

<b>MW82: Time Series Analysis</b>				<b>Study programme</b>	M
<b>Modul type</b>	<b>ECTS-Points</b>	<b>Workload</b>	<b>Study semester</b>	<b>Module Duration</b>	
optional compulsory	8	240	1. or 3.	one semester	
<b>Courses:</b>			<b>Contact hours:</b>	<b>Independent study:</b>	<b>Planned group size</b>
<b>Course 1:</b> Time Series Analysis (2 SWS)			30 h	90 h	30
<b>Course 2:</b> Time Series Analysis - Tutorial (2 SWS)			30 h	90 h	30
<b>Intended Learning Outcomes:</b>					
<p>This course provides students with skills and techniques to analyse time series data, first at a univariate level and then at a multivariate level. It also introduces some concepts and models used in statistical or machine learning for large data sets. Students are expected to do some basic programming in R.</p> <p><b>Course 1:</b> This course provides students with skills and techniques to analyze time series data, first at a univariate level and then at a multivariate level. The focus is on application of these techniques for analyzing economics data. It also introduces some concepts and models used in statistical or machine learning for large data sets.</p> <p><b>Course 2:</b> There are both computer and practice tutorials for this course. Students will learn how to use R to estimate the main models introduced in the course, as well as solve problems that are taught in the lectures.</p>					
<b>Key competencies:</b>					
<ul style="list-style-type: none"> <li>- Analytical thinking</li> <li>- Critical thinking</li> <li>- Problem Solving</li> <li>- Independent Learning</li> </ul>					
<b>Description / Contents:</b>					
<p><b>Course 1&amp;2:</b></p> <ol style="list-style-type: none"> <li>1. ARMA models</li> <li>2. Nonlinear Models</li> <li>3. Volatility Modelling</li> <li>4. Vector Autogressive Models</li> <li>5. Cointegration</li> <li>6. Forecasting</li> </ol>					

<b>Literature:</b>
<ul style="list-style-type: none"> <li>– Lutkepohl, New Introduction to Multiple Time Series (2006)</li> <li>– Hamilton, Time Series Analysis (1994)</li> <li>– Brockwell and Davis, Introduction to Time Series and Forecasting (2002)</li> </ul>
<b>Language:</b>
Courses are taught in English.
<b>Teaching methods:</b>
Lecture, group work, self-study, literature study
<b>Module applicability:</b>
M.Sc. VWL, M.Sc. BWL, M.Sc. Mathematics, M.Sc. FVM.
<b>Pre-requisites/Requirements:</b>
Admission to study Business, Economics, Mathematics or Financial and Actuarial Mathematics as a master degree.
<b>Examination Types:</b>
Examination in the form of a special examination.
<b>Requirement for award of ECTS-points:</b>
Successful participation in the exam. The exam will be passed if the grade is at least „sufficient“ (4,0).
<b>Course availability:</b>
The module will be offered every winter semester.
<b>Assessment:</b>
This course will be graded and is part of the calculation for the overall grade of your master degree. Particular information concerning the calculation of the overall grade can be gathered in the respective examination regulations.
<b>Modul convenor and main lecturer:</b>
Prof. Dr. Heimeshoff and teaching/research assistants of the DICE.
<b>Further information:</b>
Further information can be found at the website of the DICE. It is possible to write a project work within this module (MQV01).

Stand: 25.08.2023