

Modelling Project

Title	Modelling Project
Semester	E2025
Master programme in	Physics and Scientific Modelling
Type of activity	Project
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

Sign up for study activities at [stads selvbetjening](#) within the announced registration period, as you can see on the [Studyadministration homepage](#).

Registration for project-exam: Please remember to confirm your registration by signing up for exam as a group when the group formation is final. The registration is through [stads selvbetjening](#)

Registration

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 15

Responsible for the activity Nicholas Bailey (nbailey@ruc.dk)

Head of study Nicholas Bailey (nbailey@ruc.dk)

Teachers

Study administration INM Registration & Exams (inm-exams@ruc.dk)

Exam code(s) U60193

ACADEMIC CONTENT

Overall objective The project work is problem-oriented and exemplary. The project must contain specific work of a modelling nature. The project may be mainly experimental, computational and/or theoretical in nature, and must in an exemplary manner illustrate the interplay between model, theory and experiment/data. The research question addressed in the project may be within physics or may be a question (or problem) where physics approaches (such as methodologies from physics and physical thinking) plays a role in the solution.

Detailed description of content The purpose of the project is that the student via a problem-oriented and exemplary example gain competences to work with modelling within the tradition of physics.

The work can be mainly experimental, numerical and/or theoretical, but should always include elements of work with one of more specific model or class of models.

Course material and reading list The project curriculum will vary depending on the project theme and specific research question.

Relevant literature, software code, experimental methods (if relevant) and so forth are discussed with the supervisor.

The project is worth 15 ECTS points (420 hours). Some of this time is spend with the supervisor and/or head of study but most of the time is independent work by the students in groups.

Overall plan and expected work effort **Time with supervisor and/or head of study**

- Project upstart and group formation: 8h
- Problem formulation seminar: 2h
- Exam: 2h

- Supervision by supervisor (in meetings, with computer and/or in lab): 25h

Independent work by the student group

- Writing 100h
- Searching for, reading and discussing literature: 100h
- Working with the problem (e.g. writing code, experiments, mathematical analysis): 100h
- Preparation for exam: 46h

Format

All projects' 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.

Evaluation and feedback Every other year when the projects are handed in, there will also be an evaluation through a questionnaire in SurveyXact. The Study Board will handle all evaluations along with any comments from the head of study.

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 project process.

At the beginning of the semester the students will form groups defined by a theme or research question of their choosing. This choice can be facilitated by the supervisors or originate from the students.

Programme The study activity is based around PPL, where the group works independently and critically with the topic. This includes finding, reading, and understanding relevant literature, having regular productive group meetings, propose relevant scientific methods, models, experiments, or/ and analysis that can lead to an answer to the research question, composing text for the final project project, and more.

The project students agree with the supervisor on a regular meeting schedule; in order for the meetings to be fruitful the students must have an agenda and be well prepared for each meeting.

ASSESSMENT

After completing the project, the students will be able to independently plan and carry out relevant theoretical, computational and/or experimental work

Overall
learning
outcomes

- analyse and present the results achieved
- demonstrate in depth knowledge and understanding of the experimental/theoretical methods applied in the project and argue for why these are the relevant methods
- apply in-depth mathematical and/or physical concepts, models and ways of thinking
- relate experiment, data and theory
- decode, interpret, distinguish between and connect various representations of models, data and theory in relation to the project
- critically discuss the significance of the results achieved and to relate the results to the relevant scientific literature in the area.

Oral project exam in groups with individual assessment

Permitted group size: 2-7 students.

Form of
examination

The character limits of the project report are:

For 2 students: 24,000-240000 characters, including spaces.

For 3 students: 24,000-240000 characters, including spaces.

For 4 students: 24,000-240000 characters, including spaces.

For 5 students: 24,000-240000 characters, including spaces.

For 6 students: 24,000-240000 characters, including spaces.

For 7 students: 24,000-240000 characters, including spaces.

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

The project report must include an abstract in English, that is part of the

assessment.

Time allowed for the 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.

7 students: 135 minutes.

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

Oral project exam in groups with individual assessment.

The students begin the exam with a presentation with a duration of 8-10 min. each on a topic related to the project. After the presentation there will be a dialogue between the students, supervisor and co-assessor, where specific questions may be asked to individual students.

