BASIC MATHEMATICS – SPRING TERM 2022
COURSE INFORMATION

– Preliminary version, 8th March 2022 –

Forms of instruction

Until further notice, the instruction will be in the form of a series of video-recorded lectures, posted online, and exercise classes on Zoom. The exercise classes may move to a physical classroom later during the term, when travel into Japan becomes possible again. The final exam may take place on campus or online, depending on the circumstances.

All course material will be published through the course home page on NUCT.

Course content

The course covers the following topics, each of which will be the subject of one video-recorded lecture.

	Topic	Section	Exercise class
1	Lines and their slopes	1	18th April
2	Sets and logic		25th April
3	Functions and their graphs	2, 3	2nd May
4	Combinations of functions	4	9th May
5	Transformations of functions	5	16th May
6	Quadratic functions	6	23rd May
7	Polynomial functions	7	30th May
8	Exponentials	9	6th June
9	Logarithms	9	13th June
10	Systems of equations and inequalities	10	20th June
11	Linear systems, vectors and matrices	11	27th July
12	Derivatives, *I*		4th July
13	Derivatives, *II*		11th July
	Final exam		25th July

The *section* numbers in the table indicate sections in the main course book (see below).

1. Times and venues

The exercise classes take place on Mondays, 13:00–14:30, starting on the 18th April.

An introductory meeting will be held on *Monday the 11th April, at 13:00*.

Examination

The examination consists of *homework* and a *final exam*.

- *Homework:* A number of written homework assignment will be given during the course. Discussion and collaboration amongst students is encouraged; however, the participants are required to hand in individually written solutions to the problems, and may be asked to explain their solutions in class.
- The *final exam* will take place either on campus or online, depending on the circumstances (including the visa status of the participants).
- Preliminary date for the final exam is Monday the 25th July.

Grading

A total score (0–100 %) is calculated as the weighted average of the scores obtained on the homework (20 %) and the final examination (80 %).

The final grade is determined by the total score, as follows:[1]

F: 0–59 %, *C*-: 60–64 %, *C*: 65–69 %, *B*: 70–79 %, *A*: 80–94 %, *A*+: 95–100 %.

Course withdrawal: Students who do not participate in the final exam will receive the grade *W*.

Textbooks

The main textbook of this course is:

- Rhonda, Huettenmueller: *Precalculus demystified*, 2nd edition, McGraw-Hill (2012).

Those who want additional reading for the content of the lectures 2 and 11–13 may consult (for example) the following books:

- Seymour Lipschutz: *Schaum's outline of set theory and related topics*, 2nd edition, McGraw-Hill, 1998 *(lecture 2)*;
- Otto Bretscher: *Linear Algebra with Applications*, 4th edition, Pearson 2009 *(lecture 11)*;
- Serge Lang: *Short calculus*, Springer-Verlag, New York, 2002 *(lectures 12, 13)*.

Instructors

Main instructor: Erik Darpö (contact via email, NUCT or by appointment)

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Teaching assistant: TBC

[1] Students who enrolled before April 2020 will receive a grade on the five level scale *S*-*A*-*B*-*C*-*F* or, in the case of course withdrawal, *Absent*.