Title: Mathematics 1

Lecturer: Prof. Dr. Gregor Dolinar

Aim of the course:
Students acquire and broaden the understanding of the basic concepts of mathematical analysis. They develop analytical thinking skills. The acquired knowledge is indispensable for the study of electrical engineering.

Required (pre)knowledge:
Basic undergraduate mathematical knowledge.

Contents:
Number sets: natural numbers, integers, rational numbers, real numbers, complex numbers, mathematical induction.
Sequences: convergent sequences / limit of a sequence, bounded sequence.
Series: partial sum of the series, convergence, convergence tests, alternating series.
Functions: domain and the codomain, image, odd and even functions, injection, surjection, bijection, function composition, inverse function, elementary functions, limit, continuous function.
Derivative: differentiation rules, geometric interpretation, differential, applications of derivatives.
Integral: indefinite and definite integral, methods for computing integrals, applications of integrals.

Selected references:
G. B. Thomas: Thomas' Calculus, Pearson Education, 2005