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| Course: | **APPLIED HYDRAULICS AND HYDROLOGY** |
| Course id: |
| Number of ECTS: 4 |
| Teacher: | Atila Salvai, Milica Rajic, Enika Gregoric |
| Course status | Elective |
| Number of active teaching classes (weekly) |
| Lectures: 3 | Practical classes: 3 | Other teaching types: | Study research work: | Other classes: |
| Precondition courses | None |
| 1. Educational goal

Understanding the basic hydraulic principles of open channel flows. This module provides a conceptual and quantitative understanding of hydrology and the basic principles of hydraulics as a basis for later applied studies of water quality, water engineering, and water management |
| 1. Educational outcomes

Develop skills for the quantification of surface and groundwater hydraulic and hydrological processes. An understanding of rainfall, evapotranspiration, runoff, groundwater recharge, groundwater storage, and groundwater movement is essential for those involved in the science, engineering or management of the water environment |
| 1. Course content

Analysis of free surface flows, definitions. Flow resistance in open channels: resistance coefficients, discharge equations. Strongly varying flow: control section, control structures (weirs, gates), energy dissipation (hydraulic jump, stilling basins). Gradually varying flow: energy equation, qualitative analysis of surface profiles, differential equation and integration methods, and numerical models. Unsteady open channel flow: St. Venant equations, flood waves. Structures in open channels and flow measurement. The measurement of flow in rivers and canals. Sediment transport: incipient motion suspended sediment transport, bed-load transport, bedforms, sediment transport in irrigation and drainage channels, desilting devices.Precipitation, measurement of precipitation amount and intensity, spatial analysis. Evapotranspiration, Penman-Monteith approach, actual evapotranspiration. Runoff processes; overland flow, interflow, base flow. Groundwater occurrence: porosity, permeability, water holding formations, aquifers. Aquifer properties: transmissivity, storage coefficient, significance and typical magnitudes of these properties. Groundwater movement: flow lines and equipotentials, natural flow, recharge, flow to wells, drawdown, cone of influence, radius of influence, interference |
| 1. Teaching methods

Lectures and exercises. Students will accomplish a semester project and present results in oral and in writing. The work counts for 60% of the final grade. The lectures are held in English. Retake exams may be oral only. |
| Knowledge evaluation (maximum 100 points) |
| Pre-examination obligations | Mandatory | Points | Final exam | Mandatory | Points |
| Assignments | Yes | 60 | Written and Oral | Yes | 40 |
| Literature  |
| Ord. | Author | Title | Publisher | Year |
|  | Henderson F. M. | Open Channel Flow | Macmillan, New York | 1966 |
|  | Chow V.T. | Open Channel Hydraulics, | McGraw-Hill. | 1959 |
| 3. | Chow V. T., Maidment D. R., and Mays L. W. | Applied Hydrology, | McGraw-Hill | 1988 |
| 4. |  |  | Internet sources (articles, reports, presentations). |  |

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| Znak univerziteta | UNIVERSITY OF NOVI SADFACULTY OF AGRICULTURE 21000 NOVI SAD, TRG DOSITEJA OBRADOVIĆA 8 | Znak fakulteta2 |
| Study Programme AccreditationMASTER ACADEMIC STUDIES - AGRICULTURAL WATER MANAGEMENT (LOLAqua) |
| Table 5.2 Course specification |