



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

Introduction – WS2023/24

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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

- As of today (17 October 2023) we are planning
 - Only virtual lectures and presentations conducted via TUM Zoom
 - Presence might be required by supervisors depending on the Project
 - not guaranteed 100% online course
 - Follow the announcement section on the website of the course
 - After registration, check emails regularly



Schedule

Date	Time	Place	Topic	Conducted by
Tuesday, 17.10.2023	11:00 - 12:00	Zoom	Lecture 1: Introduction and Project Announcement	Course tutors
Friday, 20.10.2023	23:59 CEST	Zoom	Deadline to send project preferences	Course tutors
Monday, 23.10.2023	09:00 - 12:00	Email	Lecture 2: Presentation Tips and Project Management Lecture 3: UML	Seminar Participants
Monday, 06.11.2023	09:00 - 12:00	Zoom	Requirements Presentation	Seminar Participants
Tuesday, 07.11.2023	10:00 - 12:00	Zoom	Lecture 4: Documentation, Tests, Design Patterns & Integration Strategy	Course tutors
Monday, 11.12.2023	09:00 - 12:00	Zoom	Intermediate Presentations Part I	Seminar Participants
Tuesday, 12.12.2023	09:00 - 12:00	Zoom	Intermediate Presentations Part II	Seminar Participants
Monday, 05.02.2024	09:00 - 12:00	Zoom	Final Presentations Part I	Seminar Participants
Tuesday, 06.02.2024	09:00 - 12:00	Zoom	Final Presentations Part II	Seminar Participants



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/Virtual Reality
 - Computer Graphics



Project proposals

- 34 Projects are proposed
 - 76% from Academia
 - 24% from Industry
- From last semesters
 - SS2020 23 projects 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)
 - WS2022/23 27 projects total (5 companies)
 - SS2023 25 projects total (6 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 **FRIDAY, 20.10.2023, 23:59 CEST**
 - Find application form under **Downloads** > “**Student project application template**”
 - Submit in TUM Moodle > Student Project Application
 - PDF Attachment: **StudentID-FullName-preferences.pdf** (e.g. 05-TianyuSong-preferences.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)

Winter Semester 2020/2021

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

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

Summer Semester 2021

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

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

Winter Semester 2021/2022

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

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

Summer Semester 2022

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

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

Winter Semester 2022/2023

Choice	Number of students	Percentage
1st choice assigned	13 students	65%
2nd choice assigned	6 students	30%
3rd choice assigned	1 students	5%

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

Summer Semester 2023

Choice	Number of students	Percentage
1st choice assigned	14 students	70%
2nd choice assigned	2 students	10%
3rd choice assigned	1 student	5%
4th choice assigned	3 students	15 %

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



Etiquette

- Always be polite
 - To your fellow students
 - To your supervisors
- Send polite emails
 - 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=1535904635>
- Moodle: <https://www.moodle.tum.de/course/view.php?id=90501>

- Course tutors



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Thank you

