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| Course: | | **DECISION-MAKING IN WATER RESOURCES** | | | | | | | | | | |
| Course id: | |
| Number of ECTS: 4 | |
| Teacher: | | Bojan Srdjevic, Zorica Srdjevic, Christos Karavitis | | | | | | | | | | |
| Course status | | Elective | | | | | | | | | | |
| Number of active teaching classes (weekly) | | | | | | | | | | | | |
| Lectures:3 | | Practical classes:3 | | | Other teaching types: | | | Study research work: | | Other classes: | | |
| Precondition courses | | Basics in mathematics, IT skills | | | | | | | | | | |
| 1. Educational goal   The topic will give a deeper understanding and an introduction to application of decision-making theory and its instruments in water resources planning and management. | | | | | | | | | | | | |
| 1. Educational outcomes   On successful completion of this subject, the students should:  a) have acquired understanding of systems analysis approach to modeling of agricultural water systems;  b) have acquired basic knowledge of a number of decision making methods and tools;  c) be able to make appropriate and critical use of these methods and tools for a variety of water related problems;  d) be able to identify suitable methods and tools for solving allocation problems;  e) be able to critically assess research results;  f) improve skills for independent learning, reporting and presentation;  g) improve IT skills. | | | | | | | | | | | | |
| 1. Course content   **Introduction to the decision-making**: decisions and consequences; structuring decision problems; decision elements – goal, criteria set and alternative set; well and ill-structured problems. **Weak optimization**: single and multiple criteria approach; multi-criteria analysis; procedures and supporting systems, techniques and generators; decision-making with certainty and uncertainty. **Outranking methods**: Analytic hierarchy process (AHP); Ideal-point methods. **Instruments, mechanisms and methodologies in intelligent decision-making**: overview, advantages and shortcomings of heuristic and meta-heuristic techniques. **Social theory (elective) methods**: Borda, Hare, approval voting; linking with standard multi-criteria decision-making methods; applications. **Individual and group decision-making**:complete and incomplete information, aggregation techniques. **Multi-criteria methods and optimization in agriculture and water related problems**: Practical implementation, case studies | | | | | | | | | | | | |
| 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 | |
|  | Brans J.P. and Mareschal B. | | PROMCALC & GAIA: A New Decision Support System for Multicriteria Decision Aid | | | Decision Support Systems, 12, 297-310 | | | | | 1994 | |
|  | Saaty T. | | The Analytic Hierarchy Process, | | | McGraw Hill. | | | | | 1980 | |
|  | Srdjevic B. | | Systems Analysis Methods in Engineering With Extensions in Environmental Engineering | | | Federal University of Bahia, Salvador, Brazil. | | | | | 2003 | |
| 4. | Srdjevic B., Medeiros Y.D.P., and Faria A.S. | | An Objective Multi-criteria Evaluation of Water Management Scenarios | | | International Journal of Water Resources Management, 18 (1), 65-84, Kluwer | | | | | 2004 | |
| 5. |  | |  | | | Internet sources (articles, reports, presentations) | | | | |  | |

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