

Electrodynamics (Advanced Physics)

Title	Electrodynamics (Advanced Physics)
Semester	E2023
Master programme in	Physics and Scientific Modelling
Type of activity	Course
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	<p>Sign up for study activities at stads selvbetjening within the announced registration period, as you can see on the Studyadministration homepage.</p> <p>When signing up for study activities, please be aware of potential conflicts between study activities or exam dates.</p> <p>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.</p>
Number of participants	
ECTS	5
Responsible for the activity	Tage Emil Christensen (tec@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)	U60208

ACADEMIC CONTENT

Overall objective	The course covers a selected area of physics that is dealt with in depth. The field can be theoretical, experimental or a combination of theoretical
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and experimental. For each academic year, the selected field of the course is announced in advance by the Board of Studies.

Detailed description of content

Detailed description:

The course is an introduction to electrodynamics. Maxwells equations on integral form is central to the treatment. Elements of the course are electrostatics, magnetostatics, electromagnetic induction, electromagnetic waves and optics. Electric circuits will also be touched upon.

Course material and Reading list

HC Ohanian og JT Markert (2007): Physics for Engineers and Scientists, 3rd expanded edition, WW Norton, ISBN: 9780393109719

plus supplementary notes

Overall plan and expected work effort

- 42 hours class (lectures and problem solving)
- 4 hours exam
- 30 hours preparation reading text book material
- 36 hours problem solving as preparation for class
- 23 hours problem solving as preparation for exam

Format

Evaluation and feedback

The course includes formative evaluation based on dialogue between the students and the teacher(s).

Students are expected to provide constructive critique, feedback and viewpoints during the course if it is needed for the course to have better quality. Every other year at the end of the course, there will also be an evaluation through a questionnaire in SurveyXact. The Study Board will handle all evaluations along with any comments from the course responsible teacher.

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 form the course to the study board during or after the course.

Programme

The course will consist of lectures and problem solving. During the semester the students must hand in solved problems which will get feedback before the students hand them in as their portfolio.

ASSESSMENT

Overall learning outcomes

After completing the course the students will be able to

- in-depth knowledge and understanding of a selected area of physics
- skills relevant to the selected area of physics
- competences relevant to the selected area of physics.
- competences in being able to independently learn about a (to the student) new area of physics.

Form of examination

Individual oral exam based on a portfolio.

	<p>The character limit of the portfolio is 1,200-12,000 characters, including spaces. Examples of written products are exercise responses, talking points for presentations, written feedback, reflections, written assignments. The preparation of the products may be subject to time limits.</p> <p>The character limits include the cover, table of contents, bibliography, figures and other illustrations, but exclude any appendices.</p> <p>Time allowed for exam including time used for assessment: 30 minutes. The assessment is an overall assessment of the written product(s) and the subsequent oral examination.</p> <p>Permitted support and preparation materials for the oral exam: All.</p> <p>Assessment: 7-point grading scale. Moderation: Internal co-assessor</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>The oral exam is based on the problem solved in the portfolio. The exam will start with a student presentation of a selected problem from the portfolio and continue as a dialogue.</p> <p>Students will be assessed in the written part of the exam by their ability to:</p> <ul style="list-style-type: none"> • Knowledge and understanding of electrostatic • Knowledge and understanding of Maxwells equation • Knowledge and understanding of electric fields in matter • Knowledge and understanding of electromagnetic waves • Knowledge and understanding of basic optics • Knowledge and understanding of applications of electrodynamics in circuits and standard circuit elements • Proficiency in being able to solve problems in electrodynamics including all above topics and fields • Proficiency in the ability to apply the relevant mathematical methods in the actual execution of tasks. • The competence to interpret results obtained in physics terms and communicate such interpretations in writing <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 portfolio • engage in a scientific dialogue and discussion with the assessor and co 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) : U60208

Course days:

Hold: 1

Electrodynamics - Hand-in of portfolio

time	03-01-2024 10:00 til 03-01-2024 10:00
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forberedelsesnorm	ikke valgt
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forberedelsesnorm D-VIP	ikke valgt
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Electrodynamics - Hand-in of portfolio (reexam)

time	31-01-2024 10:00 til 31-01-2024 10:00
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forberedelsesnorm	ikke valgt
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forberedelsesnorm D-VIP	ikke valgt
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