



# HANYANG UNIVERSITY

## 2019 HISS Syllabus (Numerical Methods for Engineers)

Professor: **Se-Jin Yook**  
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Home Univ.: Hanyang University  
Dept.: School of Mechanical Engineering

Description: Numerical methods are techniques by which mathematical problems are formulated so that they can be solved with arithmetic operations. This course will cover the basic numerical analysis techniques including root finding, curve fitting, numerical integration, numerical differentiation, ordinary differential equations, etc. This course is designed mainly for mechanical engineering major students.

Objective: - To solve mathematical and engineering problems by numerical methods  
- To improve students' programming skills

Preparations: Prerequisite courses are Computer Programming, and Engineering Mathematics

Schedule:	Week 1	Introduction, Mathematical modeling and engineering problem-solving, Computers and software, Round-off errors and truncation errors
	Week 2	Roots of equations: Bracketing methods, Roots of equations: Open methods, Linear algebraic equations
	Week 3	Gauss elimination, LU decomposition, Interpolation, Least-squares regression
	Week 4	Numerical differentiation and integration, Ordinary differential equations: One-step methods, Ordinary differential equations: Multi-step methods

Evaluation:	Midterm (%)	Final (%)	Attendance (%)	Assignments (%)	Participation (%)	Etc. (%)
	45	45	10	00	00	00

### Hanyang International Summer School

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