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Faculty of Health, Science and Technology  
Mathematics

## Syllabus

### Introduction to Research Studies in Mathematics at the Faculty of Health, Science and Technology

**Course Code:** 7MAT004  
**Course Title:** Introduction to Research Studies in Mathematics at the Faculty of Health, Science and Technology  
*Introduktion till forskarstudier i matematik på Fakulteten för hälsa, natur- och teknikvetenskap*  
**Credits:** 1,5 ECTS  
**Degree Level:** Doctoral

#### Course Approval

The syllabus was approved by the Faculty of Health, Science and Technology, 15 June 2022 and is valid from the fall semester 2022.

#### Language of instruction

Teaching is mainly in Scandinavian languages and English, depending on the doctoral student's natural language.

#### Prerequisites

Prerequisites is that the student/doctoral student is admitted to a doctoral programme at the Faculty of Health, Science and Technology

#### Learning Outcomes

For a Pass grade, students must be able to:

- demonstrate familiarity with how health/science/technology research is conducted in general and in the specific research subject in particular,
- demonstrate familiarity with how a licentiate and a doctoral degree respectively is earned,
- demonstrate familiarity with the research education process, and
- demonstrate familiarity with the ethical considerations needed in the doctoral student's research field.

**Course Content**

The course is based on an individual study of course literature on how research is conducted in general and how a licentiate and a doctoral degree respectively is earned. The course includes discussions with the supervisor on the research education process and on how research in the research subject is conducted, and what ethical considerations need to be made. Doctoral students are also required to attend at least one licentiate and one public defence of a doctoral thesis.

**Examination**

For a Pass grade, doctoral students are required to study the course literature and discuss the content with the supervisor(s). In addition, an agreement between the doctoral student and supervisors should be established to create a reciprocal understanding of the research education process. Doctoral students are also required to attend at least one licentiate seminar and one public defence of a doctoral thesis in one of the following subjects: Biology, Chemical Engineering, Chemistry, Computer Science, Environmental and Energy Systems, Materials Engineering, Mathematics, Nursing, Physics, Public Health Sciences.

**Grades**

One of the grades Fail (U) or Pass (G) is awarded in the examination of the course.

**Quality Assurance**

The course convenor has a duty to encourage a continuous dialogue on learning processes and goal fulfilment. A written evaluation is carried out at the conclusion of the course combined with a joint student-teacher discussion of all aspects commented on. The result of the evaluation is collated and made available in accordance with *The Higher Education Ordinance*, Chapter 1, § 14.

**Course Certificate**

Course certificate is issued on request.

**Goal matrix**

Goals that, after completing the course, are fulfilled for the doctoral or licentiate degree are marked with an X.

	<b>Doctoral</b>			<b>Licentiate</b>	
	<b>Knowledge and understanding</b>			<b>Knowledge and understanding</b>	
1a	- demonstrate broad knowledge and systematic understanding of the research field and	x		1a demonstrate knowledge and understanding in the field of research including	x
1b	advanced and up-to-date specialised knowledge in a limited area of this field, and			1b current specialist knowledge in a limited area of this field as well as	
1c	familiarity with research methodology in general and the methods of the specific field of research in particular.			1c specialised knowledge of research methodology in general and the methods of the specific field of research in particular	
	<b>Competence and skills</b>			<b>Competence and skills</b>	
2a	- demonstrate capacity for scholarly analysis and synthesis as well as			2a demonstrate the ability to identify and formulate issues with scholarly precision critically, autonomously and creatively and to	
2b	to review and assess new and complex phenomena, issues and situations autonomously and critically			2b plan and use appropriate methods to undertake a limited piece of research and other qualified tasks within predetermined time frames in order to contribute to the formation of knowledge	
3a	- demonstrate the ability to identify and formulate issues with scholarly precision critically, autonomously and creatively, and to			2c as well as to evaluate this work	
3b	plan and use appropriate methods to undertake research and other qualified tasks within predetermined time frames and to review and evaluate such work			3a demonstrate the ability in both national and international contexts to present and discuss research and research findings in speech and writing and in dialogue with the academic community and	
4	- demonstrate through a dissertation the ability to make a significant contribution to the formation of knowledge through his or her own research			3b society in general	

5a	- demonstrate the ability in both national and international contexts to present and discuss research and research findings authoritatively in speech and writing and in dialogue with the academic community and		4	demonstrate the skills required to participate autonomously in research and development work and to work autonomously in some other qualified capacity.	
5b	society in general				
6	- demonstrate the ability to identify the need for further knowledge and				
7	- demonstrate the capacity to contribute to social development and support the learning of others both through research and education and in some other qualified professional capacity.				
<b>Judgement and approach</b>				<b>Judgement and approach</b>	
8a	- demonstrate intellectual autonomy and disciplinary rectitude as well as	X	5	demonstrate the ability to make assessments of ethical aspects of his or her own research	x
8b	the ability to make assessments of research ethics, and	x	6	demonstrate insight into the possibilities and limitations of research, its role in society and the responsibility of the individual for how it is used	x
9	- demonstrate specialised insight into the possibilities and limitations of research, its role in society and the responsibility of the individual for how it is used.		7	demonstrate the ability to identify the personal need for further knowledge and take responsibility for his or her ongoing learning.	x