Linnæus University

Jnr: 2014/3201-3.1.2

Course syllabus

Faculty of Technology
Department of Mathematics

4MA432 Matematiska metoder inom kvantmekaniken, 7,5 högskolepoäng

Mathematical Methods of Quantum Mechanics, 7.5 credits

Main field of study
Mathematics

Subject Group
Mathematics

Level of classification
Second Level

Progression
A1N

Date of Ratification
Approved by Faculty of Technology 2014-10-03
The course syllabus is valid from autumn semester 2015

Prerequisites
60 credits in mathematics including 15 credits at G2F level or the equivalent.

Objectives

The student should be able to:

- operate with self-adjoint linear operators in Hilbert space
- apply self-adjoint linear operators for solving of problems
- operate with definitions and central notions of the course in coupling with study of various problems
- operate, communicate and present argumentation using mathematical forms of representation
- demonstrate applications to theory of quantum information.

Content

The course content is

- introduction to theory of linear operators in Hilbert space
- axiomatics of quantum mechanics
- applications to theory of quantum information

Type of Instruction

Lectures and seminars. Compulsory assignments may be given during the course.

Examination

The course is assessed with the grades A, B, C, D, E, Fx or F

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The grade A constitutes the highest grade on the scale and the remaining grades follow in descending order where the grade E is the lowest grade on the scale that will result in a pass. The grade F means that the student's performance is assessed as fail (i.e. received the grade F).

The student's knowledge is assessed in the form of oral and/or written examination.

Course Evaluation
A course evaluation will be carried out at the end of the course in accordance with the guidelines of the University. The result of the course evaluation will be filed at the department.

Credit Overlap
The course cannot be included in a degree along with the following course/courses of which the content fully, or partly, corresponds to the content of this course:4MA132 Mathematical Methods of Quantum Mechanics, 7.5 credits

Other
Grade criteria for the A–F scale are communicated to the student through a special document. The student is to be informed about the grade criteria for the course by the start of the course at the latest.

Required Reading and Additional Study Material
Required reading
Ballentine L. Quantum Mechanics, A Modern Development,
World Scientific Publ., Singapore, 1998. 653 pages