

Introduction to mathematical analysis 1

Course Syllabus Spring Term 2018 — SNU

Course Title	Introduction to mathematical analysis 1 (in English)
Course number	3341.201
Instructor	Gerald Trutnau
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Course homepage	http://www.math.snu.ac.kr/~trutnau/teachingA12018.html
Course Objective	The course gives an introduction to infinitesimal calculus.
References	There is no main textbook. The lecture notes will serve as textbook, but most of the material and structure is from J.E. Marsden & M.J. Hoffman, <i>Elementary Classical Analysis</i> , 2nd edition, Freeman and W. Rudin, <i>Principles of Mathematical Analysis</i> , 3rd edition, McGraw-Hill, 1976 Other references: will be given during the lecture
Description	The topology of the real line and the Euclidean space, limits, series, and infinitesimal properties of functions are treated.
Tentative content	sets, cardinality, ordered fields and real numbers; axiom of completeness; limits of sequences; completeness of the real numbers; Euclidean space; open sets, closed sets; boundary of a set; series; convergence tests for series; compactness; connected sets; continuous functions; maximum-minimum theorem; intermediate value theorem; uniform continuity; monotone functions; differentiability in one variable; mean value property; Taylor expansion in one variable; Riemann integral, fundamental theorem of calculus; functions of bounded variation; Riemann-Stieltjes integral.
Teaching Method	Lecture, exercises.
Evaluation	Midterm (8th week, 75 minutes, 20 % of final score); Final exam (15th week, 75 minutes, 30 % of final score); Assignment sheets (40 % of final score); Attendance (10 % of final score). Students must solve exercises regularly, and will be given assignment sheets mostly every week.