Specialization Project in Computer Science

Title	Specialization Project in Computer Science
Semester	F2024
Master programme in	Computer Science
Type of activity	Project
Teaching language	English
Study regulation	Read about the Master Programme and find the Study Regulations at ruc.dk

REGISTRATION AND STUDY ADMINISTRATIVE

Registration	You register for activities through stads selvbetjening during the announced registration period, which you can see on the Study administration homepage. When registering for courses, please be aware of the potential conflicts and overlaps between course and exam time and dates. The planning of course activities at Roskilde University is based on the recommended study programmes, which should not overlap. However, if you choose optional courses and/or study plans that goes beyond the recommended study programmes, an overlap of lectures or exam dates may occur depending on which courses you choose.
Number of participants	
ECTS	20
Responsible for the activity	Henrik Bulskov (bulskov@ruc.dk)
Head of study	Henrik Bulskov (bulskov@ruc.dk)
Teachers	
Study administration	IMT Registration & Exams (imt-exams@ruc.dk)
Exam code(s)	U60551

ACADEMIC CONTENT

Overall objective	The project work is problem-oriented and must develop the student's skills in applying theories and methods within a defined academic topic. The project work involves a self-chosen problem in relation to a selected specialization. The project work gives the student the opportunity to describe and reflect on independently performed work, in which complex issues are addressed. The student must acquire knowledge, skills and competences in order to translate theories, methods and solutions ideas into their own practice in relation to software development. The project work will be supplemented by several workshops relevant to the specialization chosen for the project. Such workshops will typically focus on areas such as: 1) algorithms, programming frameworks and complex IT systems. 2) data science, artificial intelligence and business intelligence. 3) internet of things, gaming, robotics and virtual technologies
Detailed description of content	The project work will be supplemented by several workshops relevant to the specialization chosen for the project. Such workshops will typically focus on areas such as: 1. algorithms, programming frameworks and complex IT systems. 2. data science, artificial intelligence and business intelligence. 3. internet of things, gaming, robotics and virtual technologies
Course material and Reading list	
Overall plan and expected work effort	Project work will entail a total workload of 540 hours, equivalent to 20 ECTS credits. Of this total, approximately 40 hours are allocated to project initiation, while roughly 40 hours are dedicated to exam preparations and the exam itself. During the project phase, there will be 15 hours allocated to project initiation workshops and internal evaluations.

A group of four students can anticipate receiving approximately 15 hours of supervision throughout their project. Students who are granted permission to work individually should expect a reduced number of supervision hours.

An estimated 335 hours should be allocated to project work and creation of the project report.

Additionally, around 95 hours will be dedicated to workshops that provide support for specialized project work.

Students will select their specialization at the beginning of the semester and will engage in project work and workshops related to their chosen specialization. The workshops and the formation of project groups will take place at the outset of the project period.

The three specializations are: 1) algorithms, programming frameworks and complex IT systems. 2) data science, artificial intelligence and business intelligence. 3) internet of things, gaming, robotics and virtual technologies

Format

Evaluation and feedback

The project will be survey evaluated by the IMT department

Programme

ASSESSMENT

Overall learning outcomes

After completing this activity, students will be able to:

- demonstrate advanced knowledge and understanding of the specialization area chosen for the project report
- know and understand the general principles behind the specialization area's theory, methods, and technological solutions
- apply methods and techniques and theories appropriate to the specialization chosen for the project report and become proficient in approches in the specialization
- analyse, design and construct reliable and user-friendly systems

- identify scientific questions in relation to the analysis, design, and construction of software systems
- work critically with the selection and application of methods and techniques
- communicate research-based knowledge and understanding about computer science
- discuss professional computer science-related research questions
- organize, manage, and implement complex IT projects that require new solutions individually and in software development teams.

Oral project exam in groups with individual assessment

Permitted group size: 2-6 students.

The character limits of the project report are:
For 2 students: 4,800-180,000 characters, including spaces.
For 3 students: 4,800-192,000 characters, including spaces.
For 4 students: 4,800-192,000 characters, including spaces.
For 5 students: 4,800-204,000 characters, including spaces.
For 6 students: 4,800-204,000 characters, including spaces.
The character limits include the cover, table of contents, summary, bibliography, figures and other illustrations, but exclude any appendices.

Form of examination

Time allowed for exam including time used for assessment is for:
2 students: 60 minutes.
3 students: 75 minutes.
4 students: 90 minutes.
5 students: 105 minutes.
6 students: 120 minutes.

Writing and spelling skills in the project report are part of the assessment.

Permitted support and preparation materials at the oral exam: All

Assessment: 7-point grading scale.
Moderation: Internal co-assessor.

Form of Re-examination	Samme som ordinær eksamen / same form as ordinary exam
Type of examination in special cases	
Examination and assessment criteria	The examination is structured as follows: • It is primarily based on the written product submitted. • Each student initiates the examination with a 2–3 minute presentation that is academically relevant. • Subsequently, questions are posed related to the project report's field. This initiates a dialogue between the examiner and the students, followed by a discussion. • The evaluation encompasses both the written product and the oral performance. Assessment Criteria: In assessing the written product, significant consideration will be given to the student's ability to: • Articulate a problem within the realm of Computer Science in relation to a selected specialization. • Choose, present, and effectively convey knowledge of theories, methodologies and technical solutions relevant to their chosen field of study. • Contemplate their independently conducted project work and alternative approaches, anchoring them in research literature and personal experience. In assessing the oral performance, particular emphasis will be placed on the extent to which the student can: • Independently analyze and discuss the project and its problem statement based on the chosen theory and analysis.

- Provide reasoned justifications for design choices, method selections and technical solutions, drawing on empirical and/or theoretical foundations.

Exam code(s) Exam code(s) : U60551

Course days:

Hold: Physical Computing

Specialization Project in Computer Science - Workshop: Physical Computing (COMP)

time 18-03-2024 08:15 til
18-03-2024 12:00
location 22.2-067 - undervisningslokale (28)
Teacher Maja Hanne Kirkeby (majaht@ruc.dk)

Specialization Project in Computer Science - Workshop: Physical Computing (COMP)

time 25-03-2024 08:15 til
25-03-2024 12:00
location 22.2-067 - undervisningslokale (28)
Teacher Maja Hanne Kirkeby (majaht@ruc.dk)

Specialization Project in Computer Science - Workshop: Physical Computing (COMP)

time 26-03-2024 08:15 til
26-03-2024 16:00
location 22.2-067 - undervisningslokale (28)
Teacher Maja Hanne Kirkeby (majaht@ruc.dk)

Specialization Project in Computer Science - Workshop: Physical Computing (COMP)

time	02-04-2024 08:15 til 02-04-2024 12:00
location	22.2-067 - undervisningslokale (28)
Teacher	Maja Hanne Kirkeby (majaht@ruc.dk)

Specialization Project in Computer Science - Workshop: Physical Computing (COMP)

time	03-04-2024 08:15 til 03-04-2024 16:00
location	22.2-067 - undervisningslokale (28)
Teacher	Maja Hanne Kirkeby (majaht@ruc.dk)

Specialization Project in Computer Science - Workshop: Physical Computing (COMP)

time	05-04-2024 08:15 til 05-04-2024 16:00
location	22.2-067 - undervisningslokale (28)
Teacher	Maja Hanne Kirkeby (majaht@ruc.dk)

Specialization Project in Computer Science - Workshop: Physical Computing (COMP)

time	08-04-2024 08:15 til 08-04-2024 16:00
location	22.2-067 - undervisningslokale (28)
Teacher	Maja Hanne Kirkeby (majaht@ruc.dk)