

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	<p>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 Calssical Analysis</i>, 2nd edition, Freeman and W. Rudin, <i>Principles of Mathematical Analysis</i>, 3rd edition, McGraw-Hill, 1976</p> <p>Other references: will be given during the lecture</p>
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	<p>Midterm (8th week, 75 minutes, 20 % of final score);</p> <p>Final exam (15th week, 75 minutes, 30 % of final score);</p> <p>Assignment sheets (40 % of final score);</p> <p>Attendance (10 % of final score).</p> <p>Students must solve exercises regularly, and will be given assignment sheets mostly every week.</p>