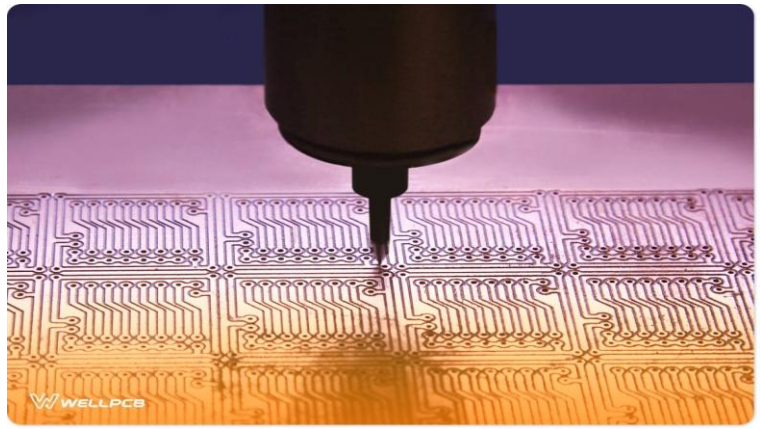
- Computer Aiding Levels in Engineering Applications:

CAM (Computer-Aided Manufacturing) Level 4



CAM in Mechanical Engineering

CAM in Civil Engineering



CAM in Electrical Engineering

INTRODUCTION TO COMPUTER AIDED DRAWING

- **Common Software Used in CAD:**

- **2D Drawing:**

➢ *General*: AutoCAD, BricsCAD, and ZWCAD.

- ***3D* Drawing:**

➢ *Mechanical applications*: SolidWorks, CATIA, and Creo,

➢ *Construction applications*: Autodesk Revit and Civil 3D.

➢ *Electromechanical applications*: SolidWorks Electrical, AutoCAD Electrical, and Revit MEP.

➢ *Computer engineering*: MATLAB/Simulink, Proteus, and LabVIEW.

INTRODUCTION TO COMPUTER AIDED DRAWING

- Used CAD Software Through the Course:

AutoCAD 2026.

© *Autodesk*

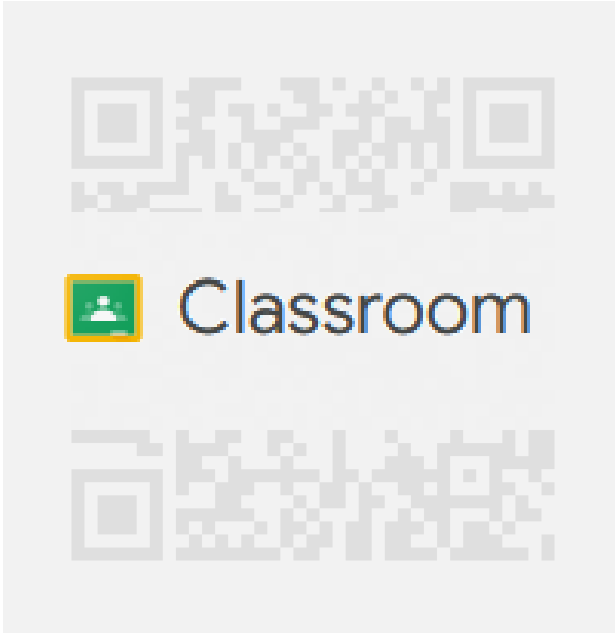
SolidWorks 2023

© *Dassault Systems*

INTRODUCTION TO COMPUTER AIDED DRAWING

- **Benefits of Using CAD:**

- Higher accuracy and precision.
- Faster design process.
- Easy editing and modification.
- Realistic 3D Visualization.
- Integration with analysis tools (CAE).
- Better documentation and reliable libraries.
- Cost reduction due to reduced waste.
- Enhanced collaboration with different software & platforms.



END OF LECTURE