

IT NUMBER		MODULE	SCOPE	EXAMINATION
PL: 181100	Mathematics for Engineers	7	8	PL: KL, 90 Min.
PV: 181101				PV: T
181100a	Mathematics for Engineers	4	5	
181100b	Exercises in Mathematics	3	3	PV

Mathematics is a vital tool for prospective engineers. This includes both the knowledge of mathematical concepts and foundations, and the more general capability to work with abstract theories. An important learning goal is the faculty to understand abstract theories, to think through them clearly, and to apply theoretic concepts to concrete problems.

After completion of the course students have acquired a basic knowledge in one-dimensional calculus. They are able to understand mathematical concepts and apply them to concrete problems. They can analyze and formulate mathematical relations and are able to visualize them, e.g. by sketching functions in a coordinate system. Students have acquired the skills to perform abstract mathematical reasoning and to work their way into new mathematical subjects.

CONTENTS OF LECTURE

1. Finite series
2. Equations with a single variable
3. Functions with a single variable
4. Sequences, limits of sequences and convergence
5. Limits of functions and continuity
6. Infinite series and power series
7. Differential calculus with a single variable
8. Curve sketching
9. Integral calculus with a single variable
10. Taylor series
11. Introduction into vector calculus