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

|  |  |  |
| --- | --- | --- |
| **Course name: Special topics in mathematical statistics** | | |
| **Teacher or teachers:** [**Tričković B. Slobodan**](../P%209.3%20Knjiga%20Nastavnika%20DOS%20He/35.%20Slobodan%20B.%20Trickovic,%20redovni%20profesor.xlsx)**,** [**Blagojević D. Borislava**](../P%209.3%20Knjiga%20Nastavnika%20DOS%20He/48.%20Borislava%20D.%20Blagojevic,%20docent.xlsx) | | |
| **Course status:** Elective | | |
| **Number of ECTS:** 10 | | |
| **Precondition courses:** None | | |
| **Educational goal**  Statistical methods for data change diagnostics comprehension. Modeling systems where change has affected data that will be used to calibrate and test models of the systems. Application of statistical models to forecast system responses after change occurs. | | |
| **Educational outcomes**  Students understand statistical methods application results as statistical data model users. Students are capable of statistical data with change modeling through four elements of the process: conceptualization, formulation, calibration, and verification. | | |
| **Course content** Data, statistics and modeling. Time series modeling. Statistical frequency analysis. Outlier detection. Graphical detection of nonhomogeneity. Statistical detection of nonhomogeneity. Detection of change in moments. Detection of change in distributions. Modeling change. Hydrologic simulation. Sensitivity analysis.Outliers and robustness in regression. Simple regression. Multiple regression. Outlier diagnostics. Robust time series analysis. | | |
| **Literature**  1. McCuen R.H.(2003). Modeling hydrologic change: statistical methods. CRC Press LLC. 433 pp. ISBN 1-56670-600-9  2. Rousseeuw P.J., Leroy A.M. (2003). Robust regression and outlier detection. A John Wiley and sons, Inc. ISBN 0-471-48855-0 | | |
| **Number of active teaching classes (weekly)** | Lectures: 4 | Study research work: 0 |
| **Teaching methods**  Lectures. Individual consultations and group discussions. | | |
| **Knowledge evaluation (maximum 100 points)**  **Pre-examination obligations Points Final exam Points**  Term paper **80** Оral part of the exam **20** | | |