FINITE ELEMENT METHOD II

Lectures (7·2h + final test):
Accuracy, error estimation and adaptive remeshing
Heat flow and thermal stresses in FEM
Introduction to structural dynamics, free vibrations
Nonlinear problems in mechanics of structures - basic numerical techniques
Orthotropic materials and composite structures
Parametric modeling and design optimization

Computer lab (15h):
Modeling simple problems of: thermal stresses, contact mechanics, plasticity and residual
stresses, free vibrations, parametric modeling and shape optimization
The classes start at the beginning of November
in the time to be agreed with the studends (eg. 5 three-hours meetings)

Recommended references:

[1] Krzesiński G., Zagrajek T., Marek P., Borkowski P.: MES w mechanice materiałów i konstrukcji.
Rozwiązywanie wybranych zagadnień za pomocą programu ANSYS, Of. Wyd.PW 2015
[2] Lecture notes from the web site: http://mel.pw.edu.pl/zwmik/ZWMiK/Dla-studentow2/Finite-Element-Method-I
[3] Bijak-Żochowski M., Jaworski A., Krzesiński G., Zagrajek T.: Mechanika Materiałów i Konstrukcji,
Tom 2, Warszawa, Of. Wyd. PW, 2014
[4] Moaveni S.: Finite element analysis. Theory and applications with ANSYS. Paerson Education,
2015.
[5] Kleiber M. (red.): Komputerowe metody mechaniki ciał stałych, seria Mechanika Techniczna XI,
Warszawa PWN 1995.
[6] Xiaolin Chen, Yijun Liuv: Finite Element Modeling and Simulation with ANSYS. Workbench, CRC
Press 2014
[7] Huebner K. H., Dewhirst D. L., Smith D.E., Byrom T. G.: The finite element method for engineers, J.
Wiley & Sons, Inc., 2001.
[8] Zienkiewicz O.C., Taylor R.: The Finite Element Method - different publishers and editions

LECTURE NOTES:
FEM I
http://meil.pw.edu.pl/zwmik/ZWMiK/Dla-studentow2/Finite-Element-Method-1
FEM II
http://meil.pw.edu.pl/zwmik/ZWMiK/Dla-studentow2/Finite-Element-Method-II

Assessment based on the final test and the results of a computer lab work