**Table 5.1** Course specification to doctoral study programs

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| **Course name: Eco-efficiency of water systems** | | |
| **Teacher or teachers:** [**Todorović R. Mladen**](../P%209.3%20Knjiga%20Nastavnika%20DOS%20He/45.%20Mladen%20R.%20Todorovic,%20redovni%20profesor.xlsx) | | |
| **Course status:** Elective | | |
| **Number of ECTS:** 10 | | |
| **Precondition courses:** None | | |
| **Educational goal**  The course focuses on the eco-efficiency of water systems and uptake of new technologies for the improvement of system performances from economic and environmental point of view. | | |
| **Educational outcomes**  Capability to design a water supply chain and value mapping of a water system and to analyze its eco-efficiency performance. | | |
| **Course content** 1) The concept of eco-efficiency and its applicability at different scales.2) Meso-level eco-efficiency analysis framework and tools.3) Development of eco-efficiency indicators and technologies assessment. Methods of evaluation (LCA).4) Systemic Environmental Analysis Tool (SEAT) and water supply chain mapping.5) Economic Evaluation Analysis Tool (EVAT) and value chain mapping.6) Eco-efficiency assessment of irrigation systems. Examples of application. | | |
| **Literature**  1. Muller, K. and A. Sturm (2001). Standardized Eco-efficiency Indicators, Ellipson AG, Basel, Swiss, 72p.  2. Samekto, C., A.G. Kendarto, N. Rullihandia, T. Sutedjo (2003). Concept of eco-efficiency for water infrastructure development in Indonesia. Ministry of National Development and Planning, Indonesia, 60p.  3. Todorovic, M., D. Assimacopoulos, D. Zaccaria, A. Scardigno (2013), “Assessing the eco-efficiency of the Sinistra Ofanto Irrigation Scheme”, Proc. 8th EWRA Int. Conf., Porto (Portugal), 9p.  4. ECOWATER project (2012), Meso-level eco-efficiency indicators to assess technologies & their uptake in water use sectors, http://environ.chemeng.ntua.gr/ecowater/ | | |
| **Number of active teaching classes (weekly)** | Lectures: 4 | Study research work: 0 |
| **Teaching methods**  Presentation of theoretical concepts and their explanation (theory).  Introduction to SEAT and EVAT tools and their capabilities (demonstration)  Guided practical work: Water supply and value chain mapping and eco-efficiency assessment of a water system. | | |
| **Knowledge evaluation (maximum 100 points)**  **Pre-examination obligations Points Final exam Points**  Lecture attendance **10**  Oral part of the exam **30**  Colloquium exam **30**  Term paper **30** | | |