

이화여자대학교 대학원
교 수 계 획 안
2008학년도 가을학기

학 수 번 호 : MA 506	요일 및 시간: 수6-7(3:30-6:15)
교 과 목 명 : 수치미분방정식	학 과 : 수 학 과
시간수 및 학점 : 3시간 3학점	Office Hour : 월/수3(11:00-)
담당 교수명 : 이준엽	연 구 실 : 종과A동320(3277-3451)
전 자 우 편 : jyllee@ewha.ac.kr	http://math.ewha.ac.kr/~jylee

1. 문헌목록 :

Michael Celia(MIT/Princeton) and William Gray(Notre Dame), Numerical methods for differential equations, fundamental concepts for scientific and engineering applications. Prentice Hall, 1992.

Robert Schilling and Sandra Harris(Clarkson), Applied numerical methods for engineers (using Matlab and C), Brooks/Cole, 2000. [Basic Numerical Tools]

John Strikwerda(Wisconsin), Finite Difference schemes and PDEs, Wadsworth & Brooks / Core, 1989. [Finite difference method]

Charles Hall and Thomas Porsching(Pittsburgh), Numerical Analysis of PDEs, Prentice Hall, 1990. [Finite element method / Analysis]

Tikhonov and Samarskii, Eqs of Mathematical physics, Dover, 1963(1990)

Sobolev, PDEs of Mathematical physics, Dover, 1964(1989)

2. 과제와 평가:

- Homework or Computational Project : 4-5 times (40%)
- Final Examination : Theory and basic idea methods (60%)

3. 강의 내용 (Syllabus)

주	강 의 주 제	강 의 제 목	교재 페이지	비 고
1-3	Partial differential equation	1.1 Physical systems 1.3 Characteristics and BC	1-43	
4-6	Finite difference approximation (one-dimensional FDM)	2.1 Discrete approximations 2.3 Analysis of approximation 2.4 Generalized Formulation 2.6 Initial Value Problems	44-90	
7	Finite difference approximation (Multi-dimensional FDM)	2.7 Multi-dimensional problems 2.8 Two dimensional examples	91-108	
8	Midterm Exam	-	-	-
9-11	Finite Element approximation (Theoretical basis)	3.1 Weighted residuals 3.3 Computation Procedures 3.5 Method of weighted residuals	114-165	
12-13	Finite Element approximation (Computational Methods)	3.7 Galerkin Finite Element method	166-177	
14	Miscellaneous Topics	4.3 Space-Time Discretization	242-254	
15	Final Exam	-	-	-