

# GE 401 – 402 INNOVATIVE DESIGN AND ENTREPRENEURSHIP I-II

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2017 – 2018 Course Presentation

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September 18, 2017



**Bilkent University**

# GE 401 Innovative Design and Entrepreneurship I – Course Description

Sequence of two courses GE 401: Fall, GE 402: Spring  
Fundamentals of design - 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. 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 Innovative Design and Entrepreneurship I – II, Course Objectives

- Capstone Design Course for CS, EE, IE departments
  - Identify and formulate a problem by specifying requirements and constraints
  - Design a system/product to meet these specifications/requirements within constraints
  - Implement the design on a hardware and test it against requirements/specifications by performing appropriate observations and measurements



# **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.
- Understanding of processes of bringing new knowledge or new technology to the market.



# GE 401 – 402 Participating Departments

- Department of Communication and Design
- Computer Engineering
- Economics
- Electrical Engineering
- Graphic Design
- Industrial Engineering
- Management



GE401 and GE402 can be taken in the place of :

- **In Electrical Engineering;** EE491 and EEE495 sequence or EEE493 – EEE494 sequence,
- **In Computer Engineering;** CS491 – CS492 sequence,
- **In Industrial Engineering;** IE477 – IE478 sequence,
- **In Management;** General Elective courses,
- **In Graphic Design;** Restricted Elective courses,
- **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



## Lecturers:

- COMD: Julide AKSİYOTE [aksiyote@bilkent.edu.tr](mailto:aksiyote@bilkent.edu.tr)
- CS: H. Altay GÜVENİR [guvenir@cs.bilkent.edu.tr](mailto:guvenir@cs.bilkent.edu.tr)
- IE: Yiğit KARPAT [ykarpat@bilkent.edu.tr](mailto:ykarpat@bilkent.edu.tr)
- MAN: Tolga BAYCAN [baycan@bilkent.edu.tr](mailto:baycan@bilkent.edu.tr)
- EE: M. Alper KUTAY [kutay@ee.bilkent.edu.tr](mailto:kutay@ee.bilkent.edu.tr)

Course web page: <http://ge402.bilkent.edu.tr>



# Course Structure

- THE PROJECT
  - Development of the product
  - Quality
  - Configuration Management
  - Production
- THE COMPANY
  - Identity, communications
  - Organization
  - Business Plan



# Course Structure

- SEMINARS
- WORKSHOPS
- STOCK MARKET
- COACHING:
  - Each Discipline coached by the same discipline
  - Weekly meetings with lecturers for EE, CS, IE
  - EE and CS students meet regularly at EE102 on Fridays at 15.40
  - EE and CS students work on their projects at EE102 during free hours
  - Graded in the discipline for about 50%



# Team Structure

- Maximum of 6 Students
- Minimum of 4 students
- Maximum of 2 Students from a Single Department
- Total of 2 students from MAN and ECON
- Total of one student from GRA and COMD
- Only One Student From Industrial Engineering Department if there is MAN student in the team
- Maximum 8 teams
- Diversity is desired to promote multidisciplinary structure



# Team (Company) Organization (suggested)

- CEO (Chief Executive Officer)
- Finance
- Engineering
- Production
- Quality
- Marketing

# Team Organization (suggested)

- **Technical Design:** Electrical, Computer and Industrial eng.
- **Business plan:** Management, Economy and Industrial Eng.
- **Project management:** Industrial Eng.
- **Quality:** Industrial Eng.
- **Communications, and web page design:** Graphic design, Comm. And Design, Computer and Industrial Eng.
- **Marketing:** Management, Economy, Industrial Eng.



# The Project

- **Students propose a project**
- Lecturers act as advisors to the students
- Sell the idea to course lecturers and get venture capital.

Value proposition is very important:

- Who will use?
- For what? Problem/need
- Why: your value proposition





# The Project

- **Students propose a project**
- Work on different functions of running a company while realizing the project
- Complete and demonstrate the product at the end of the year (This is a must)



# The 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.



# The Project

- Students are encouraged to develop ideas and projects that are not commonplace and that is expected to produce wealth if realized either in Turkey or in the World.
- Projects must contain enough technical content, which will fulfill the senior project requirements of EE and CS departments.
- Projects must be conducted in such a manner that will fulfill the senior project requirements of IE department.
- Projects must be conducted in such a manner that is acceptable to ECON, MAN, GRA and COMD departments for their students to participate.



# Seminars

- Classroom is EE-01, 2 lecture hours.
- About 15-17 seminars per year on subjects related to start-up company running
- Seminars will be technical and non-technical. Product design, development, production and marketing involve both technical and non-technical aspects.
- All team member should attend to these seminars. They will give you a very important perspective
- Distinguished lecturers from both the business and academia



# Workshops

- Workshops about current subjects and/or about the projects of teams.
- The second hour can be used for workshops, business plan preparation, etc. at some instances.

# Team Meetings

- Team meetings are very important to complete tasks and manage the team efficiently
- There will be mandatory team meetings which I will also attend as an observer.
- The second hour on Wednesdays will sometimes be used for these mandatory team meetings.



# Lab Session for EE and CS Students

- EE and CS students get together at EE-102, weekly during 15.40 – 17.30 on Friday
- They work on their projects and designs with the help of course lecturers and assistants.
- A table and a locker for their equipment will be provided and assigned to each team EE and CS students at EE-102.
- EE and CS students work at EE-102 at any time.



