

Subject : 409.310 Introduction to Numerical Analysis

Credits	Department			Representative Instructor			
				Position	Name	Email	
3	Department of Energy Systems Engineering			Assistant Professor	Cho, Hyoung Kyu	chohk@snu.ac.kr	
1. Goals	In many cases of engineering problem solving, it is often impossible to obtain the accurate solution mathematically or to understand the phenomena through proper experiments. Computers and numerical methods have to be used in such cases to generate approximate solutions or to perform simulations. Numerical analysis is the process to formulate those methods needed for the numerical solution and to develop and examine the associated programs. In this course, the elementary numerical methods needed for engineers to utilize numerical analysis for various needs are covered. Students are asked to practice programming to the level that the gained experience can form the firm base in solving practical engineering problems. It is an introductory course of the college of engineering to deal with basic and general topics in the numerical methods. More elaborate and advanced subjects needed for nuclear reactor analysis will be covered in the companion course of reactor numerical analysis and design..						
2. Texts and References	Numerical methods for engineers and scientists: an Introduction with Applications Using MATLAB®, Amos Gilat						
3. Evaluation	Attendance (%)	Task (%)	Medium (%)	Final (%)	Attitude (%)	Others (%)	Total(%)
	5%	35 %	30%	30%	0%	0%	100%
	Remark :						
4.Lecture Plan	[1 Week]	Ch.1	Introduction (MATLAB Usage)				
	[2 Week]	Ch.1	Introduction (Basic Concepts in Numerical Analysis)/				
	[3 Week]	Ch.3	Solving nonlinear equations				
	[4 Week]	Ch.3	Solving nonlinear equations				
		Ch.4	Solving a system of linear equations (direct method)				
	[5 Week]	Ch.4	Solving a system of linear equations (iterative method, etc.)				
	[6 Week]	Ch.5	Eigenvalues and eigenvectors				
		Ch.6	Curve fitting and interpolation				
	[7 Week]	Ch.6	Curve fitting and interpolation				
	[8 Week]		Midterm exam.				
	[9 Week]	Ch.8	Numerical differentiation				

	[10 Week]	Ch. 9	Numerical integration
	[11 Week]	Ch. 9	Numerical integration
		Ch. 10	Ordinary Differential Equations
	[12 Week]	Ch. 10	Ordinary Differential Equations
		Ch. 11	Ordinary Differential Equations
	[13 Week]	Ch. 11	Ordinary Differential Equations
	[14 Week]		Make-up classes
	[15 Week]		Final Exam.