

Lecture 1

Introduction to CAE

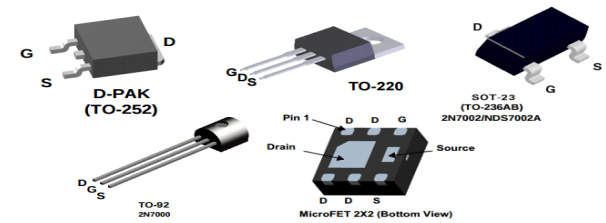
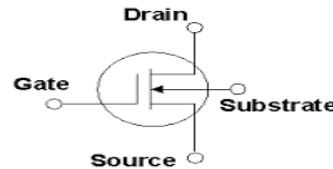
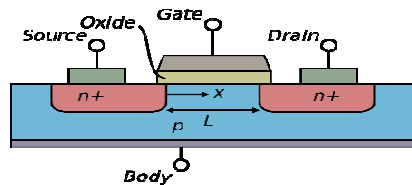
In this lecture

- About the course
- Computer Aided Electronic System Design
- Complete Workflow

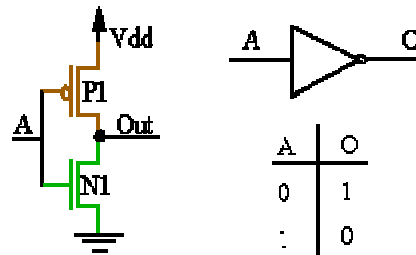
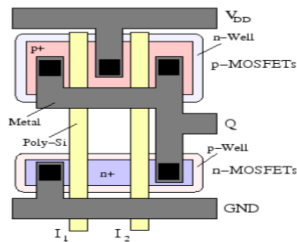
About the Course - In general

- ✓ Modeling, simulation, Design and optimization of devices, circuits and systems

