

# OOAD Term Project Description

## Fall 2024

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### Important Notes:

1. You must perform the term project even if you have done the project in previous years.
2. You must perform the project in a team (**individual work will not be accepted**).
3. You must complete the project to pass the course. (**The project grade will constitute 60% of the final exam.**)
4. You will not implement the system, but it must be designed in sufficient detail that allows it to be coded by someone else.

### 1. Objectives

- You will practice object-oriented software engineering (OOSE) tools, techniques, and paradigms.
- You will develop your teamwork and communication skills.
- You will improve your report-writing skills.
- You will practice project management issues.
- You will analyze, design, and model a software system to solve a problem.

### 2. Project Topic

This semester, the main theme of the term project is "*My University*". You will model and design a **software application tailored to our university**. You have the option to either enhance an existing software system or develop a new system to address a problem that is not currently managed through a digital platform. Here are a few suggestions to get you started:

- registration management system
- health center management system
- sports center management system
- cafeteria management system
- ...

These are just examples to inspire you. Be creative and consider incorporating as many features as possible. Don't worry; you will not implement the system.

### 3. Project Activities and Deliverables

#### 3.1. Project Activities

**Activity 1 – Project teams:** You will work in groups of **4-6** students in the project. You will make your teams. The teams may contain students from both formal and evening education.

- Build your teams and follow the announcements to inform us about your project teams.
- In case you do not have any friends to make a group with, send a message to me or the TA, and we will assign you a group.

*Deliverable:* Project team members

**Activity 2 - Project topic:** You will determine the actual scope and features of your project with your teammates. After constructing your team, immediately start discussions with your team members to decide on the theme of your project. Think about the problems you have been facing in the university and determine a **focused** project topic **customized for our university**.

*Deliverable:* A 1-page project proposal document (including the name, purpose, main features, and motivation of your project)

**Activity 3 - Requirements elicitation (Chapter 4):** You will determine the functional requirements of your system: Write a set of scenarios and develop the functional (use case) model of your system. Specify **at least three critical use cases** (login, logout, register, quit, etc. are not critical use cases!) and build your model based on those use cases. (**Note:** You will determine the complete set of use cases and show them with a UML use case diagram. But it is sufficient to give the textual descriptions of only the critical use cases.)

*Deliverable:* You will fill in the specified parts of the Requirements Analysis Document (RAD-v1).

**Activity 4 – UI mock-up design:** You will build user interface mock-ups of your application and generate the second version of the RAD report by filling in Section 3.3.5 of the RAD report (RAD-v2). You should use mock-up tools for designing (see Section 4). Include a link to your working UI design in your report. Your user interface screens will not be functional but they must include necessary navigational paths.

*Deliverable:* Requirements Analysis Document (RAD-v2)

**Activity 5 - Analysis (Chapter 5):** You will construct an object model and a behaviour (dynamic) model from the use case model. As the deliverable of this step, you will complete the Requirements Analysis Document (RAD-v3) by adding the object model and dynamic model and updating previous sections if needed.

*Deliverable:* Final version of the Requirements Analysis Document (RAD-v3). This version will be graded.

**Activity 6 - System design (Chapters 6 and 7):** Determine the design goals, perform subsystem decomposition by selecting an architecture and a framework for realizing the system, and address issues such as data storage and access control.

*Deliverable:* System Design Document (SDD)

**Activity 7 - Object design (Chapters 8 and 9):** Determine design trade-offs and identify additional solution domain objects to fill the gap between the system design and the implementation. Apply software reuse techniques such as design patterns.

*Deliverable:* Object Design Document (ODD)

### 3.2. Tentative Project Calendar

The **tentative** calendar for the term project is given in the below table. The plan may slightly change during the semester and the exact deadlines will be announced later in the lectures and Teams.

