



“Modeling coupled multiphase processes in porous media”

Lecturer: Prof. Dr.-Ing. Rainer HELMIG (University of Stuttgart, Institute for Modelling Hydraulic and Environmental Systems, Germany)

Short description of the lecture (up to 10 sentences):

Engineering problems related to porous media often involve multiple physical processes that are strongly coupled with each other, e.g. simultaneous flow and transport of several fluid phases / chemical components or coupling between free flow and porous media flow. Modeling of such phenomena requires careful formulation of the governing equations with appropriate coupling terms as well as special numerical discretization techniques. In this special course several examples of coupled processes in porous media will be discussed, covering the fields of civil, environmental, mechanical and biological engineering. This course is thematically linked to the course Fundamentals of flow and transport in porous media. Previous participation in the latter one will be helpful but not necessary.

Syllabus of the lecture subjects (enlisted):

1. Governing equations for coupled multiphase processes
2. Numerical solution techniques
3. Soil remediation
4. Geological storage of CO₂
5. Flow in shale gas reservoirs
6. Delivery of medicaments to biological tissues
7. Fuel cells

TERMINY WYKŁADÓW			
Data	Dzień tygodnia	Godzina	Sala
2014-02-17	poniedziałek	9.00-14.00	Hydro 301
2014-02-18	wtorek	9.00-14.00	Hydro 301
2014-02-19	środa	9.00-14.00	Hydro 301