Examination and assessment criteria (implemented)

The assessment criteria of the written part

- analyse and present the results achieved
- demonstrate in depth knowledge and understanding of the experimental/theoretical methods applied in the project and argue for why these are the relevant methods
- apply in-depth mathematical and/or physical concepts, models and ways of thinking
- relate experiment, data and theory

- decode, interpret, distinguish between and connect various representations of models, data and theory in relation to the project
- critically discuss the significance of the results achieved and to relate the results to the relevant scientific literature in the area.

The assessment of the oral exam is based on the student's ability to meet the criteria mentioned above and their ability to

- clearly present and communicate the scientific content of the project
- engage in a scientific dialogue and discussion with the supervisor and co assessor

Furthermore, whether the performance meets all formal requirements in regard to both for the written and oral exam

Regarding the use of generative AI at the exam

For project reports, bachelor's projects and master's theses, generative AI aids (GAI) are permitted in the work with the exam if the use is declared. You must clearly declare how you have used generative artificial intelligence (GAI). This can be included as part of the methodology section or as a short statement at the end of your report. This means that you must describe how you have used GAI, e.g. for the preparatory work on the project, to ask questions and search for information, to receive feedback and criticism on your text, to carry out proofreading or to improve language and readability. It is important that you actively relate to your choice of tools in this way, as it is part of the entire process of creating the project, and thus part of your scientific method and professional communication.

The use of any specific text that is GAI-generated requires citation, just as when using all other sources from which direct quotations are used.

In the library's guide, you can see more about how to cite AI and how you can account for your use of GAI - read them [here](#).

However, ordinary spell checking and other language suggestions, such as Word or other word processing programs, as well as programs for

writing minutes and transcription, are permitted in all written exams and do not need to be declared.

Exam code(s) Exam code(s) : U60193

Course days:

Hold: 1

Modelling Project

Time 01-09-2025 08:00 til
01-09-2025 17:00

Modelling Project

Time 02-09-2025 09:00 til
02-09-2025 10:00

Location 27.1-052 - lokale 2 (20)

Teacher Nicholas Bailey (nbailey@ruc.dk)

Modelling Project

Time 02-09-2025 11:15 til
02-09-2025 12:00

Location 27.1-052 - lokale 2 (20)

Teacher Nicholas Bailey (nbailey@ruc.dk)

Modelling Project

Time 02-09-2025 12:30 til
02-09-2025 14:45

Location 28b.0-01 - store teorirum (30)

Modelling Project

Time 03-09-2025 09:00 til
03-09-2025 10:00

Teacher Jesper Schmidt Hansen (jschmidt@ruc.dk)
Nicholas Bailey (nbailey@ruc.dk)

Modelling Project

Time 03-09-2025 10:15 til
03-09-2025 12:00
Location 27.1-052 - lokale 2 (20)
Teacher Nicholas Bailey (nbailey@ruc.dk)

Modelling Project

Time 03-09-2025 14:00 til
03-09-2025 16:00
Location 27.1-089 - teorirum 27 (66)
Teacher Jesper Schmidt Hansen (jschmidt@ruc.dk)
Nicholas Bailey (nbailey@ruc.dk)

Modelling Project

Time 04-09-2025 08:15 til
04-09-2025 10:00
Location 27.1-052 - lokale 2 (20)
Teacher Nicholas Bailey (nbailey@ruc.dk)

Modelling Project

Time 04-09-2025 14:15 til
04-09-2025 17:00
Location 27.1-089 - teorirum 27 (66)

Modelling Project

Time 05-09-2025 09:00 til
05-09-2025 10:00
Location 27.1-052 - lokale 2 (20)
Teacher Nicholas Bailey (nbailey@ruc.dk)

Modelling Project

Time 05-09-2025 10:15 til
05-09-2025 12:00

Location 27.2-054 - lokale 3 (40)

Teacher Nicholas Bailey (nbailey@ruc.dk)

Modelling Project

Time 11-09-2025 14:15 til
11-09-2025 18:00

Modelling Project

Time 11-09-2025 23:00 til
11-09-2025 23:45

Forberedelsesnorm Ikke valgt

Forberedelsesnorm d-vip Ikke valgt

Modelling Project

Time 08-10-2025 14:00 til
08-10-2025 16:00

Location 27.1-089 - teorikum 27 (66)

Teacher Nicholas Bailey (nbailey@ruc.dk)

Modelling Project

Time 18-12-2025 09:00 til
18-12-2025 10:00

Modelling Project

Time 19-01-2026 08:15 til
30-01-2026 18:00

Modelling Project

Time 02-02-2026 08:15 til
27-02-2026 18:00