MIDDLE EAST TECHNICAL UNIVERSITY

DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING

EE 493-494

SENIOR DESIGN COURSE SEQUENCE

INTRODUCING

October 14th, 2020 - 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.
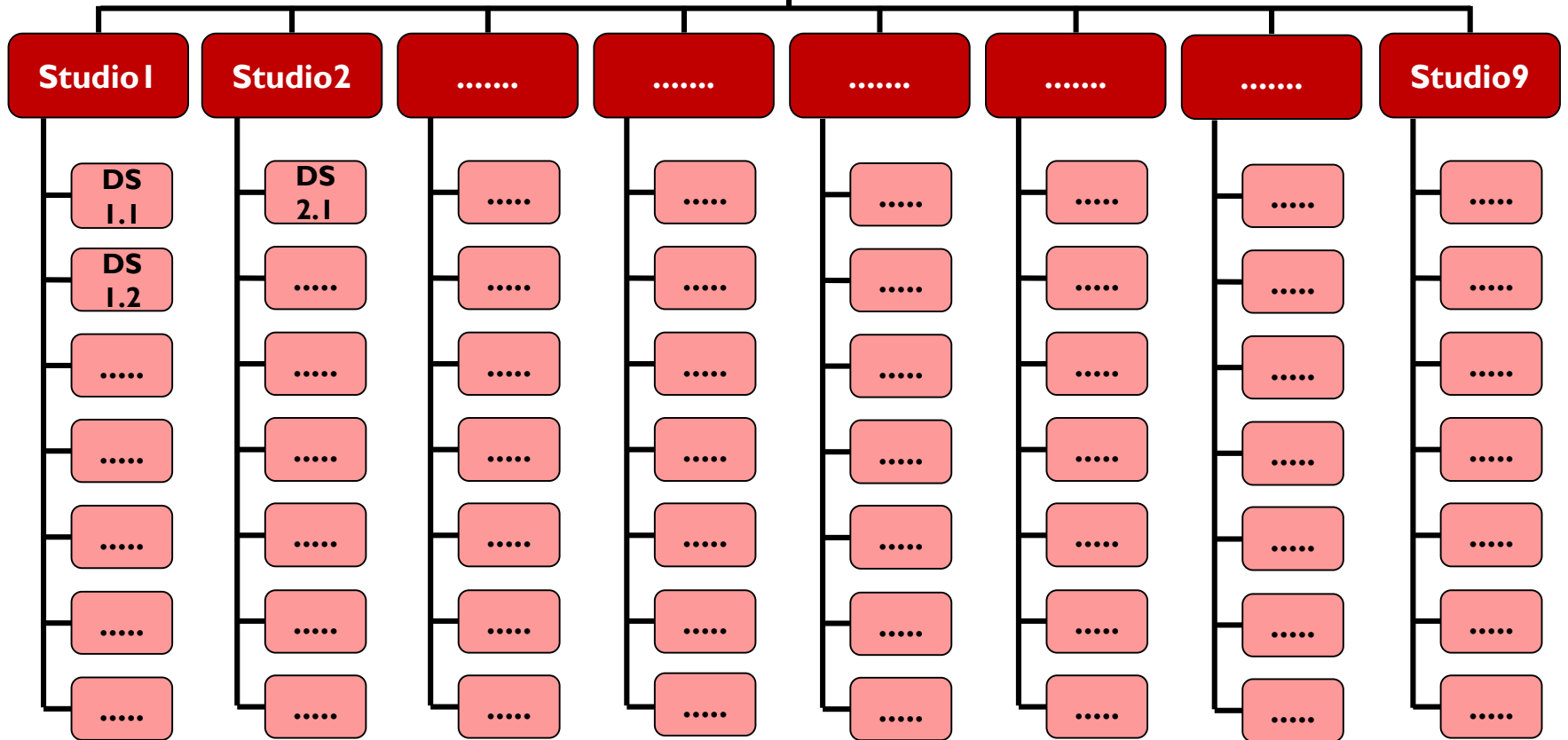
Learning outcomes of the course

- 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,

Studio Coordinators

-   Ö. Yüksel
- Sect.1   E. Özkan
- Sect.2   E. Vural
- Sect.3   A. Tuncay Koç
- Sect.4   T. Çiloğlu
- Sect.5   A. Durgun
- Sect.6   A. Erkmen
- Sect.7   Y. Serinağaoğlu
- Sect.8   İ. Ulusoy
- Sect.9   F. Kamışlı

Design Studio (weekly meetings)

Attendance is required for all !...

- Large Group (25-30 people) – 2nd week Thursday 16:40
  - 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 / ATTENDANCE

Student Presentations

- Written reports
  - Business statement
  - Proposal
  - Conceptual design (with summary)
  - 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 FIVE **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)
- Teams are strongly urged to plan possible interactions among team members in accordance with precautions against COVID-19. Relevant hardware, subsystems, modules, parts may be shipped among the team members.
- Please consider the required shipments, interactions, and other possible logistics.

Immediate tasks you should take care of:

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

- Submit the form @ ODTUClass before **October 16th**, **Friday 16:40**

- Indicate your section preference via **Section Preference form** available on the [**web page**](#) before **October 16th**, **Friday 16:40**

- Results will be announced on **October 20th, Tuesday**

- Attend your first seminar **October 21st, Wednesday 15:40**

- On **October 22nd, Thursday 16:40** you MUST join the **meeting with your Design Studio Coordinator**

Team Application

- You will submit **one form per team**.

- You will fill in **one online form per team**.

- Teams can select their projects anytime before the **Proposal Report** which is due **November 20th**.

- Your choice of instructors (design studio coordinators) and projects are **independent**. You can select any design studio coordinator and any project in **any combination**.

- Once your team's design studio coordinator is announced, you must register to your assigned course section during the **Add-Drop week**.

- You are strongly encouraged to form teams of **5 members**. If you cannot meet this requirement, we will complete your team to 5 by combining incomplete teams.

- Make sure to submit a form even if your team cannot meet the 5 members requirement. Note that, if you are an individual without a team, you still need to submit a team application form and fill in the online section preference form

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**

- 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

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

- Tentative work plan
  - scheduling
  - task allocation

Who can / must take this course ?

- Who are expected to graduate 2021-22 Fall semester or before,

  and

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

- with CGPA greater than 2.0.

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

Important Milestones:

Business Statement : October 30th

Proposal : November 20th

Module demo : December 28th - Jan1st

1-page summary of Concep. Design: December 30th

Conceptual design report : January 8th

Oral presentation : Jan 11th - Jan 15th

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.