Activity	Estimated deadline	Deliverable
1- Project teams	Week 2	E-mail (or Teams)
2- Project topic	Week 4	Project proposal document
3- Requirements elicitation	Week 6	Requirements Analysis Document (RAD-v1)
4- UI mock-up design	Week 8	Requirements Analysis Document (RAD-v2)
5- Analysis	Week 11	Requirements Analysis Document (RAD-v3)
6- System design	Week 13	System Design Document (SDD)
7- Object design	Week 15	Object Design Document (ODD)

## 4. Tools

While designing your software, you will use UML notation. To be consistent, you have to use computer-aided software engineering (CASE) tools to draw your UML diagrams. There are a dozen of CASE tools, some of them are web-based and some are desktop applications. I suggest web-based applications but you are free to choose any CASE tool. Some of them are listed below.

- [Visual Paradigm](#), [UMLet](#), [StarUML](#), [Umbrello](#), [draw.io](#), [creately](#), etc.

For developing UI mock-ups, you can use the following or similar tools (you can use trial versions):

- [Balsamiq](#), [proto.io](#), [Adobe XD](#), etc.

## 5. Templates for the Reports

You will use the following MS Office Word templates for each document. You can use other word processing tools, but you must include the same content in a similar format.

- [Project Proposal Document](#)
- [Requirements Analysis Document \(RAD\)](#)
- [System Design Document \(SDD\)](#)
- [Object Design Document \(ODD\)](#)

## 6. Guidelines for Writing Reports

- Reports will be written in English. Use the automatic spell-checking facility of your word processor.
- Use CASE tools while drawing diagrams (do not use general-purpose painting tools).
- If your diagrams are too large to fit on a report page, you should also attach a high-resolution image file for each large diagram, in your submission. Unreadable diagrams will not be graded.
- See the following guidelines while writing your reports:
  - [Requirements elicitation guidelines](#)
  - [Analysis activities guidelines](#)

## 6. How to Submit

- Your reports must be in **pdf format**.
- Name your report file as ***GroupX\_RAD.pdf / GroupX\_SDD.pdf / GroupX\_ODD.pdf*** where X is your group number.
- Reports will be submitted using MS Teams homework submission module within the announced dates.
- **Each member of the team must submit the report individually.**

## 7. Terms of Ethics

### 7.1. Academic honesty policy

Do not copy and paste the codes/text/figure/idea/etc. of any others (and from the Internet) without credit. You must give proper citations if you use any third-party material. Clearly indicate the points where you benefited from AI chatbots such as ChatGPT, Gemini, Copilot, etc. Your reports will be checked for similarity using plagiarism detection tools.

## 7.2. Teamwork

- Be aware that teamwork is hard. One objective of this project is to make you ready for real-life team collaboration and project management issues.
- Each member must contribute to the work in each stage of the project.
- You will likely have problems with your teammates. In such cases, first, try to handle those issues yourselves. If any of your team members do not contribute to the work at all, inform us without waiting till the end of the semester.
- You must fill in **Annex – I** (Distribution of Work) and **Annex – II** (Meeting Minutes) provided in the report templates. **Each member's contribution must be specified clearly.**
- If a team member does not participate in the project meetings (you should tolerate several meetings with a valid excuse) and does not make any contribution to the project, that member will be dropped from the team.

## 8. Grading

- Each report will contribute equally (1/3 of your overall project grade). Term project grade constructs 60 % of your final exam grade. **You will not be able to pass the course without doing the project.**
- While evaluating your reports, [these criteria](#) will be used and your report pdf file will be annotated using those comment codes.
- **Late submission policy:** The deadline for project submissions is **23:59** on the specified date. For each additional day, a **25% cut-off** will be applied.

## 9. Resources

- *Object-Oriented Software Engineering, Using UML, Patterns, and Java*, by Bernd Bruegge and Allen H. Dutoit, Prentice-Hall
- *Head First Design Patterns: Building Extensible and Maintainable Object-Oriented Software*, O'Reilly Media.
- Design Patterns Elements of Reusable Object-Oriented Software, by Erich Gamma, Richard Helm, Ralph Johnson, and John Vlissides, Addison Wesley ([pdf](#))
- [UML Quick Reference](#)

Good luck and have fun...

*Dr. Zeynep Cipiloglu Yildiz*