



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

Introduction – WS2022/23

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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
 - Introduction to Software Engineering - 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 CoVid-19 and subsequent government measures, short term changes might be necessary
 - Follow the announcement section on the website of the course
 - After registration, check emails regularly
- As of today (25 July 2022) 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



Schedule

Date	Time	Place	Topic	Conducted by
Monday, TBA	09:00 - 10:00	Zoom	Lecture 1: Introduction and Project Announcement	Course tutors
Tuesday, TBA	09:00 - 12:00	Zoom	Lecture 2: Presentation Tips and Project Management Lecture 3: UML	TBA
Thursday, TBA	23:59 CEST	Email	Deadline to send project preferences	Seminar Participants
Monday, TBA	09:00 - 12:00	Zoom	Requirements Presentation	Seminar Participants
Tuesday, TBA	10:00 - 12:00	Zoom	Lecture 4: Documentation, Tests, Design Patterns & Integration Strategy	TBA
Monday, TBA	09:00 - 12:00	Zoom	Intermediate Presentations Part I	Seminar Participants
Tuesday, TBA	09:00 - 12:00	Zoom	Intermediate Presentations Part II	Seminar Participants
Monday, TBA	09:00 - 12:00	Zoom	Final Presentations Part I	Seminar Participants
Tuesday, TBA	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 Reality
 - Computer Graphics



Project proposals

- Projects are proposed from
 - 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 will be announced in the web-site after the first class
 - You need to send us your application with **3 preferred projects** and **motivation**
 - Find application form under **Downloads** > **“Student project application template”**
- 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
- 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



Project Assignment (continued)

- Students can propose their own projects through a collaboration with a Postdoc/PhD candidate or Industry Partner
 - Project must be submitted by the supervisors
 - Tutors must approve the project before project kick-off
 - The deadline to submit projects is two weeks before lecture period start
 - Find Project Proposal Template under **Downloads** > **“Supervisor Project Proposal Template”**
- Students must discuss the projects with their assigned supervisors only after the projects have been assigned



Project Assignment (continued)

Summer Semester 2020

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

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

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



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 at link provided latest by the deadline given
 - Failing to upload will have consequences on the grade for specific the presentation
 - Convince us that you want a good grade: layout and content matter!
 - Presenting with camera is compulsory



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



Registration

- Highest priority is given to BMC students in their ≥ 2 semester who have never taken this course (guaranteed place*)
 - Informatics students ≥ 3 semesters are also prioritized
 - It is not possible to take the course to improve the grade (unless failed previously)
- Register through the form in our website
 - Form: <https://wiki.tum.de/pages/viewpage.action?pageId=1204094038>
 - Registration form is available until: **5 August 2022**
 - Students with fixed places will be announced on the website and contacted through the emails provided
 - TUMOnline registration will happen towards the beginning of the semester



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

- Website
 - <https://wiki.tum.de/pages/viewpage.action?pageId=1204094038>
- Course tutors



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Thank you

