DEPARTMENT OF INDUSTRIAL AND SYSTEMS ENGINEERING

ISEN 459: MANUFACTURING SYSTEMS DESIGN

REQUIRED or ELECTIVE: Required Course

CATALOG DESCRIPTION (1-6) Credit 3

Capstone design course emphasizing analysis and design of manufacturing systems, cellular design, flexible manufacturing systems and manufacturing integration; integrates knowledge gained from all required industrial engineering courses in a system design project; for students in their final semester of undergraduate studies.

PREREQUISITES

ISEN 314, ISEN 316, ISEN 416

PROFESSIONAL COMPONENT

This course is the culmination of the industrial engineering curriculum. The emphasis of this course is on the identification of, solutions to, and recommendations for corporate systems improvement. Balancing corporate desires with academic requirements is paramount for a successful project. Group projects integrate knowledge gained from all required industrial engineering courses in the form of application to an industry-sponsored system design project.

COURSE LEARNING OUTCOMES

At the end of the course, students should be able to

- learn to formulate and develop solutions for open-ended, real-life, large-scale problems;
- learn and appreciate the concept of applying theory to practice;
- learn, understand and practice professional and ethical responsibility; and
- improve written and oral presentation & team working skills.

TEXTBOOK

None

TOPICS COVERED

Class meetings cover a variety of topics related to team and project selection; meeting with project sponsors; guidelines and feedback on writing the project proposal, final report, midterm and final presentations.

CLASS AND LAB SCHEDULE

Fifty minutes of lectures per week; laboratory meetings are 150 minutes per week; additional time is used by students for visits to sponsor location, team meetings and discussions, and regular meetings with instructor and TA.

CONTRIBUTION TO MEETING REQUIREMENTS OF CRITERION 5:

Subject	Semester hrs	Subject	Semester hrs	Subject	Semester hrs
Mathematics		Engineering Science		General	
Basic Science		Engineering Design	3		

RELATIONSHIP OF COURSE TO PROGRAM OUTCOMES:

A. An ability to apply knowledge of mathematics, science, and engineering.
B. An ability to design and conduct experiments as well as to analyze and interpret data.
C. Ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.
D. An ability to function on multi-disciplinary teams.
E. An ability to identify, formulate, and solve engineering problems.
F. An understanding of professional and ethical responsibility.
G. An ability to communicate effectively.
H. The broad education necessary to understand the impact of engineering solution in a global and societal context.
I. A recognition of the need for, and an ability to engage in life-long learning.
J. A knowledge of contemporary issues.
K. An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

PREPARED BY: Georgia-Ann Klutke **Date** February 16, 2010