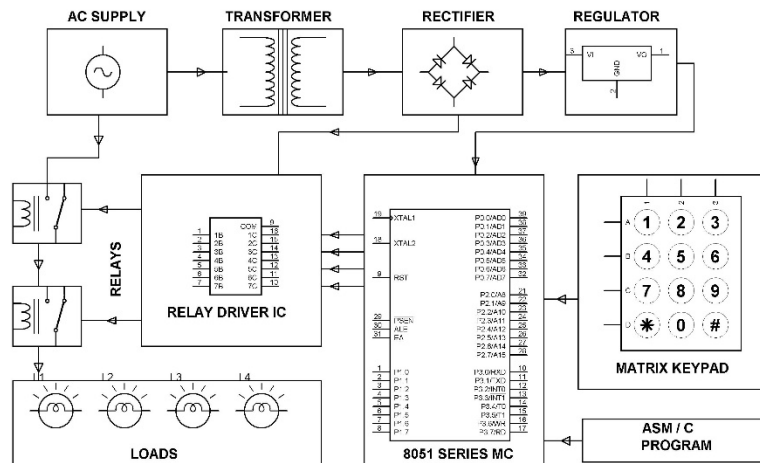
Device



Circuit

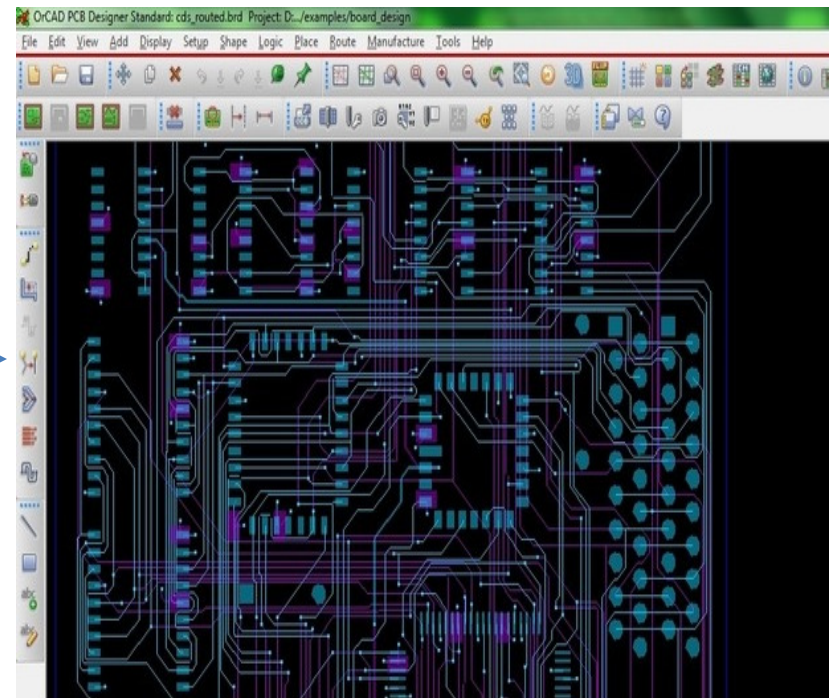
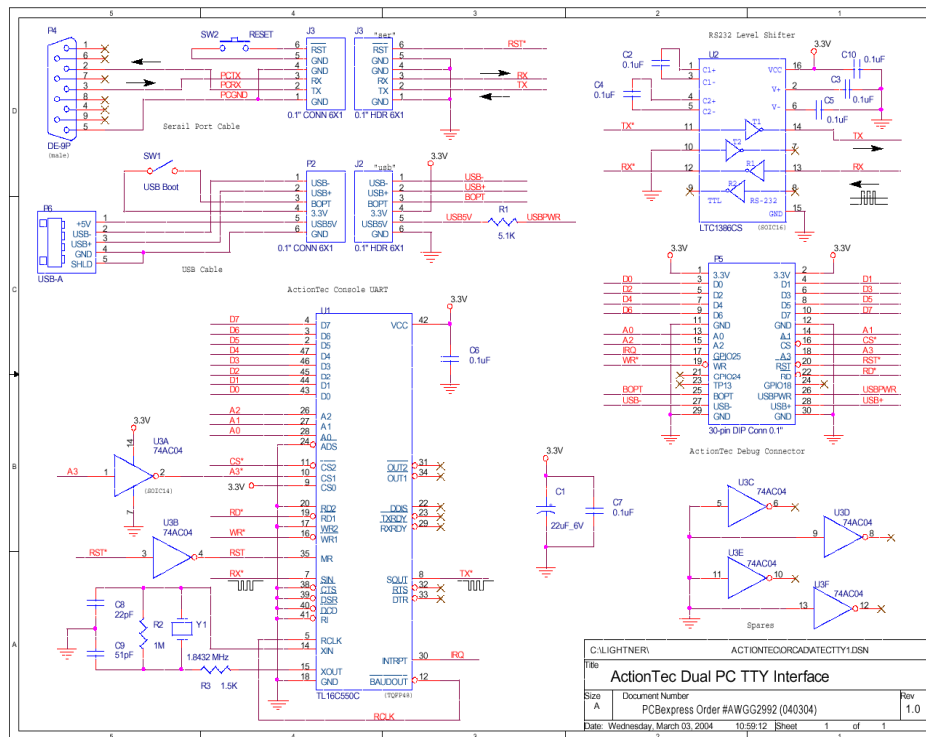


