



SYSTEM DESIGN

IE 477 - IE 478

Course Coordinators:

Dr. Savaş Dayanık

Dr. Nesim K. Erkip

Dr. Emre Uzun

TTO Coordinator:

Yeşim Gülseren

Assistants:

Ece Çiğdem

Berk Şahin

İsmail Burak Taş

Serkan Turhan



Characteristics

- Project-based and Problem Solving
- Synthesis – Capstone Project
 - Oral and Written Communication
 - Team work
- Two semesters, but you will receive a grade at the end of each semester



Learning Outcomes

(May 2019 presentation – S.Aktürk)

- Analyze system data to identify problems
- Know how to access information and do literature survey
- Formulate problems and propose solution methodologies
- Construct mathematical models of the system and validate based on actual data
- Effectively use teamwork (Peer Evaluation)
- Prepare reports and presentations to explain ideas
- Practice professional and ethical responsibility



Industrial Project

- To solve a real-life problem and implement proposed solutions
- Subject committee (academic advisor, industrial advisor, teaching assistant, course coordinators, interested faculty members)
- Company pays the transportation and some other expenses
- Written and oral presentations
- Requires a number of site visits
 - Leave two half-days for possible company visits



Industrial Project

A typical text book explanation

- The following steps may be taken:
 - Study/analyze the system to understand the problem
 - Formulate the problem and define scope of the project
 - Literature Review
 - Develop models
 - Implement the models using appropriate software or your own codes
 - Validate the model and test your results
 - Implement the proposed system/prepare manual
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Roles in Teamwork

- Natural Roles:
 - LEADER – Contact person is not necessarily the leader
 - PEACEMAKER, CONSENSUS BUILDER
 - All in the group should share the following roles:
 - CONTRIBUTOR
 - PROBLEM SOLVER
 - ASSIST
 - Natural roles (LEADER , PEACEMAKER) should occasionally be shared as well – last year as a student.
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Project Teams

- Different Skills
 - Think about roles
 - At least 2 members good in programming
 - Others?
 - Presentation skills
 - English/Turkish
 - Good to have a car owner :)
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Companies





Workshops/Seminars

Fall Semester

- Capstone Project - How to approach?
- Managing the Budget
- TÜBİTAK Funding
- Project Management
- Presentation Techniques
- Team Work and Communication

