MEC 500 Introduction to Computer Integrated Design and Manufacturing

(Spring 2009)

COURSE OBJECTIVES: Part design specification, Computer Aided Design (CAD), CAD-driven engineering analysis, Computer-Aided Manufacturing (CAM), integration of CAD/CAM, computer-integrated manufacturing, industrial robotics, CAD driven inspection and measurement, concurrent engineering, Internet-based design, and manufacturing.

PREREQUISITES: None

LECTURE: M 6:50 – 9:40 PM; Soc & Behav N117

INSTRUCTOR: Peisen S. Huang
Office: Light Eng. 163; Phone: 632-8329
Email: peisen.huang@stonybrook.edu

OFFICE HOURS: M 1:30 - 5:30 PM


REFERENCE BOOKS:

ASSIGNMENTS:
1) Homework problems are usually due one week after they are assigned. Late homework will receive reduced credit and will not be accepted after the solutions are posted.
2) Projects are due two weeks following their assignment unless otherwise stated. Written reports are expected for all projects.

EXAMINATIONS: There will be one midterm exam and one final exam. All exams are open book/notes, unless noted otherwise. No make-up exams will be permitted unless arranged prior to the exams.
GRADING:

1. Homework Assignments 20%
2. Projects (2) 30%
3. Midterm Exam (1) 20%
4. Final Exam (1) 30%

Topics by Weeks

Week 1  Introduction to CIM
Week 2  Manufacturing Systems; Manufacturing classifications; Product development cycle; Enterprise organization
Week 3  Computer aided design (CAD); Geometric modeling
Week 4  Computer-aided engineering analysis; Rapid prototyping
Week 5  Concurrent engineering; Design for manufacturing and assembly (DFMA)
Week 6  Computer control of manufacturing systems; Computer numerical control (CNC); Computer-aided part programming
Week 7  Programmable logic controller (PLC); Automated material-handling and storage systems
Week 8  Robotic systems and applications
Week 9  Computer-aided inspection and quality control; total quality management (TQM)
Week 10 Manufacturing planning and control systems; shop scheduling
Week 11 Automatic data capture; Automatic tracking with bar code and RFID technology
Week 12 Just-in-time (JIT) manufacturing systems; Inventory management
Week 13 Group technology (GT); Cellular manufacturing systems; Flexible manufacturing systems (FMS)
Week 14 Internet, World Wide Web, and the future of manufacturing

Calculator Policy

Effective spring, 2008 only the following calculators will be permitted to be used on all midterm and final exams in the Department of Mechanical Engineering. There will be no exceptions! This list of calculators is identical to that allowed for the National Council for Examiners for Engineering and Surveying (NCEES) Fundamentals of Engineering (FE) exam that many of you will take in your senior year, as well as the Professional Engineering (PE) exam that you may take several years from now. The sooner you become comfortable on one
off these calculators, the better.

NCEEES Allowed calculators as of spring, 2008:

- Casio: All fx-1115 models. Any Casio calculator must contain fx-115 in its model name.
- Hewlett Packard: The HP 33s and HP 35s models, but no others.
- Texas Instruments: All TI-30X and TI-36X models. Any Texas Instruments calculator must contain either TI-30X or TI-36X in its model name.

The NCEES policy on calculators can be found here: http://www.ncees.org/exams/calculators/.

**Americans with Disability Act**

If you have a physical, psychological, medical or learning disability that may impact your course work, please contact Disability Support Services, ECC (Educational Communications Center) Building, room 128, (631) 632-6748. They will determine with you what accommodations are necessary and appropriate. All information and documentation is confidential.

Students requiring emergency evacuation are encouraged to discuss their needs with their professors and Disability Support Services. For procedures and information, go to the following web site.

http://www.ehs.sunysb.edu/fire/disabilities/asp