GE 401 – 402 INNOVATIVE DESIGN AND ENTREPRENEURSHIP I-II

2017 – 2018 Course Presentation

Dr. M. Alper KUTAY

September 18, 2017
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
- CS: H. Altay GÜVENİR  guvenir@cs.bilkent.edu.tr
- IE: Yiğit KARPAT  ykarpat@bilkent.edu.tr
- MAN: Tolga BAYCAN  baycan@bilkent.edu.tr
- EE: M. Alper KUTAY  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
<table>
<thead>
<tr>
<th>Approx. Date</th>
<th>Literature Survey and Competition Report</th>
<th>Team</th>
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<tbody>
<tr>
<td></td>
<td>Product Requirements</td>
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<td>Product Specifications</td>
<td>Individual</td>
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<td>Preliminary Presentation</td>
<td>Team</td>
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<td>Preliminary Design</td>
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<td>Subassembly Specifications (HW)</td>
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<td>Software Module and Task Specifications (SW)</td>
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<td>Test Plan</td>
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<td>QFD Report</td>
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<td>Organizational Plan</td>
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<td>14</td>
<td>Executive Summary</td>
<td>Individual</td>
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<td>15</td>
<td>Financial Plan</td>
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<td>Quality Plan</td>
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<td>17</td>
<td>Configuration Management Plan</td>
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<td>18</td>
<td>Company Name</td>
<td>Team</td>
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<td>19</td>
<td>Designers Brief - Logotype Sketches</td>
<td>Individual</td>
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<td>Logotype Single Sheet</td>
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<td>Standard Communications</td>
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<td>22</td>
<td>Web Design Production Plan and Schedule</td>
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<td>24</td>
<td>Final Report</td>
<td>Team</td>
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<td>25</td>
<td>Final Presentation</td>
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<td>Weekly Lab Reports</td>
<td>Individual</td>
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<td>Peer Grading</td>
<td>Individual</td>
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# Plan of First Week

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
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<tbody>
<tr>
<td>18.09.2017 Mon.</td>
<td>Course Presentation at EE – 01</td>
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<tr>
<td>(12:30 - 13:30)</td>
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<tr>
<td>18.09.2017 Mon.</td>
<td>Team forming Meeting <strong>at EE – 05</strong> (All students should come and indicate their teams)</td>
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<td>(17:30 - 18:30)</td>
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<tr>
<td>20.09.2017 Wed.</td>
<td>Team lists and project proposals with value propositions are submitted</td>
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<td>(9:00 AM)</td>
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<td>(11:30 - 13:30)</td>
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# Plan of First Week (tentative)

<table>
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<tr>
<th>Date</th>
<th>Activity</th>
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<tbody>
<tr>
<td>21.09.2017 Thursday (12:00)</td>
<td>Decisions sent to teams by e-mail</td>
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<tr>
<td>22.09.2017 Friday</td>
<td>The last day of add/drop. <strong>Members of unsuccessful teams drop this course and register to other courses</strong></td>
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<tr>
<td>22.09.2017 Friday (15:40 - 17:30)</td>
<td>No Lab</td>
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# Project Proposal Form

**NAME OF THE PRODUCT**
(Team number)

<table>
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<th>Date:</th>
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**Team and team composition:**

<table>
<thead>
<tr>
<th>Student ID</th>
<th>Name</th>
<th>Dept.</th>
<th>e-mail</th>
<th>Cell phone</th>
<th>signature</th>
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*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

Bilkent University
2015-2016 Fall

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

Announcements

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:
iktay@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