

# ISYE 4106 SENIOR DESIGN

## Required for BSIE

Credit: 0-12-4

**Prepared** Profs. Hackman, Nazzal, McGinnis, Sokol, Vande Vate, Zhou, Summer 2018.

**Prerequisite(s):** ISYE 3025 and ISYE 3133 and ISYE 3232 and ISYE 3044, ISYE 4031 and three ISyE concentration electives

## Text

Senior Design Manual available on ISyE website and in Canvas.

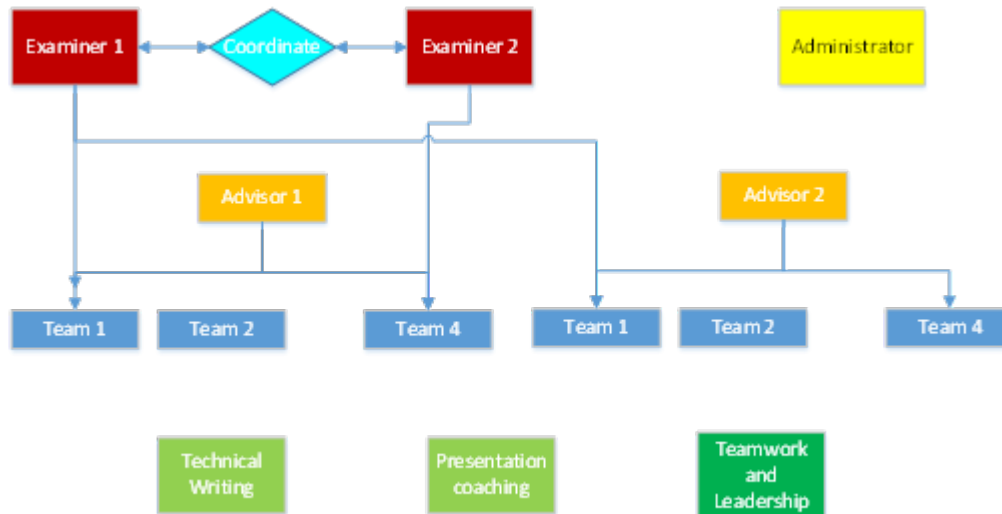
Readings on communications, technical writings, team work, project management, and leaderships are recommended by writing instructor, presentation instructor, teamwork advisor and faculty advisors.

## Catalog Description

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

## Course Description

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 and time. The organization of the project is shown in the figure below. Each student team will communicate with client representative.



## Major Milestones in approximate weeks

1. Before semester begins: team formation, client and project selection under senior design examiner(s).
2. 2<sup>nd</sup> week: Proposal and presentation to faculty and client.
3. 7<sup>th</sup> week: Interim report and presentation to faculty and client
4. 13<sup>th</sup> week: Final presentation to faculty

### Course Learning Outcomes

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

1. To identify relevant factors, collect information, define evaluation criteria and formulate engineering problems that addresses client's and other stake holder's needs.
2. To develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions. (6)
3. To apply methodologies studied in the curriculum in a cumulative and comprehensive manner to model and solve engineering design problems quantitatively and computationally to produce solutions with consideration for public health, safety, and welfare, as well as ethical, professional, global, cultural, social, environmental, and economic factors. (2 + 4)
4. To communicate effectively with various stake holders, including client, supervisor, evaluator, team members, and other relevant group in one-on-one, group discussions, formal presentations, e-mails, formal correspondence and report. (3)
5. To function effectively on a team whose members together provide leadership, create a collaborative & inclusive environment, establish goals, plan tasks, and meet objectives. (5)
6. To acquire and apply new knowledge as needed, using appropriate learning strategies via library, on-line and other resources. (7)

Course outcome \ Program Outcomes	1. identify, formulate solve engg prob by engg, sci & Math	2. produce solutions consider public health, safety, welfare, global, cultural, social, environ & economic	3 communicate with a range of audience	4 recognize ethical & professional responsibilities, make informed judgement consider resolutions in global, economic, environ and societal context.	5. effective on a team provide leadership, collaborative and inclusive envirm, plan tasks & meet obiectives	6. develop and conduct experiment, analyze and interpret data & use engineering judgement to draw conclusions.	7. acquire and apply new knowledge using appropriate learning strategies
1. Identify factors, collect info, formulate engineering problem and define evaluation criteria	H						

2. To develop and conduct experiment, analyze and interpret data and use engineering judgement to draw conclusion						H	
3. Apply method to model and solve engineering problems considering all factors		H		H			
4. To communicate effectively to all by all ways.			H				
5. To Function effectively in a team					H		
6. To acquire and apply new knowledge as needed using appropriate strategies.							H

#### **Evaluation of the important outcomes**

The outcome 1 to 6 will be assessed by the advisors and examiners via CLASS system based on presentations, reports, weekly meetings, Q/A and peer evaluations. These outcomes will also be assessed by the clients via survey based on their presentations, reports and interactions.