System



About the Course - Focus

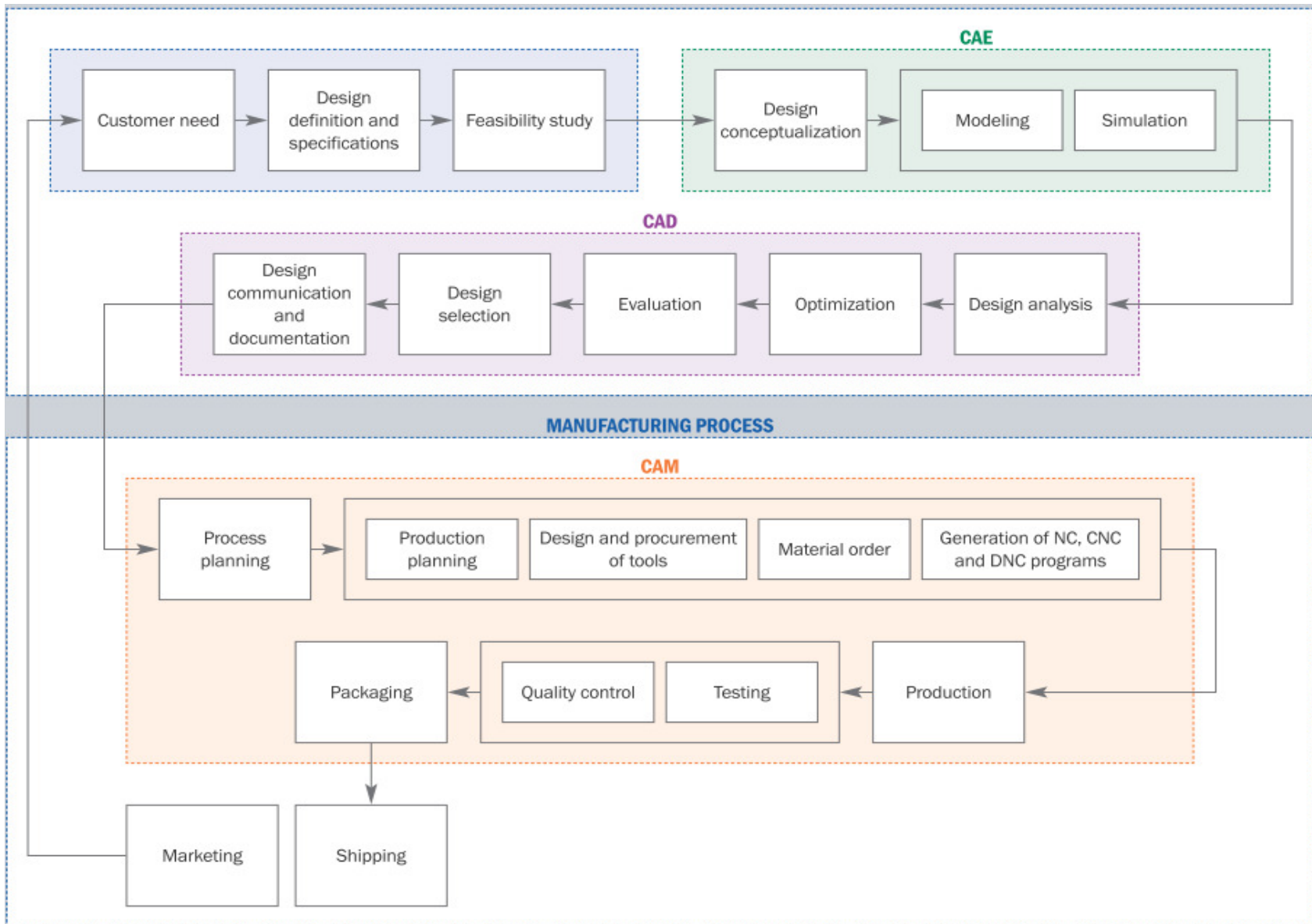
✓ Designing and Prototyping Electronic Systems in symbolic (schematic) and physical (PCB) levels using OrCAD Design Suites



