GE 401 – 402 INNOVATIVE DESIGN AND ENTREPRENEURSHIP I-II

2019 – 2020 Course Presentation

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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. Aternatives: 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

GE 401 - 402 Innovative Design and Entrepreneurship I - II

Approx. Date	26-Sep-18	3-Oct-18	10-Oct-18	17-Oct-18	24-Oct-18	31-Oct-18	7-Nov-18	14-Nov-18	21-Nov-18	28-Nov-18	5-Dec-18	12-Dec-18	19-Dec-18	26-Dec-18	2-Jan-19	Grading Type	Points
In class pitch to classmates		▓														Team	12
Short case study report		▓														Individual	6
In-Class Quizzes			▓	▓												Individual	12
Initial business model hypotheses (with respect to value proposition and customer segments)					▓											Team	30
Three weekly interview debriefs and entrepreneurial learning notes					▓	▓	▓									Team	36
Revised idea statement and updated business model hypotheses								▓								Team	30
Preliminary Presentation									▓							Team	48
Product Requirements							▓		▓							Team	36
Product Specifications										▓						Individual	36
Preliminary Design													▓			Individual	18
Subassembly Specifications (HW)													▓			Individual	18

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Software Module and Task Specifications (SW)													■			Individual	18
QFD Report											■					Individual	24
Organizational Plan														■		Individual	18
Marketing Plan														■		Individual	30
Quality Plan													■			Individual	24
Company Name						■										Team	6
Designers Brief - Logotype Sketches									■							Individual	12
Logotype Single Sheet										■						Individual	12
Standard Communications												■				Individual	6
Web Design Production plan and schedule														■		Individual	6
Final Report															■	Team	42
Final Presentation/Demo																Team	60
Weekly Lab Reports								■	■	■	■	■				Individual	30
Peer Grading															■	Individual	30

GE 401 - 402 Innovative Design and Entrepreneurship I - II

GE402 ASSIGNMENT SCHEDULE, GRADING TYPE & POINTS
(Date: March 14, 2019)

WEEK NUMBER / Approx. Date	2 13-Feb-19	3 20-Feb-19	4 27-Feb-19	5 6-Mar-19	6 13-Mar-19	7 20-Mar-19	8 27-Mar-19	9 3-Apr-19	10 10-Apr-19	11 17-Apr-19	12 24-Apr-19	13 1-May-19	14 8-May-19	15 15-May-19	16 22-May-19	16+ 29-May-19	Grading Type	Points	Percent
Progress Report	▮																Team	24	4
Corporate Identity Revision		▮															Individual	6	1
Traders Conference Materials								▮									Individual	6	1
Test Interview									▮								Individual	18	3
Company Web page														▮			Individual	24	4
Traders Conference Pres. + Demo								▮									Team	48	8
Test Report										▮							Individual	12	2
Final Design Document											▮						Individual	30	5
Financial Plan												▮					Individual	30	5
Acceptance Test / Product Demo														▮			Individual	42	7
Quality Certification														▮			Individual	12	2
Configuration Management														▮			Individual	18	3
Production Plan														▮			Individual	24	4
Final Presentation + Product Demo																	Team	60	10
Final Report															▮		Team	42	7
Revised Business Plan																	Individual	24	4
Weekly Lab Reports	1	2		3	4		5			6	7	8	9				Individual	42	7
Stock Market Grade																	Team	54	9
Investor Evaluations										▮							Team	54	9
Peer Grading															▮		Individual	30	5

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)

- 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/