ISYE 4106 SENIOR DESIGN

Required for BSIE

Credit: 0-12-4

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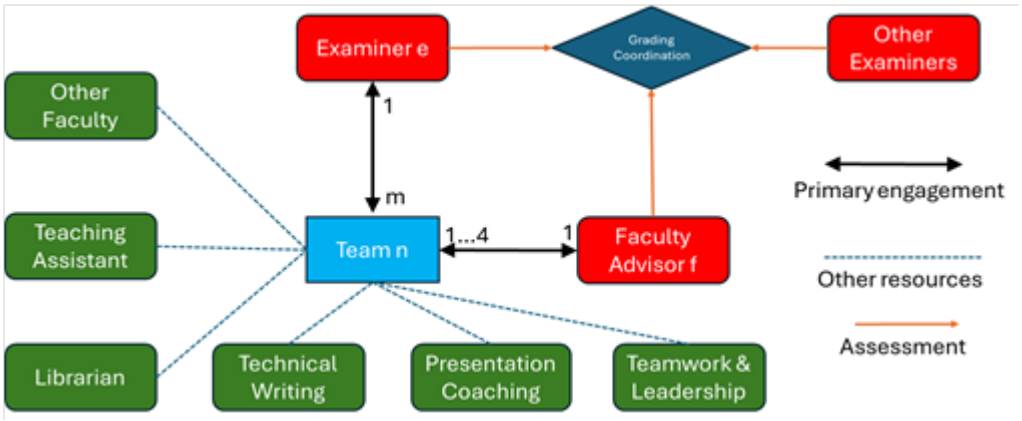
Prerequisite(s): ISYE 3025 and ISYE 3133 and ISYE 3232 and ISYE 3044, ISYE 4031 and three ISyE concentration electives, and successful completion of pre-senior design.

Text
Senior Design Manual available on ISyE website and in Canvas.
Recommended readings on technical communications, team work, project management, and leaderships are provided by the technical communication instructor, teamwork advisor, and faculty advisors. Faculty advisors may also recommend articles and publications specific to the team's project topic and industry context.

Catalog Description
Senior design project requiring student groups to formulate a project plan with a business enterprise. Includes defined milestones (proposal, interim progress, final), associated deliverables, 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 teamwork and management of people, project and time. The organization of the project is shown in the figure below. Each student team communicates regularly with a client representative.



Major Milestones in approximate weeks

1. Pre-senior Design: Before the ISYE 4106 semester begins: team formation, client and project selection under the guidance of the senior design examiner(s).
2. 2nd week: Proposal and presentation to faculty and client.
3. 7th week: Interim report and presentation to faculty and client
4. 13th week: Final presentation to faculty

Additional deliverable requirements or check-ins are published in the course schedule each semester.

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 stakeholder'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 design systems or processes to meet desired needs, and specifications and standards within multiple constraints, including to model and solve engineering 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 stakeholders, including client, supervisor, evaluator, team members, and other relevant groups 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 the library, online 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 envirn, plan tasks & meet objectives	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. Develop and conduct experiment, analyze and interpret data and use engineering judgement to draw conclusion						H	
3. Design systems that satisfy the needs and constraints.		H		H			H
4. To communicate effectively to all by all ways.			H		H		
5. To Function effectively in a team			H		H		
6. To acquire and apply new knowledge as needed using appropriate strategies.							H

H: High, M: Medium, L: Low

Evaluation of the important outcomes

Outcomes 1 - 6 are assessed by faculty advisors and examiners based on presentations, reports, weekly meetings, Q/A and peer evaluations. Clients also provide assessments via survey based on team presentations, reports and interactions.