

MAE 464

Class Project

Project outline

- Group project – each group with 4 students
- Select one product with about 4 to 10 parts
- Design and manufacture the part in the manufacturing shop in Jarvis Hall

Requirements

- Design the product using CAD system
- Develop process plan for each part
- Discuss the production plan with the TA and Shop floor technicians
- Start production of the part
- Prepare part for CNC manufacturing
- Generate CNC codes for the part
- Purchase or obtain 'bought out' parts
- Machine the parts on the CNC machine
- Fabricate and Weld if required
- Assemble and test

Next step (interim report)

- Develop full CAD model of the product (if you have not already done so)
- Draw a lay out of the machine shop in Jarvis Hall with all the machines identified (use AutoCAD to draw it)
- Develop a process plan for each component of the product using Excel sheet
 - Identify each component
 - Initial raw material
 - Outsourced or bought out item
 - Step by step process of manufacturing and on which machine
 - Estimate time at the beginning and make a production plan and sequence of manufacturing using MS project or Excel
- Develop assembly plan

Production time

- Once the process plan is completed
- Move to production stage
 - Keep track of machining time for each step of the process plan

Develop assumptions for volume products

- Volume of products that you plan to product
- Daily volume, hourly volume
- Family of products

Computer Integrated Manufacturing

- Develop GT group coding
- Detailed process plan and study CAPP
- Develop Cell manufacturing system for production of the part
- Suggest FMS system for mass production
- Design lay out with Robots/AGV etc
- Prepare a report
- Present to the class

Time-line for the rest of the project

- Mid-project presentation 1 – 10/31
 - Time-line for completion of the product
 - Process plan for each component in more detail
 - Group Technology coding for your product
 - Volume decisions
- Mid project presentation 2 – 11/07 (Interim report due on the same day)
 - Partially or fully completed parts
 - Timing requirement and production decisions
 - Preliminary machine/part requirements

- Mid project presentation 3 - 11/26
 - Finish the product
 - Complete Cell Formation for production
 - Justify machine matrix selection
 - Compare it with existing shop floor
 - Suggest FMS, AGV and Robotic Implementation etc
- Final presentation – last day of the class –
Comprehensive presentation (15 min/group)
 - Report will be due with all the elements of the project on the day of your final exam