

ECE 383 Syllabus

Course:	ECE 383
Credit Hours:	1
Course Title:	Introduction to Entrepreneurship and New Product Development
Course Description:	

Introduction to Entrepreneurship and New Product Development (ECE383) is a 1-credit course that is taught in conjunction with the Engineering Entrepreneurs Program (EEP) sections of Senior Design, ECE482 and ECE483. This course is a full immersion engineering experience and has been holistically designed to integrate the skills and knowledge that students have learned in their engineering studies. Students serve as eTeam (entrepreneurship team) members on EEP Senior Design eTeams that are led by seniors completing their senior capstone design requirement. The eTeam members serve in capacities commensurate with their knowledge and skills. This methodology provides the students a more in-depth exposure to new product development and the engineering profession.

Prerequisite(s): None

Textbook(s) and/or other required material:

Getting Started as an Entrepreneur, by the National Collegiate Inventors and Innovators Alliance, 2002 (available now as a Wikibook found at http://en.wikibooks.org/wiki/Getting_Started_as_an_Entrepreneur).

Course objectives. By the end of this course, the student should be able to (use demonstrative verbs):

- 1) Identify real-world problems and to assist senior team members in applying engineering skills to analyze, design and build a concept prototype product to solve the identified problem
- 2) Work effectively and efficiently as part of a team
- 3) Demonstrate a basic understanding of engineering product development and business planning
- 4) Assist in creating a high quality presentation
- 5) Understand the basics of corporate formation and Intellectual Property

Topics covered:

- 1) Industrial Design
- 2) Project Management
- 3) Product Design
- 4) Analysis
- 5) Manufacturing
- 6) Intellectual Property
- 7) Fundamentals of Presentations

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8) Business Planning

9) Seminar topics: Typically, seven seminars are held each semester where industry professionals and academics lecture on topics pertinent to high-technology entrepreneurship. Seminar topics include, but are not limited to, product development, corporate formation, sales and marketing, technical and business research, venture capital, intellectual property, and team dynamics to name a few.

Class/laboratory schedule (sessions per week and duration of each session):

- 1) Course Organization (1)
- 2) Senior eTeam Presentation (1)
- 3) Industrial Design Workshop (1)
- 4) Seminar Speaker (1)
- 5) Project Management (1)
- 6) Product Design, Analysis and Manufacturing (1)
- 7) Seminar Speaker (1)
- 8) Intellectual Property (1)
- 9) Fundamentals of Presentations (1)
- 10) Mid-semester Presentations (1)
- 11) Seminar Speaker (1)
- 12) Seminar Speaker (1)
- 13) Seminar Speaker (1)
- 14) Seminar Speaker (1)
- 15) Business Planning (1)
- 16) Seminar Speaker (1)

Contribution of course to meeting the requirements of Criterion 5 - other:

ECE383 is embedded into the two semester senior capstone design course sequence (ECE482 and ECE483) of the Engineering Entrepreneurs Program (EEP). As such, ECE383 students are exposed to the engineering design practice early on in their undergraduate careers. Here they learn how to incorporate engineering standards and real-world constraints to identifying problems and articulating their solutions. In addition, they learn how to work effectively and efficiently in multidisciplinary eTeams (entrepreneurship teams), and to create and apply ethical business and engineering processes into their eTeam management and culture.

Contribution of course to meeting the requirements of Criterion 5 - math and basic sciences:

Being embedded in the Engineering Entrepreneurs Program, ECE383 students are part of eTeams(entrepreneurship teams) that perform substantial amounts of engineering research, design and analysis. They will, at times, be expected to apply their understanding of mathematics and basic science to the design and development of their eTeam's new technology product. Some examples include statistical analysis, mathematical modeling and simulation, the use of design tools such as SolidWorks, and the use of modern computer systems and languages.

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Contribution of course to meeting the requirements of Criterion 5 - engineering topics:

In ECE383, students learn the fundamental principles involved in identifying real-world problems and in articulating their possible solutions. This process is always an iterative one where students continually compare/contrast various solution options to the realities of budgets and deadlines. It is hoped that as students move through the course that they begin to develop, and continue to improve, an intuitive grasp of engineering design and its tradeoffs thereby providing a bridge between engineering theory and engineering practice.

Contribution of course to meeting the requirements of Criterion 5 - general education:

ECE383 is part of the Engineering Entrepreneurs Program which is a full-immersion educational environment for new product and business prototyping that has been holistically design to improve the overall undergraduate educational experience. This is accomplished by creating multidisciplinary eTeams (entrepreneurship teams) comprised of undergraduate students from all grade levels in engineering, science, business, industrial design, and the arts and humanities. In addition to engineering, math and science, students are exposed to advanced technical writing, presentation skills, business and engineering ethics, intellectual property, and graphic and industrial design.

Relationship of this course to program learning outcomes:

Learning Outcome	Level of Instruction	Related Course Content
Outcome A	Basic	Individual assignments from eTeam leaders that are associated with the eTeam's new product prototype design and development. eTeam leaders oversee these assignments.
Outcome B	Basic	Individual assignments from eTeam leaders that are associated with the eTeam's new product prototype design and development. eTeam leaders oversee these assignments.
Outcome C	Major	Individual assignments from eTeam leaders that are associated with the eTeam's new

Relationship of this course to program learning outcomes:

Learning Outcome	Level of Instruction	Related Course Content
Outcome D	Major	<p>product prototype design and development. eTeam leaders oversee these assignments.</p> <p>In prototyping a new product students work as members of multidisciplinary eTeams. eTeams are typically composed of undergraduate students from various engineering disciplines and business. But, have also included students from industrial design, and the arts and sciences.</p>
Outcome E	Major	<p>Students attend lectures on product design and development, project management, as well as seminars covering topics ranging from industrial design to product manufacturing. In addition, students participate in brainstorming sessions led by eTeam leaders, and overseen by course instructors, on problem identification and solution evaluation.</p>
Outcome F	Basic	<p>Students attend seminars given by industry professionals on professional and ethical responsibility.</p>
Outcome G	Major	<p>Students attend special lectures/workshops</p>

Relationship of this course to program learning outcomes:

Learning Outcome	Level of Instruction	Related Course Content
Outcome H	Major	<p>given by a member of the English Department and by an NC State Librarian on technical writing, presentations and research.</p> <p>Students attend seminars given by industry professionals and academics on product development, corporate formation, sales and marketing, technical and business research, venture capital, intellectual property, and team dynamics, to name a few.</p>
Outcome I	Intermediate	<p>Being part of eTeams, students are given assignments and create assignments that are typically outside their current knowledge zone. As such, they learn, with the help of their eTeam leaders and faculty, how to go about obtaining the knowledge they require to complete their tasks.</p>
Outcome J	Intermediate	<p>Students attend seminars given by industry professionals and academics on various contemporary issues. In addition, they learn the fundamentals of business research which exposes them to current news and</p>

Relationship of this course to program learning outcomes:

Learning Outcome	Level of Instruction	Related Course Content
Outcome K	Intermediate	events. In prototyping the eTeam's new product, students are given both individual and small group assignments that typically require the application of known skills and the acquisition of new ones that involve the use of modern engineering tools, i.e. MATLAB, php, SolidWorks, etc.

Person who last prepared this description and date of preparation:

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