



# Lab Course / “Praktikum”: *Project Management and Software Development for Medical Applications*

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## Introduction – WS2022

Conducted by:

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Munich, 18 October 2022





**Work with clinicians on real-world medical applications**

**Improve your project management and presentations skills**



Technische Universität München



**JOHNS HOPKINS**  
WHITING SCHOOL  
of ENGINEERING

# Lecture Structure

- **4 lectures** by course tutors (**recommended to attend**)
  - Introduction (Administrative, Requirements, Grading) – **Mandatory**
  - Project Management & Presentation Tips
  - Unified Modeling Language (UML)
  - Introduction to Software Engineering - Documentation, Tests, Design Patterns & Integration Strategy
- **3 presentations** by students (**Mandatory**)
  - Requirements (5 mins)
  - Intermediate (7 minutes)
  - Final (incl. demo) (10 minutes)
- Minimum **10 hours per week** of project work during the semester



# CoVid-19 related announcements

- Due to the CoVid-19 and subsequent government measures, short term changes might be necessary
  - Follow the announcement section on the website of the course
  - Check emails regularly
- As of today (18 October 2022) we are planning
  - Purely virtual lectures and presentations conducted via TUM Zoom
  - Zoom details will be provided one day before the sessions via email
  - Presence might be required by supervisors depending on the Project
    - not guaranteed 100% online course



# Schedule

Date	Time	Place	Topic	Conducted by
<b>Tuesday, 18.10.2022</b>	09:00 – 12:00	Zoom	Lecture 1: Introduction and Project Announcement Lecture 2: Presentation Tips and Project Management	Course tutors
<b>Thursday, 20.10.2022</b>	23:59 CEST	Moodle	Deadline to send project preferences	<b>Seminar Participants</b>
<b>Monday, 07.11.2022</b>	09:00 – 12:00	Zoom	Requirements Presentation	<b>Seminar Participants</b>
<b>Tuesday, 08.11.2022</b>	10:00 – 12:00	Zoom	Lecture 3: UML Lecture 4: Documentation, Tests, Design Patterns & Integration Strategy	Course tutors
<b>Monday, 12.12.2022</b>	09:00 – 12:00	Zoom	Intermediate Presentations Part I	<b>Seminar Participants</b>
<b>Tuesday, 13.12.2022</b>	09:00 – 12:00	Zoom	Intermediate Presentations Part II	<b>Seminar Participants</b>
<b>Monday, 06.02.2023</b>	09:00 – 12:00	Zoom	Final Presentations Part I	<b>Seminar Participants</b>
<b>Tuesday, 07.02.2023</b>	09:00 – 12:00	Zoom	Final Presentations Part II	<b>Seminar Participants</b>



# Timeline

## Project Start

L1: Introduction and Project Announcement

L2: Presentation Tips and Project Management

L3: UML  
L4: Documentation, Tests, Design Patterns & Integration Strategy

Christmas Vacation

18 Oct 28 Oct 7 Nov 17 Nov 27 Nov 7 Dec 17 Dec 27 Dec 6 Jan 16 Jan 26 Jan 5 Feb

Deadline to send project preferences

Requirements Presentation

Intermediate Presentations

Intermediate Presentations Part II

Final Presentations Part I

Final Presentations Part II  
**End of classes**



# Projects will be on Software Development in Medical Applications

- Involves “**Medical Application**” and “**Software Development**”
- In collaboration with **Hospital** or **Industry** or **Research Institute**
- In the previous years, example projects were based on:
  - Image Analysis (Registration, Segmentation, Quantification)
  - Graphical User Interface design
  - Mobile App Development
  - Robotics
  - Machine Learning, Deep Learning
  - Computer Vision
  - Image Reconstruction
  - Simulations and Modeling
  - Augmented Reality
  - Computer Graphics



# Project proposals

- Projects are proposed
  - 50% from Academia
  - 50% from Industry
- From last semesters
  - SS2020           23 project total (1 company)
  - WS2020/21    21 projects total (3 companies)
  - SS2021           27 projects total (5 companies)
  - WS2021/22    34 projects total (8 companies)
  - SS2022           25 projects total (7 companies)





# You are a Project Manager as well as a Software Developer

- Make and follow your project **plan**
  - Gather requirements
  - Set goals and tasks
  - Derive milestones
  - Make Gantt chart (project time plan)
- **Design and implement** the software
  - Design patterns, use case and class diagram
  - Programming in higher level languages (C/C++, Python, Java, Matlab etc.)
  - Development tools like IDEs, version control (GIT) etc.
- Present your work to the **course tutors and supervisors**
  - 3 presentations: Requirements, Intermediate, Final (with demo if applicable)



# Project Assignment

- Project proposals are announced in the web-site of the course
  - Submit your application with **3 preferred projects** and **motivation** until **THURSDAY, 20.10.2022, 23:59 CEST**
  - Find application form under **Downloads** > “**Student project application template**”
  - Submit in TUM Moodle > Student Project Application
    - PDF Attachment: **StudentID-FullName-choices.pdf** (e.g. 05-ArditRamadani-choices.pdf)
- We will try to assign students one project from their preferences
  - Mixture of “FCFS” and maximization of first choices
  - There is no guarantee that you will get one of your preferences



