LUNDS UNIVERSITET
Lunds Tekniska Högskola

Course syllabus

Matematisk kommunikation
Mathematical Communication

FMAB56, 6 credits, G1 (First Cycle)

Valid for: 2023/24
Faculty: Faculty of Engineering, LTH
Decided by: PLED F/Pi
Date of Decision: 2023-04-18

General Information

Main field: Technology.
Compulsory for: Pi1
Language of instruction: The course will be given in Swedish

Aim

The aim of the course is to increase the student's awareness of, and understanding of, mathematical reasoning. The course gives an introduction to the construction of mathematical theory, demonstrating the need for rigour through simple examples. Furthermore, the student should practise his or her ability to seek information, and to put forward and present mathematical reasoning, also in popular form. The student should also get some notions of current and modern mathematical research, including how ethical questions may arise.

Learning outcomes

Knowledge and understanding
For a passing grade the student must

- be able to use fundamental concepts used in mathematical theory construction, and to understand their meaning.
- be able to informally describe the mathematical sciences (geometry, algebra, analysis and probability theory) and to give examples of research in classical as well as modern mathematics.
- now the procedure for getting a mathematical work published, and be familiar with some important mathematical journals.

Competences and skills
For a passing grade the student must

- be able to use logical reasoning to analyse and solve mathematical problems which require a division into several subproblems.
- be able to explain in a well-structured manner, with clear logic and proper terminology, orally as well as in writing, solutions (produced by the student or by others) to a mathematical problem, and be able to present, orally as well as in writing, a given mathematical problem in a manner accesible to laypersons.
- be able to comment on and review, both in writing and orally, a mathematical text or a mathematical reasoning with respect to both content and form.
- be able to search for articles and journals in data bases and libraries containing mathematical literature, and be able to provide references according to the accepted standards.

Judgement and approach
For a passing grade the student must

- develop an attitude to the world around him or her, according to which mathematics is a natural and precise instrument for communication and reasoning.
- be able to give examples of how the application of mathematical methods may have undesired social consequences, and be aware that the professional life of mathematician includes question of an ethical nature.

Contents

Introduction to the basics of mathematical theory building with particular focus on the five (most common) proof types of mathematics. Conventions and traditions in mathematical writing. Training in mathematical writing including an introduction to LaTeX and to reference management in mathematics. Training in oral presentation and review of mathematical texts as well as written and oral opposition. Orientation about mathematical publishing, mathematical journals and introduction to literature and information searching. Presentation of the mathematical sciences and an insight into research questions in classical and modern mathematics. Elements of group work planning and project management.

Examination details

Grading scale: UG - (U,G) - (Fail, Pass)
Assessment: Assignments. Written and oral reports of project work, individually and in groups. Compulsory attendance at the presentation of the assignments and the project report.

The examiner, in consultation with Disability Support Services, may deviate from the regular form of examination in order to provide a permanently disabled student with a form of examination equivalent to that of a student without a disability.

Admission

Assumed prior knowledge: Knowledge from courses in calculus and linear algebra which are taught in parallel.
The number of participants is limited to: No

The course overlaps following course/s: FMA085, FMAA30, FMAB55

Reading list

- Stenciler med populärvetenskaplig presentation av modern matematik. Handed out.

Contact and other information

Course coordinator: Studierektor Anders Holst, Studierektor@math.lth.se
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