Specialization Course in Computer Science - Data Science

Title	Specialization Course in Computer Science - Data Science
Semester	F2023
Master programme in	Computer Science
Type of activity	Course
Teaching language	English
Study regulation	Read about the Master Programme and find the Study Regulations at ruc.dk

REGISTRATION AND STUDY ADMINISTRATIVE

Registration	Sign up for study activities at STADS Online Student Service within the announced registration period, as you can see on the Study administration homepage. When signing up for study activities, please be aware of potential conflicts between study activities or exam dates. The planning of activities at Roskilde University is based on the recommended study programs which do not overlap. However, if you choose optional courses and/or study plans that goes beyond the recommended study programs, an overlap of lectures or exam dates may occur depending on which courses you choose.
Number of participants	
ECTS	5
Responsible for the activity	Henning Christiansen (henning@ruc.dk) Jens Classen (classen@ruc.dk)
Head of study	Henrik Bulskov (bulskov@ruc.dk)
Teachers	
Study administration	IMT Registration & Exams (imt-exams@ruc.dk)
Exam code(s)	U60479

ACADEMIC CONTENT

Overall objective	Specialization within one of the core specialization areas of the program. 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.

	1) Specialization course with a focus area towards algorithms, programming frameworks and complex IT systems. 2) Specialization course with a focus area towards data science, artificial intelligence and business intelligence. 3) Specialization course with a focus area within e.g. internet of things, robotics and virtual technologies.
Detailed description of content	In this specialization, we will approach data science in a systematic way and focus on key aspects such as gradient decent learning based on lost functions, the bias-variance (or underfitting/overfitting) trade-off, model selection, model evaluation, explainability, sampling techniques, reinforcement learning, Bayesian approaches, Deep Learning, etc.
Course material and Reading list	Will be announced on Moodle.
Overall plan and expected work effort	
Format	
Evaluation and feedback	
Programme	

ASSESSMENT

Overall learning outcomes	After completing this course, students will be able to: ● demonstrate knowledge and understanding of one or more of the specialization areas and the area's techniques for designing and constructing complex software systems. ● know and understand the general principles behind the specialization area's theory, methods, and technological solutions. ● elect and apply appropriate methods and techniques from the specialization area to analyse, design and construct reliable and user-friendly systems. ● become proficient in new approaches to the specialization area.
Form of examination	Individual oral exam based on a written product.. The character limit of the written product is maximum 48.000 characters, including spaces. The character limits include the cover, table of contents, bibliography, figures and other illustrations, but exclude any appendices. Time allowed for exam including time used for assessment: 20 minutes. The assessment is an overall assessment of the written product(s) and the subsequent oral examination. Permitted support and preparation materials for 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 assessment will be based on the extent to which the student: ● Demonstrates familiarity with the selection of tools for and approaches to Data Science applied in the course. ● Demonstrates knowledge of current research trends in Data Science. ● Demonstrates understanding of the process of finding and adapting data sets, selecting relevant hypotheses and applying suitable Data Science methods.
Exam code(s)	Exam code(s) : U60479

Course days:

Hold: 1

Data Science (COMP)

time	06-03-2023 08:15 til 06-03-2023 12:00
location	07.1-033 - undervisningslokale (30)
Teacher	Jens Classen (classen@ruc.dk) Henning Christiansen (henning@ruc.dk)

Data Science (COMP)

time	08-03-2023 08:15 til 08-03-2023 16:00
location	07.2-033 - undervisningslokale (30)
Teacher	Jens Classen (classen@ruc.dk) Henning Christiansen (henning@ruc.dk)

Data Science (COMP)

time	10-03-2023 08:15 til 10-03-2023 12:00
location	07.2-033 - undervisningslokale (30)
Teacher	Henning Christiansen (henning@ruc.dk) Jens Classen (classen@ruc.dk)

Data Science (COMP)

time	13-03-2023 08:15 til 13-03-2023 12:00
location	07.2-033 - undervisningslokale (30)
Teacher	Henning Christiansen (henning@ruc.dk) Jens Classen (classen@ruc.dk)

Data Science (COMP)

time	15-03-2023 08:15 til 15-03-2023 16:00
location	07.2-033 - undervisningslokale (30)
Teacher	Henning Christiansen (henning@ruc.dk) Jens Classen (classen@ruc.dk)

Data Science (COMP)

time	17-03-2023 08:15 til 17-03-2023 12:00
location	07.2-033 - undervisningslokale (30)
Teacher	Jens Classen (classen@ruc.dk) Henning Christiansen (henning@ruc.dk)

Data Science (COMP)

time	20-03-2023 08:15 til 20-03-2023 12:00
location	07.2-033 - undervisningslokale (30)
Teacher	Jens Classen (classen@ruc.dk) Henning Christiansen (henning@ruc.dk)

Data Science - Hand-in (COMP)

time	26-03-2023 20:00 til 26-03-2023 20:00
forberedelsesnorm	ikke valgt
forberedelsesnorm D-VIP	ikke valgt

Data Science - Oral examination (COMP)

time	31-03-2023 08:15 til 31-03-2023 18:00
forberedelsesnorm	ikke valgt
forberedelsesnorm D-VIP	ikke valgt
location	02.1-209 - glasburet (12)
Teacher	Henning Christiansen (henning@ruc.dk) Jens Classen (classen@ruc.dk)

Data Science - Reexam - Hand-in (COMP)

time	14-08-2023 10:00 til 14-08-2023 10:00
forberedelsesnorm	ikke valgt
forberedelsesnorm D-VIP	ikke valgt

Data Science - Oral reexamination (COMP)

time	18-08-2023 08:15 til 18-08-2023 18:00
forberedelsesnorm	ikke valgt
forberedelsesnorm D-VIP	ikke valgt
location	02.1-209 - glasburet (12)