

Master Thesis

Title	Master Thesis
Semester	E2023
Master programme in	Physics and Scientific Modelling
Type of activity	Master Thesis
Teaching language	English
Study regulation	Read about the Master Programme and find the Study Regulations at ruc.dk Læs mere om uddannelsen og find din studieordning på ruc.dk

REGISTRATION AND STUDY ADMINISTRATIVE

Registration	Tilmelding sker via STADS-Selvbetjening indenfor annonceret tilmeldingsperiode, som du kan se på Studieadministrationens hjemmeside Registration through STADS-Selvbetjening within the announced registration period, as you can see on the Studyadministration homepage .
Number of participants	
ECTS	30
Responsible for the activity	Studieleder for Fysik (fys-sl@ruc.dk)
Head of study	Studieleder for Fysik (fys-sl@ruc.dk)
Teachers	
Study administration	INM Registration & Exams (inm-exams@ruc.dk)
Exam code(s)	U60203

ACADEMIC CONTENT

Overall objective	The objective of the master thesis is that the student reaches the research front in a selected area within physics and/or scientific modelling, the mathematical foundation of physics and scientific modelling, or in another field where thinking as a physicist and/or scientific modelling plays a role in advancing the field. The goal is that the student makes
-------------------	---

independent methodological choices and conducts experimental, computational and/or analytical work to solve a scientific problem.

The master thesis problem-oriented and exemplary and should address a research question within one of the following three variants.

- Fundamental research within physics and/or scientific modelling, the mathematical foundations of physics and scientific modelling, or a neighbouring discipline where thinking as a physicist and/or scientific modelling plays a role in advancing the field.
- Applied research where physics and/or scientific modelling plays a role in solving a problem.
- Research within philosophy, history or didactics of physics, mathematics and science in which having a background in physics, mathematics and scientific modelling contributes significantly to developing the understanding of the problem.

Detailed description of content

Student work independently with solving a Scientific problem within physics and scientific modelling, the student has to choose relevant experimental, computational and/or analytical methods in collaboration with the supervisor.

Course material and Reading list

Students themselves select relevant literature for their master thesis.

Overall plan and expected work effort

Master Thesis 30 ECTS / 810 hours

- Master Thesis Seminar: 4 hours
- Exam and assessment: 1 hour
- Supervision: 7 / 15 hours (theoretical / experimental)
- Report writing: 200 hours
- Literature search: 150 hours
- Practical project work (laboratory, model design, analysis, field work): 400 hours
- Exam preparation: 40 hours

Format

Evaluation and feedback

All master thesis' processes will include ongoing dialogue-based (oral) evaluation between the students and the supervisor. Both students and supervisors are expected to provide constructive feedback and viewpoints during the process. Feedback concerning the academic content and progression, process and collaboration. When the master thesis is handed in, there will also be an evaluation through a questionnaire in SurveyXact concerning the master thesis process and the master program in general. The Study Board will handle all evaluations. Furthermore, students can, in accordance with RUCs 'feel free to state your views' strategy through their representatives at the study board, send evaluations, comments or insights from their project process to the study board during or after the master thesis process.

Programme

The student must attend the preparatory thesis seminar. Information available on study and moodle.

ASSESSMENT

Overall learning outcomes

After completing the master thesis the students will be able to

- demonstrate knowledge and expert level understanding of the theoretical concepts relevant for the project as well as their scope and relations
- independently choose, argue and understand the relevant analytical/numerical/empirical and/or experimental methods applied in the project
- critically relate the strengths and weaknesses of applied theories, methods and models in the project
- communicate the results achieved on a scientific level
- identify and formulate an exemplary research question within the selected area, which can be handled by using the means available
- discuss the significance of the results achieved critically and to relate the results to relevant scientific literature in the area, including in particular theoretical literature.

Form of examination

Master thesis written individually or in a group. Permitted group size: 2-4 students.

The student(s) can choose whether the assessment should be based on solely the written product or on both the written product and the oral exam.

The character limits of the master thesis are:

for 1 student: 24,000-367,200 characters, including spaces.

For 2 students: 24,000-367,200 characters, including spaces.

For 3 students: 24,000-367,200 characters, including spaces.

For 4 students: 24,000-367,200 characters, including spaces.

The character limits include the cover, table of contents, summary, bibliography, figures and other illustrations, but exclude any appendices.

The master thesis must include a summary. The summary can either be written in English or Danish.

The summary is included in the overall assessment.

Before submitting a master thesis written by a group, that have chosen an assessment solely based on the written product, each member of the group must clearly indicate which part(s) of the thesis they are responsible for.

All group members are responsible for the introduction, conclusion and summary.

The oral exam is individual for students that have written the thesis alone, or students that have requested an individual exam. All other oral master thesis exams are conducted as group exams.

Time allowed for exam including time used for assessment for:

1 student: 30 minutes.

2 students: 60 minutes.

3 students: 75 minutes.

4 students: 90 minutes.

There will be an individual assessment of each student's performance.

The assessment is an overall assessment of the master thesis and, where relevant, the oral performance.

Writing and spelling skills in the thesis are part of the assessment.

	<p>Permitted support and preparation materials at the oral exam: All.</p> <p>Assessment: 7-point grading scale. Moderation: External examiner.</p>
Form of Re-examination	Samme som ordinær eksamen / same form as ordinary exam
Type of examination in special cases	
Examination and assessment criteria	<p>Master thesis written individually or in a group. Permitted group size: 2-4 students.</p> <p>The student(s) can choose whether the assessment should be based on solely the written product or on both the written product and the oral exam.</p> <p>The assessment criteria of the written part</p> <ul style="list-style-type: none"> • demonstrate knowledge and expert level understanding of the theoretical concepts relevant for the project as well as their scope and relations • independently choose, argue and understand the relevant analytical/numerical/empirical and/or experimental methods applied in the project • critically relate the strengths and weaknesses of applied theories, methods and models in the project • communicate the results achieved on a scientific level • identify and formulate an exemplary research question within the selected area, which can be handled by using the means available • discuss the significance of the results achieved critically and to relate the results to relevant scientific literature in the area, including in particular theoretical literature. <p>The assessment of the oral exam is based on the student's ability to meet the criteria mentioned above and their ability to</p> <ul style="list-style-type: none"> • clearly present and communicate the scientific content of the project • engage in a scientific dialogue and discussion with the supervisor and assessor <p>Furthermore, whether the performance meets all formal requirements in regard to both for the written og oral exam.</p>
Exam code(s)	Exam code(s) : U60203

Course days:

Hold: 1

Hand-in of Thesis (starting August 2023)

time	02-01-2024 10:00 til 02-01-2024 10:00
forberedelsesnorm	ikke valgt
forberedelsesnorm D-VIP	ikke valgt