|  |
| --- |
|  **UNIVERSITY OF NIŠ** |
| **Course Unit Descriptor** | **Faculty**  | **Faculty of Sciences and Mathematics** |
| **GENERAL INFORMATION** |
| Study program  | **Mathematics** |
| Study Module (if applicable) | Probability, statistics and financial mathematics |
| Course title | Time Series |
| Level of study | ☐Bachelor $$ Master’s ☐ Doctoral |
| Type of course | $$ Obligatory ☐ Elective |
| Semester  |  ☐ Autumn $$Spring |
| Year of study  | First |
| Number of ECTS allocated | 7.5 |
| Name of lecturer/lecturers | Biljana Č. Popović |
| Teaching mode |  $$Lectures ☐Group tutorials ☐ Individual tutorials $$Laboratory work ☐ Project work ☐ Seminar ☐Distance learning ☐ Blended learning ☐ Other |
| **PURPOSE AND OVERVIEW (max. 5 sentences)** |
| The students will master the knowledge of time series. Analysis of data by the method of time series. |
| **SYLLABUS (brief outline and summary of topics, max. 10 sentences)** |
| Time series as the discrete time random process. Stationarity. Autocovariance, autocorrelation and partial autocorrelation function. Estimation of mean, variance, autocovariance, autocorrelation and partial autocorrelation function. Models AR, MA and ARMA. Deterministic components. ARIMA models. Forecasting. Identification of a model. Estimation of parameters. Diagnostic checking. Intervention analysis and outliers. Spectral theory of stationary time series. ARCH, GARCH and other heteroscedastic models. Indexes.  |
| **LANGUAGE OF INSTRUCTION** |
| $$Serbian (complete course) ☐ English (complete course) ☐ Other \_\_\_\_\_\_\_\_\_\_\_\_\_ (complete course)☐Serbian with English mentoring ☐Serbian with other mentoring \_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| **ASSESSMENT METHODS AND CRITERIA** |
| **Pre exam duties** | **Points** | **Final exam** | **points** |
| **Activity during lectures** | **5** | **Written examination** |  |
| **Practical teaching** | **7** | **Oral examination** | **48** |
| **Teaching colloquia** | **40** | **OVERALL SUM** | **100** |
| **\*Final examination mark is formed in accordance with the Institutional documents** |