# Project Assignment (continued)

- FAQ
  - my first preference is unassigned, and I am assigned to my second/third preference
    - we try to maximize the number of supervisors included in the course as well
  - Is it possible to change the project to another one that is not assigned
    - NO
- Students must discuss the projects with their assigned supervisors immediately after they have been assigned
  - send an email and schedule a kick-off meeting



# Project Assignment (continued)

## Summer Semester 2020

Choice	Number of students	Percentage
<b>1st choice assigned</b>	10 students	56%
<b>2nd choice assigned</b>	6 students	33%
<b>3rd choice assigned</b>	2 students	10%
<b>no submission</b>	0 student	0%

Tab. Percentage of assigned projects based on student's preferences

## Winter Semester 2020/2021

Choice	Number of students	Percentage
<b>1st choice assigned</b>	10 students	50%
<b>2nd choice assigned</b>	7 students	35%
<b>3rd choice assigned</b>	2 students	10%
<b>no submission</b>	1 student	5%

Tab. Percentage of assigned projects based on student's preferences

## Summer Semester 2021

Choice	Number of students	Percentage
<b>1st choice assigned</b>	7 students	40%
<b>2nd choice assigned</b>	4 students	22%
<b>3rd choice assigned</b>	5 students	27%
<b>no submission</b>	2 student	11%

Tab. Percentage of assigned projects based on student's preferences

## Winter Semester 2021/2022

Choice	Number of students	Percentage
<b>1st choice assigned</b>	18 students	69%
<b>2nd choice assigned</b>	5 students	19%
<b>3rd choice assigned</b>	2 students	8%
<b>no submission</b>	1 student	4%

Tab. Percentage of assigned projects based on student's preferences

## Summer Semester 2022

Choice	Number of students	Percentage
<b>1st choice assigned</b>	12 students	60%
<b>2nd choice assigned</b>	5 students	25%
<b>3rd choice assigned</b>	2 students	10%
<b>no submission</b>	1 student	5%

Tab. Percentage of assigned projects based on student's preferences



# Grading

- This course has **10 ECTS**
  - Equivalent to **10 – 14 hours per week** for **3 – 4 months**
- **Project Supervisor** will grade based on performance (weight: **50%**)
  - Requirement coverage
  - Implementation on time
  - Completion of the project goals
  - Regular communication
- **Course Tutors** will grade based on presentations (weight: **50%**)
  - Fundamental requirements met (citations, correctness, formatting)
  - Presentation skills (get the message across)
  - Slides (proper layout of text and visual information, consistency)
  - Content (for example: introduction, software design, tasks, project management)
  - Time Management (presentation time management and project time management)
  - Course attendance



# Grading (continued)

- Attendance to all presentations is **mandatory** (even if you are not presenting)
  - Every unexcused absence: – **0.3** on tutor grading
  - **Excuses:** Illness, funeral, civic duties, reasons beyond your influence (accident, earthquake...), work meeting that cannot be moved
  - **No Excuse:** overslept, holidays, don't want to join
  - In any case, inform us in time and get a certificate
- Good conduct
  - Complete all assignments
  - Presentation dates cannot be moved – you get a slot, you take it
  - Follow the presentation rules
  - Upload your presentation slides in Moodle latest by the deadline given
    - Failing to upload will have consequences on the grade for the specific presentation: 5.0 on slides evaluation
  - Convince us that you want a good grade: layout and content matter!
  - Presenting with camera is mandatory



# Presentation times

- Requirement presentation – **5 minutes**
- Intermediate presentation – **7 minutes**
- Final presentation – **10 minutes**
- Exceeding the time will be penalized
  - All times are including **presentation time** and **demos** (when applicable)
  - We will **interrupt** your presentation at **30s overtime**
  - You need to present for at least **30s less** than the time indicated
    - if you are faster, we will wait until time is over



# Etiquette

- Always be polite
  - To your fellow students
  - To your supervisors
- Send polite e-mails
  - Properly motivate your request
  - Write full sentences
  - Be patient for an answer
  - Teaching is not our only duty
- Do not send emails at 01:00 AM on a weekend
  - Contact your supervisors and tutors during working hours
- If you want a favorable answer, be polite





# Please follow the course webpage or write to us if you have specific questions

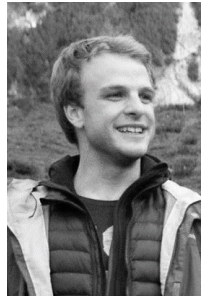
- Important links

- Website: <https://wiki.tum.de/pages/viewpage.action?pageId=1204094038n>
- Moodle: <https://www.moodle.tum.de/course/view.php?id=81736>

- Course tutors



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Thank you

