

<b>Study program:: Artificial intelligence</b>			
<b>Name of the subject: Time Series</b>			
<b>Teacher(s): Nataša M. Krklec Jerinkić</b>			
<b>Status of the subject: elective</b>			
<b>Number of ECTS credits: 6</b>			
<b>Conditions: none</b>			
<b>Subject goal</b> Acquiring basic knowledge and results in the theory of time series, and classical and contemporary methods of time series modelling.			
<b>Outcome of the subject</b> At the end of the course students must demonstrate comprehension and knowledge of theoretical fundamentals as well as practical skills in time series modeling, and application of these in economics.			
<b>Subject content</b> <i>Theory</i> The basic purpose and approach to time series analysis. Descriptive techniques and graphical presentation of time series. Time series fitting in the time domain: estimating the autocovariance function, fitting the moving averages (MA) process, ARMA and ARIMA models. Prediction theory. Heteroscedasticity: ARCH and GARCH models. Forecasting trend and seasonality. Application of time series in finance. <i>Practical learning</i> The exercises follow the topics covered at the theoretical lectures. Solving examples, exercises and real world problems. Modeling of time series using MATLAB.			
<b>Literature</b> 1. J. Mališić, <i>Vremenske serije</i> , Matematički fakultet, Beograd, 2002. 2. C. Chatfield, <i>The Analysis of Time Series: An Introduction</i> , Sixth Edition, Taylor & Francis, 2003. 3. R.S. Tsay.: <i>Analysis of Financial Time Series</i> , Wiley, 2002. 4. D.C. Montgomery, C.L. Jennings, M. Kulahci, <i>Introduction to Time Series Analysis and Forecasting</i> , Wiley, 2008.			
<b>Number of active teaching classes</b>		<b>Theoretical teaching: 2</b>	<b>Practical teaching: 3</b>
<b>Method of carrying out the teaching</b> Plenary lectures and problem sessions are conducted by classical teaching methods. On problem sessions, students solve exercises and examples from topics that were covered at theoretical lectures, discuss the solutions and learn to use computers and statistical software to implement and model time series in real world problems.			
<b>Evaluation of knowledge (maximum number of points 100)</b>			
<b>Pre-exam obligations</b>	points	<b>Final exam</b>	points
Colloquia	50	Oral exam	50