

Lecture Syllabus

Year 2018, spring semester

Finite Element Implementation

Lecturer : Hong-Gun Park (880-7055, Building 39-431 parkhg@snu.ac.kr)

Lecture time : Mon. 11:00-12:15. Wed. 11:00-12:15.

Text Book : Finite Elements for Structural Analysis by Weaver and Johnston, Prentice Hall

References : Finite Element Analysis Fundamentals by R. H. Gallagher, Prentice Hall

Finite Element Procedures in Engineering Analysis by K. Bathe, Prentice Hall

The Finite Element Method by Zienkiewicz and Taylor, McGraw-Hill.

The Finite Element Method Using MATLAB, Kwon, and Bang, CRC

Summary of lecture : Basics of finite element analysis for structures in civil engineering. The characteristics and application of finite elements including inelastic Analysis.

Contents:

Approximate solution methods : weighted residual, finite difference method.

Basic Concepts : stress-strain relationship, Principle of Virtual Work

One Dimensional Elements (Truss and Beam-column)

Two – Dimensional Elements (Plane stress, Plane strain)

Iso-parametric formulation

General Solids (brick elements)

Axisymmetric elements

Plate bending

General Shell

Axisymmetric Shell

Vibrations

Instability

Evaluation :

Homework & Projects : 40 %

Mid-term test : 30 %

Final test : 30 %

Deadline for submission of homework : within one week

Projects : computer programming for structural analysis using software matlab