GE 401 – 402 INNOVATIVE DESIGN AND ENTREPRENEURSHIP I-II

2022 – 2023 Course Presentation

Dr. M. Alper KUTAY
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May 12, 2022, Thursday
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: 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 Computer Engineering;** Project Elective. Alternative: CS491 – CS492 sequence,
- **In Electrical Engineering;** Project Elective. Alternatives: EE491 and EEE495 or EEE493 – EEE494 sequence,
- **In Industrial Engineering;** Project Elective. Alternative: IE477 – IE478 sequence,
GE401 and GE402 can be taken as:

- In Communication and Design; Elective courses,
- In Economics; Restricted and Unrestricted Elective courses.
- In Graphic Design; Restricted Elective courses,
- In Management; Unrestricted Major Elective courses,
GE 401 – 402 Prerequisites - Important

• 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 OR IE272 – Manufacturing Processes and Operations Analysis
  • 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

ALL STUDENTS IN THE TEAM SHOULD SATISFY PREREQUISITE CONDITIONS
Instructors (2021 – 2022):

- COMD: Jülide AKŞİYOTE GÖRÜR  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: Tolga BAYCAN  baycan@bilkent.edu.tr
- MAN: Örsan ÖRGE  orsan@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
• Develop identity for your team (name, logo, webpage etc)
GE 401-402 Innovative Design and Entrepreneurship I – II,
Course Objectives

• Develop business plans
• Learn/apply product development processes
• Understanding of processes of bringing new knowledge or new technology to the market.
• Participate in a multidisciplinary 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 teams
• Maximum of 6 Students, Minimum of 5 students
• Students from at least 3 different departments in the team
• At least two students from CS or EE departments
• Total of maximum 2 students from MAN and ECON
• Total of maximum one student from GRA and COMD
Team Structure

- Diversity is desired to promote multidisciplinary structure
- **YOU FORM YOUR TEAM**
- Team composition will be evaluated by instructors of the course

- **Team Formation Meeting:** First day of classes at 18:00, (September 15, 2022, tentative)
Project Idea

- Students propose technology based/innovative project ideas. YOU DEVELOP and PROPOSE 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 for your team
- Instructors act as advisors/mentors to the students
Project

• Students propose a project idea.

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

- Students propose a project idea

- Focus your ideation efforts in one of the following domains:
  1. Sustainability and climate change
  2. Environment
  3. Agriculture / Farming / Gardening
Project

- Students propose a project idea
- You will mature/pivot your idea through entrepreneurial process and finalize requirements
- 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!)
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 in detail
  • 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.

• Business Plan
  • Organizational plan
  • Marketing Plan
  • Financial Plan
Course Structure

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

- Quality and Configuration Processes
  - Team Meetings
  - Quality Plan
  - Configuration Plan

Course web page: http://ge402.bilkent.edu.tr
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 total grade point 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

- Course hours: Lecture/Seminar hours and Lab Hours
- SEMINARS (Wednesdays/Fridays)
- WORKSHOPS (Wednesdays/Fridays)
- VIRTUAL STOCK MARKET (second semester)
- DEMONSTRATIONS (Fridays)
Course Organization

• COACHING:
  • Each activity will be coached/mentored by the corresponding discipline
  • Meetings with instructors from EE, CS, IE, MAN and COMD
  • Students work in product development meet regularly at EE102 on Fridays
  • Students work in product development 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 inception!
- Learn diverse aspects of turning your tech idea to a marketable product
- Multidisciplinary/interdisciplinary collaboration
- Project and team (especially multidisciplinary) 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, developing a tech-based idea

• Teams who are accepted to take this course and register to BİGG Marka will be directly eligible to take first phase training of BİGG program

• Other funding mechanisms are available
How to proceed?

- Attend GE402 Awards Ceremony/Project Fair tomorrow (May 13, 2022) between 17:00 – 18:15 in Mithat Çoruh Auditorium and its foyer
- Form your team during summer
- Develop tech-based start – up ideas on given topics
Course Webpage

GE401-402: Innovative Design and Entrepreneurship I-II

Announcements

12.05.2022 -- GE401-402 Innovative Design and Entrepreneurship I and II course presentation will be held on Thursday, May 12, 2022 at 12:40 in the EE-01 Auditorium.

13.05.2022 -- Virtual Stock Market Awards Ceremony and Project Demonstrations will be held on Friday, May 13, 2022 at 17:00 in the Mithat Coruh Auditorium and its foyer.

This page was last updated: Tuesday 07:55, May 10, 2022
Where To Look For Ideas

• Internet (Just for inspiration)

• GE 401 – 402 web site: http://ge402.bilkent.edu.tr/


• FP7 and H2020
  http://ec.europa.eu/programmes/horizon2020/

• Eurostars – Eureka
  https://www.eurostars-eureka.eu

• NSF SBIR
  http://www.nsf.gov/eng/iip/sbir/
Thank You
## Plan of First 7 days

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
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<tbody>
<tr>
<td>22.09.2021 Wednesday</td>
<td>Course Presentation (Mithat Çoruh Auditorium)</td>
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<tr>
<td>(12:30 - 13:30)</td>
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<tr>
<td>22.09.2021 Wednesday</td>
<td>Team formation meeting (All students should attend, regardless of</td>
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<td>(18:00 - 19:00)</td>
<td>they’ve already formed a team or not EE-05)</td>
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<td>24.09.2021 Friday</td>
<td>Team lists are submitted (by e-mail to <a href="mailto:kutay@ee.bilkent.edu.tr">kutay@ee.bilkent.edu.tr</a>)</td>
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<td>(22:00)</td>
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<tr>
<td>27.09.2021 Monday</td>
<td>Brief project idea proposals with value propositions are submitted</td>
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<td>(14:00)</td>
<td>(by e-mail to <a href="mailto:kutay@ee.bilkent.edu.tr">kutay@ee.bilkent.edu.tr</a>).</td>
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<tr>
<td>27.09.2021 Monday (22:00)</td>
<td>Decisions sent to teams by e-mail</td>
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<tr>
<td>28.09.2020 Tuesday</td>
<td>The last day of add/drop. <strong>Members of successful teams register to this course</strong>&lt;br&gt;<strong>Members of unsuccessful teams who have registered drop the course</strong></td>
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<td>29.09.2021 Wednesday (10:30 – 11:20)</td>
<td><strong>Course Organization Presentation</strong>&lt;br&gt;EE – 01</td>
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Team List

• Each team should submit names, departments and contact information of team members

• Until 22:00, September 24, 2021 to me (kutay@ee.bilkent.edu.tr) by e-mail

• Include all team members as CC in the e-mail
Project Idea Proposal Form

- Each team can submit up to 3 project ideas.
- Submit your project ideas until 14:00, September 27, 2021 to me (kutay@ee.bilkent.edu.tr) by e-mail.
- Include all team members as CC in the e-mail and send all your proposals in one e-mail.
- You can download project idea proposal template from the webpage of the course: http://ge402.bilkent.edu.tr/
Project Idea Proposal Form

PROJECT IDEA PROPOSAL
(Team number 1)

Date:
Team and team composition:

<table>
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<tr>
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<th>Name</th>
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