



**FACULTY:** ENVIRONMENTAL ENGINEERING

**COURSE TITLE: APPLIED HYDRAULICS**

**Course code:**

**Number of contact hours: 50**

**Duration: 1 semester (spring)**

**ECTS credits: 5**

**Programme description:**

The purpose of the course is the acquisition of theoretical and practical knowledge in the field of hydraulics of open channel flow in context of hydraulic structures designing. Specially the emphasis will be taken on mastering the ability to perform analytical calculations as well as the ability to use the computer program (Hec-Ras) to simulate natural flow scenarios as well as changes in these conditions due to building a water structures within cross sections of the riverbed.

Specific problems discussed during lectures, workshops and seminars will cover:

- the acquisition of theoretical and practical knowledge in the field of calculation of flow parameters in open channels to the
- study of the transient flow on the example of the hydraulic jump and depression curve effect.
- learning of calculation methods for hydraulic design of: spillways and gated weirs, road culverts, bridges as well as stilling basins and energy dissipation devices.
- acquiring the ability to carry out computer simulation and analysis of the flow conditions prevailing above and below the hydraulic structures such as spillways and road culverts.

Students will gain

**Course type (hours):** lectures (15 h), practical classes (20 h), laboratory (15 h)

### Literature:

[1] Martin Marriott — Civil Engineering Hydraulics, London, 2016, Wiley-Blackwell

[2] D. Vischer; Willi H. Hager; D. Cischer — Dam Hydraulics, Zurich, 1998, Wiley

[3] Willi H. Hager — Energy Dissipators and Hydraulic Jump, Netherlands, 1992, Kluwer Academic Publishers

### Assessment method

Evaluation of the requirements fulfilment, for obtaining the course completion credit, includes:

- attendance in laboratory classes ( non unjustified absence is demand), project classes ( one unjustified absence is allowed) and lectures ( three unjustified absence is allowed) ,
- oral examination concerning assignments (reports) realized in the frame of practical classes,
- oral examination concerning assignments (reports) realized in the frame of laboratory classes.

Compilation of component grades:

The module grade in semester I = (laboratory classes grade \*0.5) + (project classes grade \* 0.5)

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