GE 401 Innovative Design and Entrepreneurship I – Course Description

Sequence of two courses GE 401: Fall, GE 402: Spring

From the conception of an idea to a marketable end product within the framework of a simulated start-up company. Inception of a start-up company. Entrepreneurial processes, business plan preparation; fundamentals of project management; product design stages; incorporation of standards, quality directives, social and environmental factors. Seminars by experts in the field. Concept demonstration of the end-product.

Prerequisites: Each department has its own prerequisites.
GE 401 Innovative Design and Entrepreneurship I – Course Description

• This is a 3 credit course (per semester)
• This is a two-term course, ie: GE401 and GE402 must be taken consecutively.
• Multidisciplinary course: 7 different departments from 4 different faculties
GE 401 – 402 Participating Departments

- Communication and Design
- Computer Engineering
- Economics
- Electrical Engineering
- Graphic Design
- Industrial Engineering
- Management
GE401 and GE402 can be taken as:

- **In Electrical Engineering; Project Elective.** Alternatives: EE491 and EEE495 sequence or EEE493 – EEE494 sequence,

- **In Computer Engineering; Project Elective.** Alternative: CS491 – CS492 sequence,

- **In Industrial Engineering; Project Elective.** Alternative: IE477 – IE478 sequence,

- **In Management; Unrestricted Major elective course,**
GE401 and GE402 can be taken as:

- **In Graphic Design;** Restricted Elective course,
- **In Communication and Design;** Elective courses,
- **In Economics;** Restricted and Unrestricted Elective courses.
GE 401 – 402 Prerequisites

• EE Students:
  • EEE212 – Microprocessors
  • EEE313 – Electronic Circuit Design
  • EEE321 – Signals and Systems

• CS Students:
  • CS202 – Fundamental Structures of Computer Science II
  • CS319 – Object-Oriented Software Engineering

• IE Students:
  • IE271 – Operations Analysis and Design
  • IE375 – Production Planning
GE 401 – 402 Prerequisites

- MAN Students:
  - MAN321 – Corporate Finance
- ECON Students:
  - ECON301 – Econometrics I
- GRA Students:
  - GRA301 – Graphic Design III
- COMD Students:
  - COMD305 – Digital Video Production I
Instructors (2018 – 2019 year):

- COMD: Julide AKSİYOTE aksiyote@bilkent.edu.tr
- CS: H. Altay GÜVENİR guvenir@cs.bilkent.edu.tr
- EE: M. Alper KUTAY kutay@ee.bilkent.edu.tr
- IE: Yiğit KARPAT ykarpat@bilkent.edu.tr
- MAN: Örsan Örge orsan@bilkent.edu.tr
- MAN: Tolga BAYCAN baycan@bilkent.edu.tr
GE 401-402 Innovative Design and Entrepreneurship I – II,
Course Objectives

• Foster your innovation and entrepreneurship abilities
• Enhance your ability of assessing the commercial viability of a new technology based idea.
• Learn basic processes/activities of a start-up company
• Developing identity for your team (name, logo, webpage etc)
GE 401-402 Innovative Design and Entrepreneurship I – II,
Course Objectives

- Developing business plans
- Learn product development processes
- Understanding of processes of bringing new knowledge or new technology to the market.
- Participate in a interdisciplinary project team
GE 401-402 Innovative Design and Entrepreneurship I – II, Course Objectives

- Capstone Design Course for CS, EE, IE departments
  - Identify and formulate an engineering problem by specifying requirements and constraints
  - Design an engineering system/product to meet these specifications/requirements within constraints
GE 401-402 Innovative Design and Entrepreneurship I – II, Course Objectives

• Capstone Design Course for CS, EE, IE departments
  ▪ Implement the design on a hardware and test it against requirements/specifications by performing appropriate observations and measurements
  ▪ Apply project management and execution methodology
  ▪ Apply configuration management and quality
Team Structure

- Students form their team
- Maximum of 6 Students, Minimum of 5 students
- Students from at least 3 different departments in the team
- Maximum of 2 Students from a single department
- Total of maximum 2 students from MAN and ECON
- Total of maximum one student from GRA and COMD
Team Structure

• Maximum one student from Industrial Engineering Department if there is MAN or ECON student in the team
• Diversity is desired to promote multidisciplinary structure
• **FORM YOUR TEAM UNTIL THE BEGINNING OF FALL SEMESTER**
Project Idea

- Students propose project ideas.
- Project: identifying and validating the need/problem of target customer, formulating the solution by specifying the product, design, development, testing of this product, business plan development, identity development
- Instructors act as advisors/mentors to the students
- Sell the idea to course instructors and get venture capital.
Project

• Students propose a project idea.

