

ISYE 4106 SENIOR DESIGN

Required

Credit:

0-12-4

Prepared Prof.

Sokol, Fall 2013

Prerequisite(s):

ISYE 3025 and ISYE 3133 and ISYE 3232 and ISYE 3044, and four ISyE courses in a concentration, and completion of 4800 Senior Design preparation.

Catalog Description

Senior design project requiring student groups to formulate a project plan with a business enterprise. Includes specific milestones, targets, and evaluation criteria.

Text

No textbooks. Readings on communications, technical writings, team work, project management, and leaderships are often recommended by advisors.

Objectives

Senior design provides a design experience similar to ISyE professional practice, and an opportunity to learn about the business world. The experience includes team work and the management of people, project e. The management of the project is organized in a hierarchy including student, supervisor, project manager and client representative.

Topical Outline (Milestones)

1. Before semester begins: team formation, client and project selection under senior design coordinator
2. 2nd and 3rd week: Proposal and presentation to faculty and client.
3. 7th and 8th week: Interim report and presentation to faculty and client
4. 14th and 15th week: Final report and presentation to faculty and client

Outcomes

The senior design or capstone course covers all the program objectives. At the end of this course, the students will exhibit the ability to:

- Work effectively in a team project that includes managing the project, time and people, including team members and other stake holders.
- Define a problem properly considering the responsibilities, capabilities and constraints in time, budget, information, and other resources.
- Identify relevant factors, design experiments and collect the related data and interpret results.
- Apply methodologies studied in the curriculum in a cumulative and comprehensive manner to model and to solve the problems, both analytically and computationally.
- Use library, on-line and other resources to acquire knowledge not covered in the curriculum.

- Define sound evaluation criteria and to apply them to the solutions and to present value of the project.
- Communicate to the various stake holders, including client, supervisor and evaluator in one-on-one, group discussions, formal presentations, e-mails, formal correspondence and report.

Course outcome \ Program Outcomes	a. apply math	b. Design, conduct experiment, analyze interpret data	c. Design system	d. team	e. problem solving	f. prof/ and ethical responsibilities	g. communication	h. global, eco, envi and soc context	i. Life-long learning	j. Contemporary issues	k. use tools for eng. practice
Work effectively in team project				High			High				
Define problem			High	High	High	High	High	High			High
Identify factors, collect data		High	High	Med		Med	Med			Med	High
Apply method	High		High	Med	High			Med		Med	High
Use library, on-line and other resources									High	High	
Evaluation	Med				Med	Med		High		Med	High
Deliver effective presentations oral		Low	Med	Med		Low	High				
Prepare effective written report	Low		Low	Med	Med	Med	High	Low	Low	Med	

The evaluation of these outcomes are based on presentations, reports, peer evaluations, feedback from clients, and advisor assessment.

ISyE ABET Student Outcomes a - k

- 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) an 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 multidisciplinary 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 solutions in a global, economic, environmental, 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.