

ITC8190  
Mathematics for Computer Science  
Introduction

Aleksandr Lenin

September 4th, 2018

# Objectives of the Course

- provide basic mathematical background for studying the cryptographic subjects.
- ability to understand mathematical texts
- can understand and use mathematical language

## About the Course

6 ECTS credits upon completion

1 lecture and 1 practice per week

Examination in the end of the course

Schedule:

Lecture: Tue 12:00–13:30 @SOC-218

Exercise: Wed 12:00 - 13:30 @ICT-637

The timetable is not fixed and may change within the first two weeks of the semester.

# Course Topics

1. Introduction (this week)
2. Sets and mappings between sets (week 2).
3. Relations on a set: equivalence and order relations (week 3).
4. Minimal/maximal, smallest/greatest, lower/upper bounds, supremum/infimum (week 4).
5. Infinite sets and their comparison (week 4).
6. Natural numbers and induction. Divisibility and prime numbers
7. Elementary counting principles. Permutations and combinations
8. Recurrence relations and sums
9. Algebraic structures: groups, rings, integral domains, fields (tentative).

## Course Topics (contd.)

10. Polynomials and their roots.
11. Vector spaces. Linear maps. Matrices and matrix operations.
12. Real numbers. Sequences and convergence.
13. Continuous functions. Derivatives. O-notation. Series. Integrals.
14. Probabilities. Random variables, mean and standard deviation.

# Course organization

The course structured into 3 activity categories:

- Individual home assignments – 70%
- Examination 30%

Examination is pen and paper one. No written, printed or electronic materials permitted.

## Course organization

To pass the course, a student has to score at least 51% in every activity category.

Students who get less than 51% for individual assignments will not be admitted to the exam.

The deadlines are not subject to extension.

In some cases exceptions may be made, but do not count on this!

# Course organization

All assignments are pen and paper ones. No written, printed or electronic materials permitted.

The deadlines are not subject to extension.

In some cases exceptions may be made, but do not count on this!



## The "muddy card" method

If you feel that

- you did not understand some part of the lecture
- you feel that some important topic was skipped
- you would like to get some information on the topic not covered by this course
- you would need more detailed description of the topic than that introduced during lecture

in such and similar cases please email the instructor, who will be maintaining a Q&A list and will populate it with the answers to your questions every week.

## Exercise lessons

- Students solve practical tasks on a whiteboard in front of the class
- Alternatives are negotiable
  - Students solve practical tasks individually?
  - ...

# Suggested Reading

- Lecture slides
- Some additional reading material may be given at the end of a topic.

# Course Instructor

**Aleksandr Lenin**

email: `aleksandr.lenin@ttu.ee`

Course homepage:

`https://courses.cs.ttu.ee/pages/ITC8190`

Consultation times agreed via email.

## Test

Students whose student code starts with **IVCM18...** take the test.

**IVCM13** Wed 05.09.2018 12:00 – 13:30 ICT–637  
(ITC8190 exercise slot)

**IVCM11** Wed 05.09.2018 17:45 – 19:15 SOC–417  
(ITC8240 exercise slot)

**IVCM12** Wed 05.09.2018 19:15 – 21:00 SOC–417  
(ITC8240 exercise slot)

Students are given 1h 20m to solve the test.

The test is pen-and-paper. No electronic, written or printed materials permitted!

Registration:

<https://doodle.com/poll/x3uyiic8d6i2qc9y>



THANK YOU  
FOR  
YOUR  
ATTENTION  
ANY QUESTIONS?