Enterprise System Integration
(MTAT.03.229)

COURSE INTRODUCTION

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Course description

- The objective of this course is to introduce principles and methods for designing, implementing, and integrating enterprise applications.

- The course introduces approaches to enterprise system integration, including:
  - Resource-oriented architectures (REST);
  - API design methods and patterns of enterprise integration;
  - Frameworks & tools for implementing & integrating enterprise applications.
Who are we?

Mohamad Gharib
Lecturer

Baseer Ahmad Baheer
Supervisor of practical sessions
Course content

Introduction to the ESI course

System Engineering

[Enterprise] System requirements

[Enterprise] System Architecture

System Modeling

Conceptual/Meta/Domain Modeling

Fill in the survey [link]
Course content

- Introduction to the ESI course
- Principles of [enterprise] systems engineering
- Domain-driven design (DDD)
- Domain-Oriented Microservice Architecture

[Enterprise] System requirements
[Enterprise] System Architecture
System Modeling
  - Conceptual/Meta/Domain Modeling

Fill in the survey [link]

- Will be covered topic
- Might be covered topic
- Background topic
Course content

Introduction to the ESI course

Principles of [enterprise] systems engineering

System Engineering

[Enterprise] System requirements

System Modeling

[Conceptual/Meta/Domain Modeling]

[Enterprise] System Architecture

Domain-driven design (DDD)

Domain-Oriented Microservice Architecture

Web Services (SOAP and REST)

REST (CRUD APIs and Hypermedia APIs)

REST Security (Authorization and Authentication)

Fill in the survey [link]

Will be covered topic

Might be covered topic

Background topic
Course structure

- Up to **12 Lectures** (might include a lecture for discussing assignment 1 & 2).
- Up to **12 Practical sessions** (including a session for discussing assignment 3).
- **Project** (3 or 4 checkpoints).

See details on the Wiki page: [https://courses.cs.ut.ee/2022/esi](https://courses.cs.ut.ee/2022/esi)
Course structure

1- Introduction to the ESI course

2- Principles of [enterprise] systems engineering

3- Domain-driven design (DDD)

4- Domain-Oriented Microservice Architecture

5- Web Services (SOAP and REST)

6: Building RESTful API (CRUD) I

6: Building RESTful API (CRUD) II

8- Thick client applications (Vue.js)

9- REST Security (Authorization and Authentication)

10- [Integration] testing (Vue.js)

11- Enterprise Integration Patterns
Course structure

1. Introduction to the ESI course
2. Principles of [enterprise] systems engineering
3. Domain-driven design (DDD)
4. Domain-Oriented Microservice Architecture
5. Web Services (SOAP and REST)
6. Building RESTful API (CRUD) I
7. Consuming REST APIs
8. Thick client applications (Vue.js)
9. REST Security (Authorization and Authentication)
10. Integration and Building SOAP Web Services
11. Enterprise Integration Patterns
9. Building Role-Based REST API
10. Building Modern API with GraphQL?
11- the X-Road project
Course structure

1. Introduction to the ESI course
2. Principles of [enterprise] systems engineering
3. Domain-driven design (DDD)
4. Domain-Oriented Microservice Architecture
5. Web Services (SOAP and REST)
6. Building RESTful API (CRUD) I
7. Consuming REST APIs
8. Assignment 3 Building and Consuming SOAP
9. REST Security (Authorization and Authentication)
10. Integration and Building RESTful Web Services
11. Enterprise Integration Patterns
12. Assignment #1 Rel. designing your case study
13. Assignment #2 Rel. DDD Microservice Architecture
14. Assignment #3 Rel. to SOAP

15. Building Role-Based REST API
16. Building Modern API with GraphQL?
17. [Integration] testing (Vue.js)
18. the X-Road project
Course structure

1. Introduction to the ESI course
   - 1. Overview of Technologies and Tools for ESI
   - 3. Domain-driven design (DDD)
   - 4. Domain-Oriented Microservice Architecture

2. Enterprise Scale CI/CD
   - Assignment #1: Rel. designing your case study

3. Enterprise Architecture Modeling - the Issue of Integration
   - Assignment #2: Rel. DDD Microservice Architecture

5. Web Services (SOAP and REST)
   - Assignment #3: Rel. to SOAP

4. Integration with Enterprise Networks Hardware
   - 6. Building RESTful API (CRUD) I
   - 7. Consuming REST APIs
   - 8. Assignment 3 Building and Consuming SOAP

6. Integration and Building RESTful Web Services
   - 11. Enterprise Integration Patterns

7. Building RESTful API (CRUD) II
   - 12. The X-Road project

8. Thick client applications (Vue.js)

9. REST Security (Authorization and Authentication)
   - 10. Assignment 1 & 2
   - 10. [Integration] testing (Vue.js)

10. Building Role-Based REST API

11. Building Modern API with GraphQL?
Course structure

Assignment #1&2 – relying on Problem-Based Learning (PBL)

https://en.wikipedia.org/wiki/Problem-based_learning
Course structure

- **Lectures**
  - Assignment #1&2

- **Practical sessions**
  - Assign. #3

Problems:
- Pro #1
- Pro #2
- Pro #3
- Pro. #Final
- EXAM

Assignment #1&2 – relying on Problem-Based Learning (PBL)
https://en.wikipedia.org/wiki/Problem-based_learning
Grading

Assignments: **25 points**
Project: **25 points**.
Exam: **50 points** (minimum of **21/50** required to pass the exam).

The resulting sum (out of 100) will be mapped to a grade between A and F using the standard University scale.

One supplementary exam will be offered to students who fail or unable to attend the first exam.
Course rules and communication

- You will be split into teams of 4 members, you need to register your team by the end of next week (link in Slack).
- Assignments and project deliverables are not expected to be divided among team members, and they will be presented and discussed by ALL team members.
- Points will be granted individually not as a team. Optimally, all the team members will get the same points.
- Do not forget to join the Slack Workspace.
Experience has shown that your final grade is highly correlated with lectures attendance.
Thank You for your attention

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