LTAT.05.003
Software Engineering

Lecture 01.1:
Course Organization

Dietmar Pfahl
email: dietmar.pfahl@ut.ee

Fall 2021
Course Information/Overview

• Level: Bachelor’s level (in English)
• Credits: 6 ECTS
• Pre-requisite: MTAT.03.130 Object-oriented Programming
• Work load (per individual student): 156 person-hours in total
  • Lectures: 14 x 2 = 28 ph
  • Lab work (incl. independent work): 14 x (2 + 5) = 98 ph
  • Exam preparation: 30 ph
• Assessment:
  • 7 Lab Assignments / Tasks (team work) – 70% of grade
  • 1 Exam (written) – 30% of grade
• Grade scale: A (90%+), B(80%+), C(70%+), D(60%+), E(50%+), F
Letter Grades

A - An excellent performance, clearly outstanding. The student demonstrates excellent judgement and a high degree of independent thinking.

B - A very good performance. The student demonstrates sound judgement and a very good degree of independent thinking.

C - A good performance in most areas. The candidate demonstrates a reasonable degree of judgement and independent thinking in the most important areas.

D - A satisfactory performance, but with significant shortcomings. The candidate demonstrates a limited degree of judgement and independent thinking.

E - A performance that meets the minimum criteria, but no more. The candidate demonstrates a very limited degree of judgement and independent thinking.

F - A performance that does not meet the minimum academic criteria. The candidate demonstrates a lack of both judgement and independent thinking.
Student Feedback (before 2019)

Scale: 1-5
Student Feedback (2019)

143 Students Responded

Scale: 1-4

3.40
Student Feedback (2020)

123 Students Responded

Scale: 1-4

3.43
Course Objectives

- To obtain basic knowledge in software engineering and primary skills for working at any stage of software development projects.

Required pre-requisite:
- Compulsory: Object-oriented Programming (6 ECTS)

Related courses:
- Software Project (next year)
- Software Testing (next term)
- Web Application Development (in parallel)
- …

That implies that we (I and the lab supervisors) take it for granted that you know the principles of object-oriented programming and how to program java code.
Schedule of Lectures

Week 01: Introduction to SE
Week 02: Requirements Engineering I
Week 03: Requirements Engineering II
Week 04: Analysis
Week 05: Development Infrastructure
Week 06: Continuous Development and Integration
Week 07: Project Estimation / Architecture and Design I
Week 08: Architecture and Design II
Week 09: Verification and Validation I
Week 10: Verification and Validation II
Week 11: Refactoring (and TDD)
Week 12: Agile/Lean Methods
Week 13: Industry Guest Lecture
Week 14: Course wrap-up, review and exam preparation
Week 15: Reserve time slot (no lecture scheduled as of today)
Software Engineering 2021/22 fall

**Notice:** On August 18, the university management recommended that lectures with 100+ students be conducted online. I will follow this recommendation and run the lecture online (as last year). The BBB or Zoom link for the virtual lecture will be posted in Moodle. I will create the Moodle page for the course before August 30. The practice sessions (labs) will be done in-class. Please go to the first lab for more instructions. I will also explain the set-up of the labs in my first lecture on September 3.

- **Lectures:** Fridays 10:15-12:00
- **Coordinator and Lecturer:** Dietmar Pfahl (dietmar.pfahl at ut dot ee)
- **Lab Sessions & Supervisors:** -- All labs in weeks 3, 5, 7, 9, 11, 13, and 15 are mandatory. Not attending the labs during the indicated weeks might result in a lower course grade. Details will be announced in the first lecture.
  - Mondays 10:15-12:00, room 1022 (Lab Group 1: Vimal Kumar Divvedi)
  - Mondays 10:15-12:00, room 2010 (Lab Group 2: Baseer Ahmad Baheer)
  - Mondays 12:15-14:00, room 1022 (Lab Group 3: Vimal Kumar Divvedi)
  - Mondays 12:15-14:00, room 2010 (Lab Group 4: Anna Talas)
  - Tuesdays 10:15-12:00, room 1022 (Lab Group 5: Baseer Ahmad Baheer)
  - Tuesdays 10:15-12:00, room 2010 (Lab Group 6: Vimal Kumar Divvedi)
  - Tuesdays 12:15-14:00, room 1022 (Lab Group 7: Baseer Ahmad Baheer)
  - Tuesdays 12:15-14:00, room 2010 (Lab Group 8: Karoline Holter)
  - Thursdays 10:15-12:00, room 1022 (Lab Group 9: Alexandra Pöllumäe)

- **Course Outline:** Please look up the entries in the Student Information System (SIS)

- **Exam Dates (tentative):**
  - Exam 1: Friday, 07-Jan-2021 at 10:15-12:45 - room tba.
  - Exam 2: Tuesday, 11-Jan-2021 at 14:15-16:45 - room tba.
  - Re-take Exam: Friday, 21-Jan-2021 at 10:15-12:45 - room tba.

