Differential equations

Course Syllabus
Fall Term 2014 — SNU

Course Title   Differential equations (in English)

Course number   881.003

Instructor   Gerald Trutnau

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Course homepage   `http://www.math.snu.ac.kr/~trutnau/teachingODE2014.html`

Course Objective   Basic linear ordinary differential equations will be studied as well as existence and uniqueness of solutions.

Prerequisits   Basic knowledge in linear algebra and analysis

References   Boyce, William E.; DiPrima, Richard C. Elementary differential equations and boundary value problems. John Wiley & Sons, Inc., New York-London-Sydney 1965 xi+485 pp.
Robinson, James C. An introduction to ordinary differential equations. Cambridge University Press, Cambridge, 2004.

Description   The course is for students who do not major in mathematics.

Tentative content 1. Basics and definition of differential equation
2. Integration techniques (substitution, integration by parts, partial fraction decomposition of rational functions)
3. Separation of variables
4. Linear differential equations of first order
5. Solution via substitution (Euler homogeneous, Riccati, Bernoulli differential equation)
6. Linear differential equations of higher order
7. Linear differential equations with constant coefficients
8. Existence and uniqueness of solutions

Teaching Method   Lecture, exercises.

Evaluation   Midterm (8th week, 75 minutes, 30 % of final score);
Final exam (15th week, 75 minutes, 30 % of final score);
Assignment sheets (30 % of final score);
Attendance (10 % of final score).
Students must solve exercises regularily, and will be given assignment sheets every week.