

Finite Element Analysis of Structures

Fall 2012, TUE/THU 9:00~10:15, Room N27-1108

Instructor: Phill-Seung Lee, phillseung@kaist.edu, 010-9105-3694

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Prerequisites: Undergraduate statics and mathematics

Textbook: *Finite Element Procedures*, K.J. Bathe. Prentice Hall, 1996

Grades: Ten Homeworks (15%) + Midterm Exam (40%) + Final Exam (45%)
+ Reading Assignment (0%)

The objective of this course is to teach the fundamentals of finite element analysis of linear/nonlinear problems in solids and structures. This course includes the theoretical foundations and appropriate use of finite element methods. Specially, the computer programming of finite element procedures will be taught. The methods studied in this course would be practical procedures that are employed extensively in the ocean, mechanical, civil and aeronautical industries.

Schedule

Period (week)	Contents	Period (week)	Contents
1	Review: tensors and solid mechanics	9	Computer programming
2	Principle of virtual work	10	Mathematical aspects - II
3	Finite element formulation	11	Nonlinear analysis and solution procedures
4	ADINA session - I (Linear analysis)	12	Total and updated Lagrangian formulations
5	FE solutions and convergence	13	ADIINA session - II (Nonlinear analysis)
6	Mathematical aspects - I	14	Total and updated Lagrangian formulations
7	Isoparametric finite elements	15	Dynamic analysis
8	Midterm Exam	16	Final Exam