

Analiza și Modelarea Sistemelor Software - Intro

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2025

Welcome

- ▶ Course: Software Systems Modelling / Analiza și Modelarea Sistemelor Software (AMSS)
- ▶ Instructor: Traian-Florin Șerbănuță
- ▶ Semester: Fall 2025
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Agenda

1. Introductions
2. Course overview
3. Why analysis & modeling?
4. Interactive exercise
5. Mini modeling challenge
6. Logistics & next steps

Who We Are

- ▶ Name
- ▶ Program
- ▶ One fun fact about you
- ▶ Your experience with software / modeling

Course Scope & Objectives

By the end of the course, students should get better at:

- ▶ Analyzing requirements of software systems
- ▶ Creating structural and behavioral UML models
- ▶ Applying (some) design patterns effectively
- ▶ Evaluating models for consistency and completeness

Course Structure

- ▶ **Structural diagrams:** class, package, component, deployment
- ▶ **Behavioral diagrams:** use case, state, activity, interaction
- ▶ **Model evaluation & testing**
- ▶ **Documentation & design patterns**
- ▶ **Project**

Assessments

- ▶ Project: 90%
 - ▶ teams consisting of 4-5 students (recommended)
 - ▶ there will be a single note for the entire team
 - ▶ documentation (50%) and presentation (50%)
- ▶ Participation: 20%

Why Analysis & Modeling?

- ▶ Software projects fail due to poor communication and unclear requirements
- ▶ Models help us:
 - ▶ Visualize systems
 - ▶ Detect errors early
 - ▶ Improve maintainability
 - ▶ Communicate across teams

Icebreaker: Model Your Morning Routine

Task: Draw a simple diagram of how you got from waking up to arriving in class.

- ▶ 5 minutes individual work
- ▶ Share with a neighbor
- ▶ Volunteers present their models

Mini Modeling Challenge

Scenario: A university library system.

- ▶ Users: students, faculty, external
- ▶ Operations: borrow, return, renew, reserve
- ▶ Constraints: borrowing limits

Task: Sketch a simple class diagram and at least one use case.

Discussion

- ▶ Compare different group solutions
- ▶ What entities and relationships emerged?
- ▶ What use cases are most critical?
- ▶ What was challenging?

Logistics & Next Steps



AMSS 2025/2026

- ▶ Join Teams page:
- ▶ Course materials: <https://traiansf.github.io/class/amss2025/>
 - ▶ Materials from previous iteration of this class (prof. Claudia Chirita): GitHub
- ▶ Communication: Teams / email
- ▶ Next class: Requirements analysis

Homework

Readings

- ▶ Chapters 1 and 2 (and maybe 3) of Martin Fowler's UML Distilled
- ▶ Familiarize with some design patterns (and associated humour)

Setup

Install/find some software for drawing UML diagrams you are comfortable with

Examples:

- ▶ PlantUML (also available as VSCode extension)
- ▶ Mermaid, 4 Github, a la Markdown. Sintaxă diagrame de clasă
- ▶ Lucidchart
- ▶ app.diagrams
- ▶ Visual Paradigm
- ▶ Microsoft Paint / Word / pencil and paper

Thank You

- ▶ Today: introductions, overview, first modeling exercises
- ▶ Next: dive deeper into requirements analysis

Questions?