NAME OF THE COURSE	STATISTICAL ANALYSIS					
Code	EUA010	Year of study	2.			
Course teacher	Full professor, Elza Jurun, PhD Assistant professor Tea Šestanović, PhD	Credits (ECTS)	5			
Associate teachers	Marija Vuković, mag.oec.	Type of instruction (number of hours)	L	S	E	F
			26		26	
Status of the course	-	Percentage of application of e-learning	40%			

COURSE DESCRIPTION

Course objectives	Introducing the importance of statistical methods in the professional and scientific work. Independent data processing using software tools and interpretation of results. Independent analysis of correlation and regression between economic variables. The possibility of analyzing trends and forecasting of time series including seasonality analysis and ARIMA models.
Course enrolment requirements and entry competences required for the course	**Course signature requirements**: as determined by the Statute of the Faculty of Economics and Rules and Regulations for Studies and Study Programmes. **Entry competencies**: Passed (basic) Statistics course. English language proficiency level B2-C1 (CEFR) and computer skills (Microsoft Office Package).
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	Learning outcome of the subject: 1. To analyze and interpret the results of analysis of variance, regression analysis and forecasting models. Specific learning outcomes: 1. To use the analysis of variance with one or more variable factors. 2. To analyze linear correlation. 3. To analyze single / multiple linear / nonlinear regression models. 4. To analyze the time series by using individual and aggregative indices. 5. To analyze the trend and prognostic models of time series. 6. To analyze the calculated seasonally adjusted values of the time series.

Course content broken down in detail by weekly class schedule (syllabus)

Lectures		Exercises	
Topic	Hours	Topic	Hours
Analysis of variance: One-Way ANOVA and Two-Way ANOVA.	2	Analysis of variance: One-Way ANOVA and Two-Way ANOVA.	2
Linear correlation coefficient. Rank correlation. Partial correlation. Testing the significance and interval estimation of correlation coefficients.	2	Linear correlation coefficient. Rank correlation. Partial correlation. Testing the significance and interval estimation of correlation coefficients.	2
Simple linear regression.	2	Simple linear regression.	2
Multiple linear regression. Nonlinear regression models.	2	Multiple linear regression. Nonlinear regression models.	2

	Problem of multicollinearity in regression analysis.	2	Problem of multi-collinearity in regression analysis.	2
	Problem of heteroscedasticity. Methods for variables selection in regression models.	2	Problem of heteroscedasticity. Methods for variables selection in regression models.	2
	Types of time series. Graphical presentation and comparison.	1	Types of time series. Graphical presentation and comparison.	1
	Index numbers: chain base and fixed base indices. Conversion of indices.	1	Index numbers: chain base and fixed base indices. Conversion of indices.	1
	Price and quantity indices.	1	Price and quantity indices.	1
	Measures of central tendency for time series.	1	Measures of central tendency for time series.	1
	Trend models. Linear and exponential trend models. k^{th} degree polynomial.	2	Trend models. Linear and exponential trend models. k^{th} degree polynomial.	2
	Moving average models. Asymptotic trend models.	2	Moving average models. Asymptotic trend models.	2
	Seasonal variations in time series. Seasonal adjustment.	2	Seasonal variations in time series. Seasonal adjustment.	2
	Time series forecasting. Autocorrelation. Stationarity.	2	Time series forecasting. Autocorrelation. Stationarity.	2
	ARIMA models for time series analysis. Exponential smoothing.	2	ARIMA models for time series analysis. Exponential smoothing.	2

Format of instruction	☑ **lectures** ☑ **seminars and workshops** ☑ **exercises** ☐ *on line* in entirety ☑ **partial e-learning** ☐ field work	☐ independent assignments ☐ multimedia ☐ laboratory ☐ work with mentor ☐ (other)
Student responsibilities	Students are required to actively participate in classes during lectures and exercises, with the attendance of minimum 70%. Students' activity will be monitored through self-evaluation quizzes that will be available to students on the course websites within the Moodle platform. In case the student takes less than four self-evaluation quizzes during the semester, the student will be denied a signature. The condition for taking the exam is a signature.	

Screening student work *(name the proportion of ECTS credits for each activity so that the total number of ECTS credits is*	Class attendance	2	Research		Practical training	
	Experimental work		Report		Self-evaluation quizzes	0.5
	Essay		Seminar essay		(Other)	
	Tests	1.5*	Oral exam	1	(Other)	

equal to the ECTS value of the course)	Written exam	1.5*	Project		(Other)	

Grading and evaluating student work in class and at the final exam	The exam consists of written and oral part. During the semester two tests will be organized. The test is deemed to be passed if the student correctly and neatly solves and interprets at least 50% of the tasks. The condition for accessing the second test is the positively resolved first test. The total score on the written part of the exam is based on the sum of the scores obtained on both tests. Alternatively, students can pass the written exam during the exam period. The exam is deemed to be passed if the student correctly and neatly solves and interprets at least 50% of the tasks, provided that a minimum of 20% from the total sum of points on the exam from each part of the material is achieved. * A student who achieves a positive grade from the first and second test, does not have to take the written exam. After successfully passing the written part one can undertake the oral part of the exam. The final grade is formed as the average score of the written and oral exam. Key points and appropriate grades for written exam: 0-49 inadequate (1) 50-62 sufficient (2) 63-75 good (3) 76-88 very good (4) 89-100 excellent (5)

Required literature (available in the library and via other media)	**Title**	**Number of copies in the library**	**Availability via other media**
	Jurun, E. & Ratković N.: Poslovna statistika s primjerima u Microsoft Excelu, Ekonomski fakultet, Split, 2017.	10	
	Newbold P. et al.: Statistics for Business and Economics, 9th Ed., Pearson Education, Prentice Hall, Upper Saddle River, NY, 2019.	3	
	Teachers' handouts and other on-line materials for preparation of mid-term exams and final exams (available on the Mooodle).		Moodle

Optional literature (at the time of submission of study programme proposal)	• Gujarati D.& Porter C. : Basic Econometrics, 5th Ed., Mc Graw Hill, 2019. • Rozga, A.: Statistika za ekonomiste. Ekonomski fakultet. Split, 2017. Articles: E.Jurun, N.Ratković, & I.Matić : ***Periodic Average National Reference Rate as a New Financial Standard***, Proceedings of the 14th International Symposium on Operational Research SOR'17, Bled, Slovenia, 2017. str.409-414. E.Jurun, B.Vuleta & N.Ratković, : ***Statistical Analysis of the Public Opinion Survey on Free Sunday,*** Proceedings of the 19th International Symposium on Operational Research SOR'19, Bled, Slovenia, 2019. str.326-332. • Croatian bureau of statistics (www.dzs.hr)
Quality assurance methods that ensure the acquisition of exit competences	• Monitoring obligations of students (teacher) • Control of Teaching (Vice-Dean) • Analysis of students' success in all subjects of study (Vice-Dean) • Student survey on the quality of teachers and teaching for each course of study (UNIST, Centre for Quality Improvement) • Exam administered by the subject teacher validates all the learning outcomes of the course. The contents of the exam are periodically

	reviewed. This revision is the basis for determining the adequacy of the ways of checking learning outcomes (Vice-Dean)
Other (as the proposer wishes to add)	The course is taught in Croatian and/or English.