

IMT3511 Discrete Mathematics - 2015-2016

Course code: IMT3511

Course name: Discrete Mathematics

Course level: Bachelor (syklus 1)

ECTS Credits: 10

Duration: Spring and autumn

Duration (additional text):

In principle this course will be given in the spring semester, but in case there is enough interest, then it can also be given in the fall semester.

Language of instruction: English

Expected learning outcomes: Knowledge:

- The candidate possesses knowledge of important topics within abstract algebra.
- The candidate possesses knowlegde of important topics within combinatorics.
- The candidate possesses knowlegde of fundamental topics within graph theory.

Skills:

- The candidate knows relevant methods and terminology in discrete mathematics.
- The candidate is capable of applying his/her knowledge in different courses.

General competence:

• The candidate is capable of understanding and analyzing problems related to abstract algebra, combinatorics and graph theory.

Objectives:

After the course, the students should acquire:

- Understanding of the most important topics of abstract algebra
- Understanding of the most important topics of combinatorics, including fundamentals of graph theory.

Topic(s):

General concepts: * Logic, proofs, sets, algorithms, induction and recursion, combinatorics, discrete probabilities

Graphs: * Connectivity, shortest path, (minimal) spanning trees

Modeling computation: * Finite-state machines, Turing machines

Abstract algebra: * Groups, rings, fields

Teaching Methods:

Lectures Exercises Tutoring

Teaching Methods (additional text):

The course is given as a self reading course, where there is time for the students during lectures to raise questions on the theory and/or the exercises.

The course will be made accessible for both campus and remote students. Every student is free to choose the pedagogic arrangement form that is best fitted for her/his own requirement. The lectures in the course will be given on campus and are open for both categories of students. All the lectures will also be available on Internet through GUC's learning management system (ClassFronter).

Form(s) of Assessment:

Oral exam, individually

Form(s) of Assessment (additional text):

Candidates will get an oral exam (max 45 minutes) with written preparation (max 60 minutes). Candidates will be given a number of assignments within the topics of the course and 60 minutes to prepare written answers. After this the candidates will be questioned about their answer in the oral part.

If the number of students is too high, then the oral exam is replaced by a 3 hour written exam. The students will be notified about this one month prior to the exam at the latest.

Grading Scale:

Alphabetical Scale, A(best) – F (fail)

External/internal examiner:

Evaluated by either internal and external examiner or 2 internal examiners.

Re-sit examination:

Re-sit August 2016

Tillatte hjelpemidler:

Examination support:

D: No printed or hand-written support material is allowed. A specific basic calculator is allowed.

Coursework Requirements: None.

Academic responsibility: Faculty of Computer Science and Media Technology

Course responsibility: Professor Patrick Bours

Teaching Materials:

Kenneth H. Rosen:
Discrete Mathematics and its Applications, 7th ed.
McGraw-Hill International Edition (2012), ISBN 978-0-07-338309-5.
William J. Gilbert and W. Keith Nicholson
Modern Algebra with Applications, 2nd ed.
Wiley (2004), ISBN 0-471-41451-4

Additional information:

In case there will be less than 5 students that will apply for the course, it will be at the discretion of Studieprogramansvarlig whether the course will be offered or not an if yes, in which form.

Publish:

Yes