<table>
<tr><th colspan="2">NAME OF THE COURSE</th><th colspan="6">Financial modeling</th></tr>
<tr><td>Code</td><td>EUB320</td><td>Year of study</td><td colspan="4">First</td></tr>
<tr><td>Course teacher</td><td>Prof Zdravka Aljinović
Prof Branka Marasović
Dr Tea Poklepović, Assistant Professor</td><td>Credits (ECTS)</td><td colspan="4">5</td></tr>
<tr><td rowspan="2">Associate teachers</td><td rowspan="2">Tea Kalinić, mag math
Ante Toni Vrdoljak, PhD</td><td rowspan="2">Type of instruction (number of hours)</td><td>L</td><td>S</td><td>E</td><td>F</td></tr>
<tr><td>26</td><td></td><td>26</td><td></td></tr>
<tr><td>Status of the course</td><td>Obligatory/optional</td><td>Percentage of application of e-learning</td><td colspan="4">40</td></tr>
<tr><th colspan="7">COURSE DESCRIPTION</th></tr>
<tr><td>Course objectives</td><td colspan="6">Enable entering the world of practitioners from the financial – banking and funds industry.</td></tr>
<tr><td>Course enrolment requirements and entry competences required for the course</td><td colspan="6">Good knowledge of Excel and affinity to quantitative methods in economics.</td></tr>
<tr><td>Learning outcomes expected at the level of the course (4 to 10 learning outcomes)</td><td colspan="6">To value and manage stocks, options, and bonds and their portfolios.

Particular outcomes:
1. To construct efficient frontiers for stocks' and/or mixed portfolios;
2. To evaluate risks with different risk measures;
3. To evaluate options;
4. To create option strategies and to manage the taken positions;
5. To evaluate bonds and to manage bonds' portfolios;
6. To construct the yield curve.</td></tr>
</table>

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

Lectures: Topic	Hours	Exercises: Topic	Hours
Basics of the Modern Portfolio Theory; Portfolio Mean and Variance, Calculating the Variance – Covariance Matrix.	2	Basics of the Modern Portfolio Theory; Portfolio Mean and Variance, Calculating the Variance – Covariance Matrix.	2
Theoretical framework of the Markowitz' model, the minimum variance set, efficient portfolio, efficient frontier – short sale allowed	2	Efficient frontier – short sale allowed	2
Efficient frontier without short sale, CAPM, beta	2	Efficient frontier without short sale. Beta.	2
Value at Risk – VaR; Definition and Characteristics. Stock's VaR, Portfolio's VaR.	2	Stock's VaR, Portfolio's VaR.	2

	Options – Basic definitions and terminology; Basic Properties of an Option’s Price.	1	Basic Properties of an Option’s Price.	1
	Option Strategies; Hedging, Spread, Straddle.	2	Option Strategies; Hedging, Spread, Straddle.	2
	General Restrictions on European and American Option Prices	2	General Restrictions on European and American Option Prices	2
	The Binomial Option Pricing Model	2	The Binomial Option Pricing Model	2
	The Black-Scholes Option Pricing Model	2	The Black-Scholes Option Pricing Model	2
	Option Price Sensitivity Analysis – Greeks	2	Option Price Sensitivity Analysis – Greeks	2
	Bonds: the value of a bond, clean price, accrued interest, dirty price. Duration. Bond yield.	2	Bonds: the value of a bond, clean price, accrued interest, dirty price. Duration. Bond yield.	2
	Bond Portfolio Immunization	2	Bond Portfolio Immunization	2
	The term structure of interest rates – yield curve. The forward rate and forward curve.	2	The term structure of interest rates – yield curve. The forward rate and forward curve.	2
	Nelson-Siegel model. Yield curve approximation.	1	Nelson-Siegel model. Yield curve approximation.	1

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 obliged for active participation in the course performance. Student’s activity will be observed through 13 independent assignments – exercises in Excel, which will be announced on the Merlin platform through semester. Students are obliged to attend 70% of classes – lectures and exercises, and to have all independent assignments – exercises done and documented on the Merlin platform.	

Screening student work *(name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)*	Class attendance	1.5 ECTS	Research	3 ECTS*	Practical training	3 ECTS*
	Experimental work		Report		Independent assingments	0.5 ECTS
	Essay		Seminar essay	3 ECTS*	(Other)	
	Mid-term exams	3 ECTS*	Oral exam		(Other)	
	Written exam	3 ECTS*	Project		(Other)	

Grading and evaluating student	1. Three mid-term exams during classes.

<table>
<tr><td>work in class and at the final exam</td><td colspan="3">2. Research/Seminar essay/ Practical training during classes.
3. Exam: written + Excel
* The course content is divided into three main parts: stocks, options, bonds. Each part can be passed with one mid-term exam; Every mid-term exam includes solving tasks in Excel. Students who pass all three mid-term exams are free of the final exam during exam terms. Exercises as well as exam and mid-term exams are performed on computers.
Instead passing mid-term exams, students can make and present Research/Seminar essay/ Practical training for the particular part or for all three parts.
Scoring and appropriate marks:
0% - 49% - insufficient (1)
50% - 59% - sufficient (2)
60% - 75% - good (3)
76% - 90% - very good (4)
91% - 100% - excellent (5)</td></tr>
<tr><td rowspan="9">Required literature (available in the library and via other media)</td><td>Title</td><td>Number of copies in the library</td><td>Availability via other media</td></tr>
<tr><td>Aljinović, Z., Financial modeling, authorized lectures, University of Split, Faculty of Economics</td><td></td><td>Merlin course page</td></tr>
<tr><td>Benninga, S., Financial modeling, 3rd ed, The MIT Press, Cambridge, 2008</td><td>1</td><td></td></tr>
<tr><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td></tr>
<tr><td>Optional literature (at the time of submission of study programme proposal)</td><td colspan="3">Dalton, B., Financial Products, An Introduction Using Mathematics and Excel, Cambridge University Press, NY, 2008
Hull, J.C., Options, Futures and Other Derivatives, 9th ed, Pearson Education Limited, Harlow, 2018</td></tr>
<tr><td>Quality assurance methods that ensure the acquisition of exit competences</td><td colspan="3">Registering students' attendance and success in carrying out of their duties (lecturer).
Monitoring lectures and practice sessions (Vice Dean for Education).
Students' Performance analysis in each course (Vice Dean for Education).
Student questionnaire on the quality of lecturers and lessons for each course
(University of Split, Quality Assurance Centre)
Examination is used as an instrument to evaluate individual course outcomes by the course lecturer.
The content of exam is reassessed periodically in order to assure compliance with the course outcomes.</td></tr>
<tr><td>Other (as the proposer wishes to add)</td><td colspan="3"></td></tr>
</table>