

INDUSTRIAL TECHNOLOGY 492H
Research and Development in Industrial Technology
Spring 2007
Mr. James Stutts

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Office Hours: 7:30-8:00 MTWTh
 10:00 – 11:00 TTh
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 5:30 – 6:00 MW
 At other times by appointment
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Course Credit: 3 Semester Hours,

Prerequisite: “B” average or recommendation of faculty member and approval of the Department Head

Class Meeting Time: TBA

Class Location: TBA

Course Description:

A course designed to be an honors course devoted to research and development through the use of various research methods and/or through laboratory experimentation of a selected problem or research interest. During the course of your research you are expected to cover and expand on the material in the course outline and fulfill the objectives.

Attendance Policy:

This is intended to be an independent study class where the student is expected to work independently with minimal supervision. The student is also expected to provide regular updates throughout the semester to the instructor.

Basis for Assigning Grade:

- | | |
|-----------------------------|-----|
| 1. Proposal | 10% |
| 2. Meetings with instructor | 20% |
| 3. Written report | 70% |

Grading Scale: (*Departmental Policy*)

Grading for 492H is Pass/Fail

Course Outline:

1. History and evolution of CNC systems and equipment
2. Control circuits
3. Tool Movements
4. Function and Machine Codes
5. Computer simulation of machine operation
6. Computer simulation
7. Specifications of actual lathes and milling machines
8. Programming
9. Computer Integrated Manufacturing
10. Social and ethical issues related to automation

Course Objectives:

1. The student will demonstrate a working knowledge of the evolution of automated machinery.
2. The student will describe the advantages and disadvantages of automated systems.
3. The student will understand the electrical power, computers, and the auxiliary equipment needed to run CNC equipment.
4. The student will set up and program CNC equipment.
5. The student will demonstrate knowledge of Computer-Numerical Control Systems.

Course Assignments:

1. The student will write a proposal on the topic they wish to research. This proposal should included a detailed description of the topic they wish to research, why they are interested in this topic, how is this topic relative to the class that the 492H is replacing, and a time line for the completion of the research project. **Due by week two of the semester.**
2. The student will have at least six meetings with the instructor throughout the semester.
3. The student will complete a research paper with the results of their research. **Due by Friday May 4, 2007.**

Lab Work:

During the course of 492H it may be necessary that you use labs in the department (Drafting rooms, CAD lab, wood shop, metal lab, etc.) to prepare experiments and resurch. If that is the case the following guidelines must be followed to properly abide with department and university policies.

1. Obtain proper permission to go in the lab from the professor(s) in charge of the lab
2. Never disturb a class in progress
3. **Wear ANSI Approved safety glasses** in the labs that require eye protection.
4. Follow any other safety rules that apply to the lab that you are using.

PLEASE DISCUSS WITH THE INSTRUCTOR ANY RELEVANT INFORMATION THAT MAY BE USEFUL IN ASSISTING YOU TO SUCCESSFULLY COMPLETE THIS COURSE. IF YOU ARE A QUALIFIED STUDENT WITH A DISABILITY, SEEKING ACCOMMODATIONS UNDER THE ADA, YOU ARE REQUIRED TO SELF-IDENTIFY WITH THE OFFICE OF DISABILITY SERVICES, ROOM 203, STUDENT UNION. NO ACCOMMODATIONS WILL BE GRANTED WITHOUT DOCUMENTATION FROM THE OFFICE OF DISABILITY SERVICES.

BECAUSE THIS IS A SENIOR-LEVEL COURSE, PROFESSIONAL STANDARDS OF CONDUCT WILL BE EXPECTED, INCLUDING CARE OF EQUIPMENT AND FACILITIES, PROMPTNESS IN COMPLETION OF ASSIGNMENTS, SELF DISCIPLINE, AND HONESTY. VIOLATION OF THESE STANDARDS CAN AFFECT YOUR FINAL GRADE IN INDUSTRIAL TECHNOLOGY 492H.

STUDENTS SHOULD NOTE THAT REPERCUSSIONS OF ACADEMIC DISHONESTY ARE DISCUSSED IN THE UNIVERSITY CATALOGUE.

Important Dates and Notes:

1. Students will **NOT** automatically be dropped from class. Students who choose to drop must do so by the semester deadline! ! **Friday, March 16, 2007** is the last day to **withdraw** from classes.
2. **Monday, March 19 –Thursday March 22, 2007** is **early registration** for the **Summer 2007** Semester. **Monday, April 2 –Thursday April 5, 2007** is **early registration** for the **Fall 2007** Semester.
3. The students Southeastern Louisiana University e-mail address **MUST** be used for all e-mail communication between students and faculty/administration/staff. Students are encouraged to check their Southeastern e-mail frequently for important communications from the university.
4. If you are a qualified student with a disability seeking accommodations under the Americans with Disabilities Act, you are required to **self-identify** with the office of Disability Services, Room 203, Student Union. No accommodations will be granted without documentation from the Office of Disability Services.
5. **Academic Integrity**: Students should note that repercussions of academic integrity are discussed in the university catalogue. “Cheating on examinations, plagiarism, improper acknowledgment of sources in essays and the use of a single essay or paper in more than one course without permission are considered very serious offenses and shall be grounds for disciplinary action”.

Useful references for the course:

The students are encouraged to visit traditional libraries and online sources of information regularly. Many of the course assignments require such visits, but the visits should not be limited to completion of assignments. The following references are but a few, which may prove to be helpful in finding valuable CNC information.

Bone, J. Opportunities in CAD/Cam Careers. NTC Publishing Group. October 1993

Jami J. Shah, Martti Mantyla. Parametric and Feature Based CAD/Cam: Concepts, Techniques, and Applications. Wiley, John & Sons, Incorporated. October 1995

Kunwoo, Lee. Principles of CAD/CAM/CAE Systems. Addison Wesley, Longman, Inc. January 1999

Mikell P. Groover, Emory W. Zimmers. CAD/Cam: Computer-Aided Design and Manufacturing. Prentice Hall PTR. February 1997

Soenen, R. and Olling, G. Advanced CAD/Cam Systems : State-of-the-Art and Future Trends in Feature Technology. Chapman & Hall. April 1995

Also the following online sources:

http://www.discover.com/feb_00/feat3dfax.html

<http://www.manufacturing.net/>

<http://www.deskeng.com/articles/01/mar/cover/index.htm>

<http://www.caenet.com/res/archives/CAE-200105/feature1.html>