**News**

- **Week 2** -- The first week of lab sessions (beginning on Sep 6). Please make sure you know your lab group and go to the correct room. It is important that you attend the first lab as it is where you form/confirm your project teams and report team names and members to your lab assistants. **Project teams must have *three* members.** All team members must be enrolled in the same lab (group). 4-person teams may only be formed in case the total number of students in a lab group is not a multiple of 3. 2-person teams may also be possible but you need the consent from your lab supervisor.
Project Topic: POS System
(POS: Point-of-Sale)
Project Topic: POS System
(POS: Point-of-Sale)

Intro

• Congratulations, you are employed as an analyst by "Joostes Marss AS" company. During the first day at work you are informed that "Joostes Marss" got a new client who needs a new **POS system**. Your new boss is patting your shoulder and says that you are responsible for the project and become the lead analyst of the project.

Customer

• Your customer is a BSC, a big supermarket chain. This company is mostly dealing with the management of supermarkets. Currently, the company has 22 stores in Estonia, Latvia, Lithuania and Poland. Your customer has ambitions to expand to 100 stores, and enter the markets of Finland, Sweden and Norway. Today, your customer is using a different POS software in their stores, which makes it expensive to maintain business processes across the company. The administration decided to replace their current POS software by a new software solution developed specifically for their needs.
Project = Team Work
Project Tasks (Labs)

- Week 01: no labs
- Weeks 02-03: Task 1: Requirements Gathering
- Weeks 04-05: Task 2: Requirements Specification, Modeling, Planning
- Weeks 06-07: Task 3: Development Environment
- Weeks 08-09: Task 4: Development - Phase I
- Weeks 10-11: Task 5: Development - Phase II
- Weeks 14-15: Task 7: Functional and Non-Functional Testing

Details can be found on the course wiki:
https://courses.cs.ut.ee/2021/SE2021/fall/Main/Labs
Project Tasks (Labs)

- Week 01: no labs
- Weeks 02-03: Task 1: Requirements Gathering
- Weeks 04-05: Task 2: Requirements Specification, Modeling, Planning
- Weeks 06-07: Task 3: Development Environment
- Weeks 08-09: Task 4: Development - Phase I
- Weeks 10-11: Task 5: Development - Phase II
- Weeks 14-15: Task 7: Functional and Non-Functional Testing

Details can be found on the course wiki: https://courses.cs.ut.ee/2021/SE2021/fall/Main/Labs
Difficulty (Labs)

High

Low

Lab Assignment

Team
Project Set-Up

Within each lab group, students are divided into **project teams of three**.

Each project team has a permanent lab instructor and a **fixed weekly lab time**.

Each project team gets 7 tasks, each task equaling a maximum of 10 grading points.

Submission of task solutions has **strict** deadlines.

**Penalties for late delivery** are as follows:

- up to 24 h late: -10%
- up to 7x24h late: -50%
- > 7x24h late: -100%
<table>
<thead>
<tr>
<th>Week</th>
<th>Task 1</th>
<th>Task 2</th>
<th>Task 3</th>
<th>Task 4</th>
<th>Task 5</th>
<th>Task 6</th>
<th>Task 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Assigned</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td><strong>Assess</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td><strong>Submit</strong>*</td>
<td>Assigned</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Feedback</td>
<td><strong>Assess</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td><strong>Submit</strong>*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Feedback</td>
<td><strong>Assess</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td><strong>Submit</strong>*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Feedback</td>
<td><strong>Assess</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td><strong>Submit</strong>*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Feedback</td>
<td><strong>Assess</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td><strong>Submit</strong>*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Feedback</td>
<td><strong>Assess</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td><strong>Submit</strong>*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Feedback</td>
<td><strong>Assess</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td><strong>Submit</strong>*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* = submit before midnight of the day before Lab

Project Schedule
Project Rules (1)

- Teams must deliver their solutions to their lab assistant using course development environment via repository on Bitbucket.

