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

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| **Course name: GIS, remote sensing in water and land management** |
| **Teacher or teachers:** [**Todorović R. Mladen**](../P%209.3%20Knjiga%20Nastavnika%20DOS%20He/45.%20Mladen%20R.%20Todorovic%2C%20redovni%20profesor.xlsx) |
| **Course status:** Elective |
| **Number of ECTS:** 10 |
| **Precondition courses:** None |
| **Educational goal**The course focuses on the application of Geographical Information Systems (GIS) and remote sensing techniques in land and water management.  |
| **Educational outcomes** Capability to design a GIS-based project including the use of remote sensing data for management of land and water resources. |
| **Course content**1) Introduction to GIS: definition, components, applications, benefits, limitations. 2) Maps: scales, resolution, precision, accuracy, projections, coordinate systems. 3) Data models: vector, raster, pros & cons, overlay functions, map algebra. Examples of application. 4) Spatial interpolation methods and applicability. Examples of application.5) GIS applications in hydrology: DEM, slope, exposition, surface runoff modelling. Examples of application.6) Remote sensing: definition, principles, platforms, sensors, data acquisition and elaborations. 7) Vegetation Indices and their application in land and water management: CWSI, NDVI, SAVI, WRI, SRI. 8) GIS-based DSS development for land and water management management. Example of application. |
| **Literature**1. Todorovic, M. (2005). Application of GIS in land and water management, CIHEAM-IAM, Bari, 49p.2. Todorovic, M. and P. Steduto (2003). "A GIS for irrigation management". *Physics and Chemistry of the Earth*, Special volume "Water for food and environment", Elsevier Science Ltd., Oxford, UK, Vol.28(4-5):163-1743. Kovar K. and H.P. Nachtnebel (Eds.), 1996. Application of GIS in Hydrology and Water Resources Management. 90p. |
| **Number of active teaching classes (weekly)** | Lectures: 4 | Study research work: 0 |
| **Teaching methods**Presentation of theoretical concepts and their explanation (theory).Introduction to ArcView GIS and its capabilities (demonstration)Guided practical work: Development of a GIS database for land and water management. |
| **Knowledge evaluation (maximum 100 points)****Pre-examination obligations Points Final exam Points**Lecture attendance **10**  Oral part of the exam **30**Term paper **30** Homework **30** |