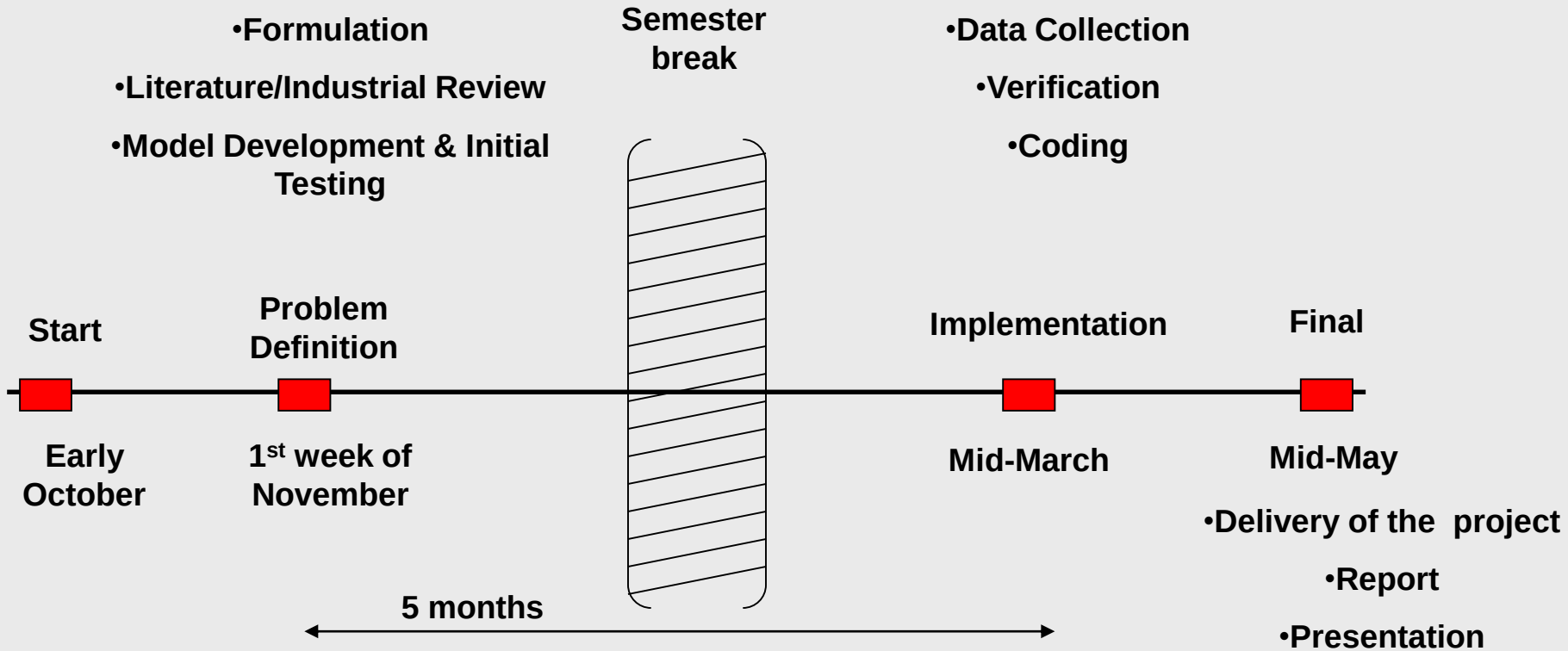


Effective Project Management

- ***Project Plan***
 - Tasks, packages, sub-packages, etc.
- ***Time plan***
 - Deadlines, due dates, deliverables
- ***Resource Allocation***
 - Team work
- ***Coordination***



The System





Requirements

- Kick-off Meeting Mid October
- Project Proposal Report Early to Mid November
- Project Proposal Presentation Mid to Late November
- Short Presentations to Course Coordinators, Dec 2 - 6
- End-of-Semester Report, Report Due December 31
- End-of-Semester Presentations to Course Coordinators Mid January
- Project Progress Report, Mid March
- Final Report, Mid May
- Final Presentations, Late May



Project Proposal (Early to Mid November)

- Complaints and symptoms from the company
- Required outcomes, expectations: **Deliverables**
- Project constraints and limitations



Definition and Scope of the Problem - CONSENSUS

!!Go beyond the initial description!!

Main project activities: Workpackages, Timetable



Presentation to Course Coordinators (Dec 2-6)

- A short version of the proposal presentation to course coordinators
- To enable coordination between projects



End of semester report and presentation

- Brief definition of the Problem
- Literature Review
 - Previous studies in the scientific literature
 - Similar Studies in the industry
- Proposed Methodolgy
- Model Development and Testing
- Timetable



Important

- Attendance to all of the workshops and seminars is obligatory from the beginning of the semester!
 - Come to the class on-time.
 - Check our web-site frequently.
courses.ie.bilkent.edu.tr/ie477
 - PUNCTUALITY IS VERY IMPORTANT
 - Submit all of your requirements **on time**.
 - Be ready for any meeting at least 10 minutes before the scheduled time.
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Important

- No excuse for any part time job you may have.
 - You have to perform all of your duties that are assigned to you in your group.
 - You have to attend all meetings with your advisors and coordinators!



Team Formation

- For information on team dynamics follow announcements on <https://courses.ie.bilkent.edu.tr/ie477>
 - For each team, fill out the “Team Information Form” via the link sent to you online **until 17:30 TODAY!**
 - Names, surnames, e-mail addresses, elective courses, summer trainings, strongest and weakest skills.
 - **ONE SUBMISSION PER GROUP.**
 - Each team should have a project contact person (Details will be announced later)
 - Students with no groups inform TA via ie477@ie.bilkent.edu.tr
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Project Teams

IE 477 - TEAM INFORMATION FORM

Please indicate your team's contact person (CP) with an asterisk (***)
Please list all team members in alphabetical order w.r.t.surnames

CP	Name	Surname	Student No	Cellular	e-mail	IE Electives				Internship I	Internship II	Project for Internship II

Please select two strongest and two weakest skills for your team from the list below

	Problem Solving	Research Skills	Computer Skills	Team Work	Oral & Written Commun.	Time Mngmt	Working Under Stress	Creativity
Strongest								
Weakest								



Voting Principles

- Projects already announced on the course web page.
- Each team is going to send their rankings of the projects and a single page cover letter until **September 30 Monday by 17:00**
- Fill the required form (to be provided on the course web page.)