- Intermediate solutions must be presented/explained to the lab assistant by a randomly selected team member during assessment sessions.
  - It is important for the solution presenter to know every aspect of the solution and be able to explain them. If he/she needs help from other team members, they may jump in and help.

- During the assessment session teams have to be present with ALL their team members.
  - Rule 1: If no team member shows up, the team will get 0 marks for the homework assignment – no matter what is submitted in the end.
  - Rule 2: If team members appear but not sufficient work has been done, up to 30% penalty applies.
  - Rule 3: You must be at least in 5 assessment labs to not receive an individual penalty on the total amount of lab scores of your team.
Project Rules (2)

• Each team must complete all tasks independently.
  • This does not mean that you are not allowed to talk to other teams and discuss solutions.
  • Communication is a good thing and we welcome it.
  • However, copying the work of others, i.e., copying of code, is considered plagiarism and strongly prohibited (we have special software for automatic checks).
  • According to University rules, if we find evidence of plagiarism, we must inform the head of Institute and formal steps will be taken.

• If something in a homework task assignment is not clear to you, then you should ask for clarifications from your lab assistant.
  • If you detect that a task is unclear only during the night before the assessment your lab supervisor is most probably not available for answering questions. Also lab supervisors have the right of a private life!
Assessment (1)

• Labs – 70% of total grade
• Exam – 30% of total grade

• Rules:
  • All members in a team receive equal grades in labs
    • **BUT**: Exceptions from equal grade rule will be made, if individuals in a team don’t participate actively
  • **Team penalties** apply for late delivery and if the whole team doesn’t show up in an assessment lab. → see course wiki for details
  • **Individual penalties** apply when attending less than 5 assessment labs
  • Don’t plagiarize!

• Proposed Exam Dates:
  • Exam 1: Friday, 07-Jan-2021 at 10:15-12:45 (limit: 100 students)
  • Exam 2: Tuesday, 11-Jan-2021 at 14:15-16:45 (limit: 100 students)
  • Re-take Exam: Friday, 21-Jan-2021 at 10:15-12:45
Assessment (2)

Labs – Practical Assessment

10 points per lab session. Total = 70 points.

If you get less than 30 out of 70 points in the practical assessment, you will get a grade of 'F' in your first examination (i.e., exam 1 || 2).

In this case, you will be given a second chance to improve your practical assessment score.

If your score after the improvement is at least 30 out of 70, you will become eligible for a retake exam (korduseksam).

Exam – Conceptual Assessment

The Conceptual Assessment will consist of an exam worth 30 points.

Students who get less than 10 out of 30 in this exam, will get a grade of 'F', regardless of their Practical Assessment score.

This same rule will apply for the retake exam (korduseksam).
GO TO LABS !!!!!
FORM PROJECT TEAMS!
Sign up to SLACK

(use the link distributed via email)
Online Teaching: Lectures

- **Lectures:** will be done online due to COVID19 regulations applied in Delta
  
  - All lectures will be done online using BBB -> Go to the Course Moodle page and klick the BBB link to the lecture
  
  - There are also pre-recorded Panopto videos of the first and following lectures (partly taken from last years)
  
Online and In-Class Teaching: Practice Sessions (Labs)

- Practice Sessions (Labs):
  - in weeks 2, 4, 6, 8, 10, 12, and 14: on-site
    - this might be changed to online if the COVID-19 situation requires
  - in weeks 3, 5, 7, 9, 11, 13, and 15 online (Zoom/BBB link in Moodle)
    - The labs in odd weeks are the so-called “assessment labs”
    - It is mandatory for all team members to be present (online with video switched on)
Communication Rules

- Message Board: Slack !!!
- Lab → Lab Instructors (Alexandra, Anna, Baseer, Karoliine, Vimal)
  - If you encounter problems within a team (e.g., lack of communication or active participation of a team member) try to solve the problems first internally.
  - If that doesn't work (i.e. the team member repeatedly does not cooperate despite your attempts), notify your lab assistant and ask him for help to get the team back on track.
- Lecture/Exam → Dietmar
ASK QUESTIONS

(I will try my best to give satisfactory answers)