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

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| **Course name: Knowledge representations and standardization in water science** |
| **Teacher or teachers:** [**Gocić Lj. Milan**](../P%209.3%20Knjiga%20Nastavnika%20DOS%20He/53.%20Milan%20Lj.%20Gocic%2C%20docent.xlsx) |
| **Course status:** Elective |
| **Number of ECTS:** 10 |
| **Precondition courses:** None |
| **Educational goal**The aim of this course is to introduce students in using techniques for representing knowledge, how to integrate data and to process and analyze data. |
| **Educational outcomes** Enabling students to represent knowledge in the field of water resources and elaborate data processing by applying research methods. The acquired knowledge can be applied in further researches in the field of water science. |
| **Course content**Knowledge Representation. Knowledge base system models. Hybrid Knowledge Representation Techniques. Hydrologic Metadata. Hydrologic Data Models. Data Models for Storage and Retrieval. Data Formats. Data communication. Web Services. Extensible Markup Language. Grid Computing. Data Processing and Analysis. Data Sources. Data Representation. Data Integration. Feature Extraction. Feature Selection and Analysis. Ontology. Ontology Languages. Ontological Engineering. Knowledge Representation and Ontologies. |
| **Literature**1. M. B. Abbott, Hydroinformatics: Information technology and the aquatic environment, Avebury Technical, Aldershot, UK, 19912. John Davies, Dieter Fensel and Frank van Harmelen, Towards the semantic web : ontology-driven knowledge management, John Wiley & Sons Ltd, 20033. K.K. Breitman, M.A. Casanova and W. Truszkowski, Semantic Web: Concepts, Technologies and Applications, Springer-Verlag London Limited, 2007 |
| **Number of active teaching classes (weekly)** | Lectures: 4 | Study research work: 0 |
| **Teaching methods**Lectures. Consultations and interactive work with the students. Lectures are organized in combined form. The presentation of the theoretical part is followed by the corresponding examples. |
| **Knowledge evaluation (maximum 100 points)****Pre-examination obligations Points Final exam Points**Lecture attendance **10**  Oral part of the exam **30**Project task **30**Term paper **30**  |