MEC 500 Introduction to Computer-Integrated Design and Manufacturing

(Spring 2010)

COURSE DESCRIPTION: 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; Melville Library E4315

INSTRUCTOR: Dr. Peisen Huang
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OFFICE HOURS: M 9:30 – 11:30 AM & W 9:30 – 11:30 AM


ASSIGNMENTS: 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.

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, both 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 30%  
3. Midterm Exam 20%  
4. Final Exam 30%

Topics Covered
1. Introduction to CIM; manufacturing systems; manufacturing classifications; product development cycle  
2. Computer aided design (CAD); geometric modeling  
3. Computer-aided engineering analysis; rapid prototyping  
4. Concurrent engineering; design for manufacturing and assembly (DFMA)  
5. Computer control of manufacturing systems; computer numerical control (CNC); computer-aided part programming  
6. Industrial robotic systems and applications  
7. Programmable logic controller (PLC); automated material-handling and storage systems  
8. Computer-aided inspection and quality control; total quality management (TQM)  
9. Automatic data capture; automatic tracking with bar code and RFID technology  
10. Group technology (GT)  
11. Flexible manufacturing systems (FMS); cellular manufacturing systems  
12. Manufacturing planning and control systems; shop scheduling  
13. Just-in-time (JIT) manufacturing systems; inventory management  
14. Green design and manufacturing

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.

Statement on Academic Dishonesty

Academic dishonesty is an extremely serious offense and will not be tolerated in any form. Academic dishonesty in general is the presentation of intellectual work that is not originally yours. Examples include, but are not limited to, copying or plagiarizing class assignments including homework, reports, designs, and other submitted materials; copying or otherwise communicating answers on exams with other students; bringing unapproved aids, either in physical (written) or electronic form to an exam; obtaining copies of an exam prior to its administration, etc. Academic dishonesty violates both the ethical and moral standards of the Engineering profession and all infractions related to academic dishonesty will be prosecuted to the fullest via the CEAS CASA committee. For you, the honest student, academic dishonesty results in lower class curves, hence a depression in your GPA and class standing, while cheapening the degree you earn.

Calculator Policy

Following the Mechanical Engineering Department’s mandatory calculator policy, only the following calculators will be allowed to be used on the midterm and final exams. 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 of these calculators, the better. If you have any questions on this policy please feel free to contact me. The NCEES policy on calculators can be found here: http://www.ncees.org/exams/calculators/.

NCEES 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.