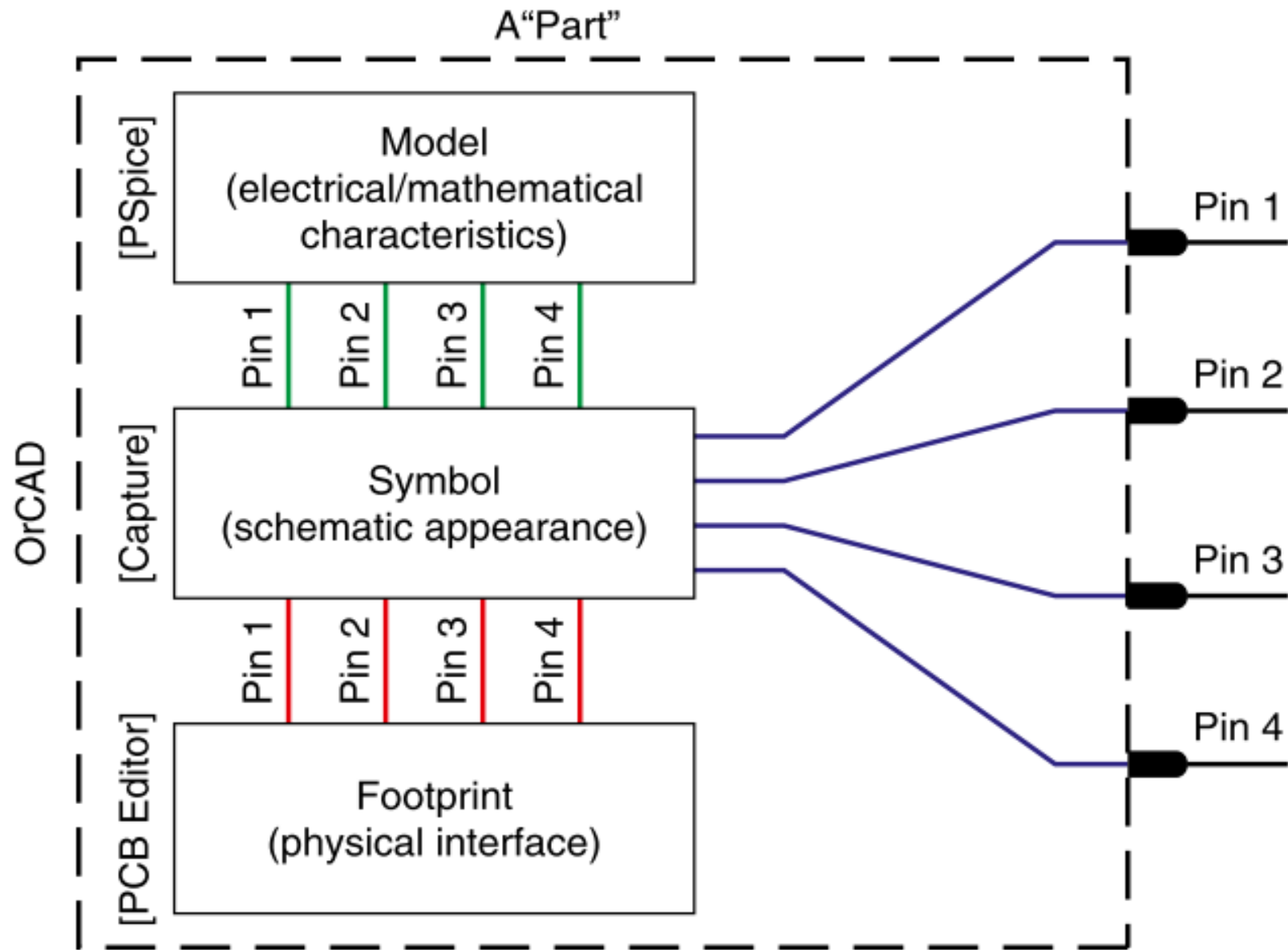
Why Printed Circuit Board?

- ✓ Simplicity
- ✓ Affordability
- ✓ Efficiency
- ✓ Reliability
- ✓ Environmental friendly

Computer Aided Engineering (CAE)



PCB CAD with OrCAD



PCB CAD

- PCB CAD tool allows us to enter our design and ultimately produce information that a PCB Fab house can use to create the PCB.
- The files that the tool produces are called “Computer Aided Manufacturing (CAM) files.
- The design flow for PCB CAD consists of:
 - 1) **Part Library Development** - A library contains all of the parts in your design. Each part contains a schematic, a physical layout, and information about the vendor that can be used to create a “Build of Materials”
 - 2) **Schematic Entry** - A schematic contains all of the part symbols and how they are connected “Parts” will drive forward the pad configuration in the layout and “nets” will drive forward the traces and plane shapes.
 - 3) **Layout** - A physical layout is then performed in which all of the parts are placed and connected with traces.
 - 4) **CAM** - The final step is to create the Gerbers, Drill Files, and Drawings to be sent to the fab house.