• Value proposition is very important:
  • Who will use? (Target customer)
  • For what? (Problem/need or opportunity associated with target customer and your initial solution)
  • Why should they use/prefer your product? (Comparison with competitors with your key differentiation)
Project

• Students propose a project idea

• Work on different functions of a running startup company while realizing the project

• Complete, demonstrate and validate the product at the end of the year (This is a must)
Project

- Innovative!
- Innovative means – examples:
  - A new idea,
  - A new process,
  - An idea that makes production easier or makes life easier for mankind
  - To sum up; something that makes life easier for the mankind-i.e., something that makes money or saves money.
Course Structure/Activities

• Project Idea Proposition
  • Target Customer
  • Problem/need of the target customer
  • Your solution, proposition
  • Comparison with competitors with your key differentiation

• Revision/Validation of your idea (Entrepreneurial Process)
  • Customer interviews
  • Hypothesis testing
  • Revision of your hypothesis
  • Validation of your hypothesis
Course Structure/Activities

• Defining your product
  • Requirements (basic functions and operational/performance requirements)
  • Specifications (technical description of your product)

• Developing identity of your team/company
  • Name (company/product)
  • Logo (company/product)
  • Communications templates etc.
Course Structure

- Business Plan
  - Organizational plan
  - Marketing Plan
  - Financial Plan

- Design and Development of your Product
  - QFD and technical specifications
  - Design
  - Development
  - Test
  - Quality

Course web page: http://ge402.bilkent.edu.tr
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<td>In-Class Quizzes</td>
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<td>Initial business model hypotheses (with respect to value proposition and customer segments)</td>
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<td>Three weekly interview debriefs and entrepreneurial learning notes</td>
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<td>Revised idea statement and updated business model hypotheses</td>
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<td>Preliminary Presentation</td>
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### GE402 ASSIGNMENT SCHEDULE, GRADING TYPE & POINTS

(Date: March 14, 2019)

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Grading

- Each activity will be graded,

- Grade types:
  - Team grades (examples):
    - Entrepreneurial process grades,
    - Presentation grades,
    - Some Reports grades
    - Final report grades
  - Individual grades, examples:
    - Product Development Documents, Business plan etc
    - Peer grades,
    - Lab grades,
Grading

• Total Grade Point:

  Team grade + Individual Grade + Peer Grade;

• Total Grade Point: a guiding number for letter grades. The letter grades will be decided by the all course instructors taking into account the student's grade and his/her performance at his/her discipline
Peer Grades

- Students evaluate their teammates at the end of each term,
- The evaluation must be impartial and unbiased,
- Each student must contribute to the team as much as possible and the contribution must be reflected in the peer grades
Course Organization

• SEMINARS

• WORKSHOPS

• VIRTUAL STOCK MARKET (second semester)

• DEMONSTRATIONS
Course Organization

- COACHING:
  - Each activity will be coached/mentored by the corresponding discipline
  - Meetings with instructors from EE, CS, IE, MAN and COMD
  - EE and CS students meet regularly at EE102 on Fridays at 15.40
  - EE and CS students can work on their projects at EE102 during free hours (7/24 allocated table for each team)
Benefits to Students

- This course gives you the chance to work in a simulated start-up company environment from its start!
- Learn diverse aspects of turning your tech idea to a marketable product
- Interdisciplinary collaboration
- Project and team (especially multi-disciplinary) management,
- Simultaneous emphasis on the originality and the marketability of an idea,
Benefits to Students

- Hands-on project execution experience
- Up-to-date information from distinguished speakers on practical matters of forming and running a company
- Teams who are accepted to take this course and register to BİGG Marka will be eligible to take first phase training of BİGG program
- Other funding mechanisms will be available
How to proceed?

• Form you team (until the beginning of Fall Semester, there will be a team formation meeting in the first week)
• Develop tech based start – up ideas (you will validate and may pivot during the first 3-4 weeks of the course)
• Fill in proposal form(s) for your idea(s)
• We will evaluate your preparedness in the first week
Where To Look For Ideas

- Internet (Just for inspiration)
- FP7 and H2020
- Eurostars – Eureka
  [https://www.eurostars-eureka.eu](https://www.eurostars-eureka.eu)
- NSF SBIR