

GE 401 – 402 INNOVATIVE DESIGN AND ENTREPRENEURSHIP I-II

2025 – 2026 Course Presentation

M. Alper KUTAY

September 15, 2025, Monday

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-semester long 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
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GE401 and GE402 can be taken as :

- **In Computer Engineering;** Senior Project Elective.
Alternative: CS491 – CS492 sequence,
- **In Electrical Engineering;** Senior Project Elective.
Alternatives: EE491 and EEE495 or EEE493 –
EEE494 sequence,
- **In Industrial Engineering;** Senior Project Elective.
Alternative: IE477 – IE478 sequence,

GE401 and GE402 can be taken as :

- **In Communication and Design;** Restricted/Unrestricted Elective courses,
- **In Economics;** Restricted/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;**
 - IE272 – Manufacturing Processes and Operations Analysis
 - IE375 – Production Planning

GE 401 – 402 Prerequisites

- **COMD Students:**
 - COMD282 - Media and Design Studio II
- **ECON Students:**
 - ECON301 – Econometrics I
- **GRA Students:**
 - GRA301 – Graphic Design III
- **MAN Students;**
 - MAN321 – Corporate Finance

Instructors (2025 – 2026):

- COMD: Jülide AKŞİYOTE GÖRÜR aksiyote@bilkent.edu.tr
- CS: TBD
- EE: M. Alper KUTAY kutay@ee.bilkent.edu.tr
- IE: Yiğit KARPAT ykarpat@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 entrepreneurial skills;
- 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 the 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 team**
- **Maximum of 6 Students, Minimum of 5 students**
- **Students from at least 3 different departments in the team**
- At least three (3) students from CS or EE departments
- Total of maximum two (2) students from MAN and ECON
- Total of maximum one (1) 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: September 15, 2025, @18:00, at EE-05**

Project Idea

- **Teams propose technology based/innovative ideas. YOU DEVELOP IDEAS!**
- **Project: identifying and validating the need/problem of a 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

- **Teams 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

- **Teams propose a project idea**
- Focus your ideation efforts in one of the following domains:
 - 1. Education**
 - 2. Environment and climate change (including natural disasters)**
 - 3. Agriculture / Farming / Gardening**
 - 4. Energy**
- Consider target customer (customer segment) who are easy to reach!

Project

- **Teams propose a project idea**
- You will mature/pivot your idea through the entrepreneurial process and finalize your idea and requirements
- Work on different functions of a running startup company while realizing the project
- **Complete, demonstrate and validate the product with your customer segment at the end of the year (This is a must!)**

Course Structure/Activities

- Project Idea Proposition
 - Target user/customer
 - Problem/need of the target user/customer
 - Your solution, proposition
 - Comparison with competitors with your key differentiation
- Revision/Validation of your idea (Entrepreneurial Process)
 - Hypothesis testing
 - Customer interviews
 - 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, Business plan, Quality/Config. 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: Wednesdays (10:30 – 12:20), Fridays (15:30 – 17:20)
 - SEMINARS (Wednesdays/Fridays)
 - WORKSHOPS (Wednesdays/Fridays)
 - VIRTUAL STOCK MARKET (second semester)
 - PRODUCT DEMONSTRATIONS (Fridays)
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Course Organization

- COACHING:
 - Each activity will be coached/mentored by the corresponding discipline
 - Meetings with instructors from EE, CS, IE, MAN and CMD
 - Team members responsible from Product Development will meet regularly on Fridays at 15:30 starting from 9th week in the Fall semester

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
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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 BiGG Marka will be directly eligible to take first phase training of BiGG program**
- **Other funding mechanisms are available**

How to proceed?

- **Form your team**
- Develop tech-based start – up ideas
- Fill in proposal form(s) for your idea(s)
- You will present your ideas and we will discuss them next week.

Plan of first 2 weeks

15.09.2025 Monday (12:30 - 13:20)	Course Introduction Presentation (Mithat Çoruh Auditorium)
15.09.2025 Monday (18:00 - 19:00)	Team formation meeting (All students should attend, regardless of they've already formed a team or not EE-05)
17.09.2025 Wednesday (13:00)	No lecture Team lists are submitted (by e-mail to kutay@ee.bilkent.edu.tr)
17.09.2025 Wednesday (23:00)	Feedback sent to teams by e-mail

Plan of first 2 weeks

18.09.2025 Thursday (15:00)	Team updates and then Teams approved by e-mail
19.09.2025 Friday	The last day of add/drop. Members of accepted teams register to this course Students who don't have a team drop the course
24.09.2025 Wednesday (10:30 – 11:20)	First Lecture – Course Info
26.09.2025 Friday (15:30 – 16:30)	Idea Proposal Presentations by teams EE – 01

Team List

- Each team should submit names, departments and contact information of team members
- **Until 13:00, September 17, 2025 to me (kutay@ee.bilkent.edu.tr) by e-mail**
- Include all team members as CC in the e-mail



GE401-402: Innovative Design and Entrepreneurship I-II

Project Idea Proposal Form

- Each team can submit up to 3 project ideas
- **Submit your project ideas until September 26, 2025**
- 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/>
- You will present your ideas to the class on September 25, 2025 in EE-01

Project Idea Proposal Form

PROJECT IDEA PROPOSAL (Team number¹)

Date:

Team and team composition:

Student ID	Name	Dept. Code	e-mail

*You can download project proposal template from the
webpage of the course: <http://ge402.bilkent.edu.tr/>*

Where To Look For Ideas

- Internet (Just for inspiration)
- GE 401 – 402 web site: <http://ge402.bilkent.edu.tr/>
- TÜBİTAK: <http://www.tubitak.gov.tr/tr/destekler/sanayi/ulusal-destek-programlari/icerik-1512-teknogirisim-sermayesi-destegi-programi-bigg>
- 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*