Writing Principles

- Language: English (unless otherwise is stated);
Paper Size: A4;
Paper layout: Portrait;
Margins: All margins must be 2 cm;
Line spacing: 1.5 lines;
Page Numbers: All pages must include page numbers;
Font: Times New Roman;
Font type and size: Normal, 12 points;
 - Please state your **team number**, **project title**, **names of the team members** (always in alphabetical order of the surnames), **academic and industrial advisors** in all of the written documents that you submit.
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Assessment

- Project proposal presentation
- Project proposal report
- Short presentation to Coordinators
- End of semester presentation
- End of semester report
- Academic Advisor evaluation
- Industry Advisor evaluation
- Peer evaluation

An individual letter grade at the end of each semester



Grade

- If we observe that you have not accomplished the goals to be reached by the end of this semester, you may receive an F as a group!
 - You will have to repeat IE 477 in the spring semester.



Effect of Peer Evaluation

Grup AA	Student A	Student B	Student C	Student D	Student E	Student F	Student G	AVG.
Student A		5	5	5	5	5	5	5.00
Student B	5		5	5	5	5	5	5.00
Student C	5	5		5	5	5	5	5.00
Student D	5	5	5		5	5	5	5.00
Student E	5	5	5	5		5	5	5.00
Student F	5	5	5	5	5		5	5.00
Student G	5	5	5	5	5	5		5.00

STUDENT F: We are the leaders



Effect of Peer Evaluation

Grup BB	Student A	Student B	Student C	Student D	Student E	Student F	Student G	AVG.
Student A		1	5	2	5	5	3	3.50
Student B	1		1	4	1	1	3	1.83
Student C	5	2		2	5	5	3	3.67
Student D	1	5	1		3	2	5	2.83
Student E	1	3	3	3		5	3	3.00
Student F	2	3	3	4	5		3	3.33
Student G	1	5	1	4	1	1		2.17



When people consider taking any business position, there is always a risk to the job and the company. One of the most common risks is the possibility of losing the company's reputation and customer base. This is because the company's reputation is its most valuable asset, and it can be easily damaged by a single bad review or a negative headline. Therefore, it is important for businesses to take steps to protect their reputation and customer base. One way to do this is by being transparent and honest with customers. Another way is by providing excellent customer service. By doing these things, businesses can build a strong reputation and customer base that will help them succeed in the long run.



Effect of Peer Evaluation

S. Dayanık, N.K. Erkip, E. Uzun



Important Dates

- **September 25 Wednesday, until 17:30** - Reporting team members.
 - Submit the filled “Team Information Form”.
 - Students with no groups inform TA.
 - **September 30 Monday until 17:00** - Ranking industrial project preferences along with a cover letter. Group time schedule.
 - **October 2** – Announcement of the Project assignments.
 - **October 7 – October 25** – Kick-off Meetings likely to be at Company Premises
 - **28 days after your Kick-Off** – Project Proposals Due (inc. Saturday & Sunday)
 - **November 11 – December 29** – Proposal Meeting likely to be at Bilkent
 - **December 2 – 6** – Presentation to course coordinators
 - **December 31** – End-of-semester report submission to course coordinators
 - **January 16, 17** – Final presentations to course coordinators
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Yeşim Gülseren

Bilkent TTO

Üniversite-Sanayi İşbirliği Koordinatörü

Destek Verilen Çalışmalar

- İş Dünyası ile iletişim
- Projelere Hazırlık ve Bilgilendirme
- Proje Yönetimi, Koordinasyon
- Projelerin mali, idari ve yasal süreçleri
- İç İletişim ve Motivasyon
- Seyahat Organizasyonu
- Fuar, Kitap ve etkinlik Organizasyonu
- Kariyer Planlama
- Girişimcilik
- Sektör Tanıtım Etkinlikleri



Rektörlük Binası 3. Kat

No : 308

yesime@bilkent.edu.tr



Industrial Project

- INFORMS Undergraduate Operations Research Prize (2019, Maryland, USA)
- YA/EM Öğrenci Proje Yarışması (Haziran, 2020, Boğaziçi Üniversitesi)
- TÜBİTAK 2241-A Sanayi Odaklı Lisans Bitirme Tezi Destekleme Programı



Industrial Project

- We are planning to organize
 - 18th Industrial Engineering Project Fair and Competition on June 8th 2019
 - Industrial Projects 2020 Book



Projeler Kitabı





Endüstri Mühendisliği Bölümü

Proje Fuarı ve Yarışması

