



Politechnika Krakowska
im. Tadeusza Kościuszki

FACULTY: ENVIRONMENTAL ENGINEERING

COURSE TITLE: COMPUTER METHODS IN WATER AND GEOTECHNICAL ENGINEERING

Institute/Division: Institute of Geotechnics

Number of contact hours: 30 (Lectures, exercises, laboratory)

Course duration: 1 semester (SPRING)

ECTS credits: 2

Course description: *Knowledge of theoretical basis and practical skills in applying FEM in analysis of problems of water engineering including soil structures. Ability to use Z_Soil FEM code for analysis of static, stability and transient filtration in geotechnical systems. The lectures topics will include: review of matrix notation; mechanics of continuum and filtration – physical basis and boundary value problems in variation and matrix form; basis of finite element method; FE for statics of continuum; finite elements for nonlinear and transient problems; simple soil models; elastoplastic analysis and its finite elements implementation; load capacity and stability analysis in FE; finite elements in transient filtration problem*

Literature: Zienkiewicz O.C. “Finite element methods”,
Z_SOIL.PC User manual, Materials available at the Institute’s web page

Assessment method: Preparation and oral presentation of reports from performed simulation (factor 0,4) Test on lecture content (oriented on practical aspects of considered problems), (factor 0,6)

Prerequisites: Strength of materials, soil mechanics, numerical methods

Primary target group: 3rd year students in Environmental Engineering programme, BSc(Undergraduate)

Lecturer: Aleksander Urbański, Professor

Contact person: Aleksander Urbański, Ph.D., phone #: +48 12 628-2823; e-mail: aurbansk@usk.pk.edu.pl

Deadline for application: 1st February 2016