MIDDLE EAST TECHNICAL UNIVERSITY

DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING

EE 493-494

SENIOR DESIGN COURSE SEQUENCE

INTRODUCING

October 25th, 2019 - Wednesday

Design Studio Coordinators

Outline

- Objectives of the course
- Course platform
- Project work
- Course timeline
- Watch out!
- This year's projects

Elements of Engineering Training

- Analytical skills
- System approach
- Technical perfection

- Research ability
- Lifelong learning habit and skills
- Effective communication skills

- Creative thinking
- Project management skills
- Teamwork ability

Learning Methods

"Passive learning" theoretical lectures

"Active learning" laboratory work, homework

Senior Design Course Sequence

Learn   by   Doing

Objective of the course

- To provide **engineering design experience** for our students through
  - intra and inter-team **collaboration**,
  - physical **project work**, and
  - process **documentation**,

- To provide the ability to **understand and redefine** a given engineering problem and the ability to develop a **conceptual design**,

- To provide students the ability to **communicate** effectively.

Learning outcomes of the course

- Understand fundamentals of design process such as problem redefinition, idea generation, idea evaluation,

- Apply creative thinking for the design of a product,

- Develop the ability to communicate and discuss design ideas,

- The ability to share and fulfill responsibilities within a team,

- Gain the ability to analyze a design problem,

Course Platform

Seminars

Studio1	Studio2	…….	……..	……..	……..	…….	Studio9
DS 1.1	DS 2.1	…..	…..	…..	…..	…..	…..
DS 1.2	…..	…..	…..	…..	…..	…..	…..
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Studio Coordinators

-                             Ö. Yüksel
- Sect.1   E. Özkan
- Sect.2   A. Erkmen
- Sect.3   A. Tuncay Koç
- Sect.4   E. Vural
- Sect.5   L. Alatan
- Sect.6   M. Ankaralı
- Sect.7   T. Çiloğlu
- Sect.8   A. Ö. Yılmaz
- Sect.9   S. Korkan

Design Studio (weekly meetings)

Attendance is required for all !...

- Large Group (25-30 people) – 2nd week Thursday
  - General discussion on Methodology

- Small Group (5 people) – 30 ~ 60 minutes.
  - Company based

Each meeting is an exam

Design Studio (weekly meetings)

- Role of the students
  - Inform about the progress
    - Team
    - Individual
  - Weekly reports

- Questions
  - Course road-map
  - Technical
  - Non-technical

- Role of the coordinator
  - Monitoring your progress
  - **No solution** will be **proposed/imposed** by the coordinator.

Seminars

Attendance is required for all !...

- Design tools / How to ?
  - Project management
  - Presentation
  - Statistical tools
  - Safety
  - • • •

- Invited speakers
  - Transfer of experience
  - Success stories
  - Opportunities after graduation
  - • • •

Each seminar will have an in-class QUIZ

Student Presentations

- Written reports
  - Business statement
  - Proposal
  - Conceptual design
  - Weekly progress reports
  - Critical design review report
  - Final report
- **Log-book** (throughout the project, individual, lab-diary!)
- Oral presentation
- Critical module demo
- Implementation demo
- Final demo
- Project fair

Note that: Team members will be graded individually for each deliverable (i.e. reports, presentations, demos etc.) throughout the course.

Projects, "Companies" and Partners

One of the FOUR **projects**:

- Open ended
- Encouraging creativity
- Realistic constraints
- Not necessarily have comparable difficulty

- Companies
  - Consist of FIVE partners
  - Do not share company know-how with others

- Partnership
  - Share all responsibilities within the "Company" and the expenses
  - Responsible for the progress of the project individually and as a team

How to start a "Company"?

- Recommendations for composition of "Partners"
  - have similar expectations
  - be reliable
  - have complementary skills / talents
    - All partners should be confident for the entire design!

- A company requires professional partnership, it is **not** a social club!

- All "partners" must register to the same section (studio)

Immediate tasks you should take care of:

- Assemble your team, fill in the **Team Application Form**

- Slide the form under the office (Rm: C-209) door of **Dr. Lale Alatan** before **September 27th**, **Friday 16:40**

- Indicate your section preference via **Section Preference form** available on the **web page** before **September 27th**,**Friday 16:40**

- Results will be announced on **October 1st, Tuesday**

- Attend your first lecture according to your section **October 2nd, Wednesday 15:40**

- On **October 3rd, Thursday 16:40** you MUST join the **meeting with your Design Studio Coordinator**

Project Work

- A year long process!

- Conceptual design to production and demo

- Project management

- Written documentation & oral presentation

- You will be graded based on your performance during the entire sequence of tasks, not only based on the final product performance

Budget

- Partners should share the project expenses.

- Final product cost limit: **200 USD**

  - Sponsorship

- Laptops or PC's **are not** included in the project cost.

Business Statement Report

- Company info
  - Mission / Vision
  - Human resources
    - Composition
    - CV's
    - Your picture

- 4 projects
  - redescribe
  - interpret
  - Put under a microscope

- Tentative work plan
  - scheduling
  - task allocation

Design studio laboratory

- Design studio laboratory (DSL) (Block – E, basement floor) is equipped with basic measurement devices.

- Test room with specific equipment (inside DSL) – by booking in advance.

- Sustainability
- Clean working environment
- Safety
- Emergency
- Sharing common space
- Student property

Who can / must take this course ?

- Who are expected to graduate 2020-21 Fall semester or before,

  and

- those who have passed **EE 313** and at least **two of** EE302, EE314, EE361

- All EEE seniors who wish to graduate must take this course sequence.

Important Milestones:

Business Statement   :   October 11th

Proposal   :   November 1st

Module demo   :   December 9th - 13rd

Conceptual design report   :   December 20th

Oral presentation   :   Dec 23rd - Dec 27th

START WORKING & ENJOY!

Don't rush ≠ Sit & wait

Don't rush = Think!

> **Create ideas**
> **Create more ideas**
> **Compare & contrast**

Test as necessary

Make sure you are on the right track!

Thank you for your attention.