# Stock Market

- The stocks of the companies established by the students will be traded at the virtual stock market during the second semester
- Some of the lecturers of the Bilkent University and professionals outside will act as the traders of the stock market
- The success of your company at the stock market will be part of grading





	Approx. Date	27-Sep-17	4-Oct-17	11-Oct-17	18-Oct-17	25-Oct-17	1-Nov-17	8-Nov-17	15-Nov-17	22-Nov-17	29-Nov-17	6-Dec-17	13-Dec-17	20-Dec-17	27-Dec-17	Grading Type	Points
1	Literature Survey and Competition Report															Team	30
4	Product Requirements															Team	36
5	Product Specifications															Individual	42
6	Preliminary Presentation															Team	30
7	Preliminary Design															Individual	30
8	Subassembly Specifications (HW)															Individual	12
9	Software Module and Task Specifications (SW)															Individual	12
10	Test Plan															Individual	24
11	QFD Report															Individual	24
12	Organizational Plan															Individual	24
13	Marketing Plan															Individual	24



# Plan of First Week

<b>18.09.2017 Monday</b> <b>(12:30 - 13:30)</b>	Course Presentation at EE – 01
<b>18.09.2017 Monday</b> <b>(17:30 - 18:30)</b>	Team forming Meeting <b>at EE – 05</b> (All students should come and indicate their teams)
<b>20.09.2017 Wednesday</b> <b>(9:00 AM)</b>	Team lists and project proposals with value propositions are submitted
<b>20.09.2017 Wednesday</b> <b>(11:30 - 13:30)</b>	Project Proposal Review meeting. Teams present their proposals and value propositions to Lecturers.

# Plan of First Week (tentative)

<b>21.09.2017 Thursday (12:00)</b>	<b>Decisions sent to teams by e-mail</b>
<b>22.09.2017 Friday</b>	<b>The last day of add/drop. Members of unsuccessful teams drop this course and register to other courses</b>
<b>22.09.2017 Friday (15:40 - 17:30)</b>	<b>No Lab</b>

# Project Proposal Form

## NAME OF THE PRODUCT (Team number)

**Date:**

**Team and team composition:**

Student ID	Name	Dept	e-mail	Cell phone no	signature

**Short explanation of the project (at most one page):**

Explain here what the principle function of the project is and who will use the project (Target customer). Also explain the basic method of realizing the project.

**Required resources and approximate cost:**

**Equipment:**

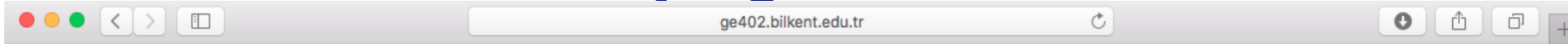
**Materials:**

*You can download project proposal form from webpage.*

**Basic roles of the students in the teams:**

(Such as HW designer (EE), SW designer (CS), Project manager (IE), Financial manager(MAN, ECON), graphic design and communications (COMD, GRA))

# Course Webpage



[ Home ] [ Bilkent University ]

## Bilkent University

2016-2017 Fall

## GE401-402: Innovative Product Design & Development I-II

[Home](#)

[Course Info](#)

[2015-2016 Companies](#)

[Previous Years' Companies](#)

[Stock Market](#)

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### Announcements

--->>> Welcome <<<---

22.09.2016 -- Welcome New Students! You can find some updated information about the course from [here](#).

22.09.2016 -- Template for the project proposals can be downloaded from [here](#).

### Contact

For questions and comments:

[kutay@ee.bilkent.edu.tr](mailto:kutay@ee.bilkent.edu.tr)

This page was last updated: Wednesday 15:08, September 21, 2016

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# Where To Look For Projects

- Internet (Just for inspiration)
- 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/>



# Innovative Products and Entrepreneurship

- Innovation and entrepreneurship: two terms commonly used together and cited as the key for healthy economic growth
- New technology is very important for military and economic power
- Economic power: use new technology to produce marketable products: innovation and entrepreneurship
- Example: Facebook, Whatsapp, Apple, Microsoft





# Innovative Products and Entrepreneurship

- Very important item in R&D policy of both developed and developing countries
- Start-ups and small companies : more innovative
- Many national and international funds available: TUBITAK 1512, Kalkınma Ajansları, H2020 etc.



# Innovative Product Design And Development, GE401-GE402

- This course gives you the chance to work in a start-up company environment
- Innovate/grow/change continuously
- 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 running experience
- Broadened student vision of the industrial and working environment
- Early work experience-company orientation starting at senior level
- Up-to-date information from distinguished lecturers on practical matters of running a company
- An important reference on C.V.
- Successful completion of the course will definitely increase your chance of finding funds



# Companies

- 2001-2002 : 4 companies
- 2002-2003 : 2 companies
- 2003-2004 : 7 companies
- 2004-2005 : 10 companies
- 2005-2006 : 12 companies
- 2006-2007: 8 companies
- 2007-2008: 8 companies
- 2008-2009: 11 companies



# Companies

- 2009-2010: 14 companies
- 2010-2011: 9 companies
- 2011-2012: 9 companies
- 2012-2013: 8 companies
- 2013-2014: 9 Companies
- 2014-2015: 8 Companies
- 2015-2016: 7 Companies
- 2016-2017: 9 Companies

