NAME OF THE COURSE	Actuarial Mathematics					
Code	EUBD27	Year of study	1			
Course teacher	Prof. Branka Marasović, PhD, Prof. Snježana Pivac, PhD, Assist. Prof. Tea Šestanović, PhD	Credits (ECTS)	5			
Associate teachers	Tea Kalinić, mag. math.	Type of instruction (number of hours)	L	S	E	F
			26		26	
Status of the course	Optional	Percentage of application of e-learning	30			

COURSE DESCRIPTION

Course objectives	The main aim of the course is to ensure the acquisition of knowledge and skills for application mathematical and statistical models on solving insurance problems.
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.
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	Learning outcome of the subject: Select and combine mathematical and statistical tools to solve insurance issues. Specific learning outcomes: 1. Create mortality tables 2. Estimate the probabilities of survival and death based on mortality tables 3. Estimate the value of net premium for different types of insurance 4. Estimate the value of gross premium 5. Estimate mathematical reserve values by retrospective method and prospective method 6. Compare the insurance offers of different insurance companies based on acquired knowledge

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

Lectures		Exercises	
Topic	Hours	Topic	Hours
Principles of Insurance. Tasks and elements of actuarial organization. Probability calculus.	2	Principles of Insurance. Tasks and elements of actuarial organization. Probability calculus.	2
The basic deterministic model. Mortality table. Constructing the mortality table from the values of qx. Life expectancy.	2	The basic deterministic model. Mortality table. Constructing the mortality table from the values of qx. Life expectancy.	2
Standard notation and terminology. Commutations symbols.	2	Standard notation and terminology. Commutations symbols.	2
Insurance of a single life. The pure endowment insurance	2	Insurance of a single life. The pure endowment insurance	2
The life annuity. A whole-life annuity.	2	The life annuity. A whole-life annuity.	2

	The life annuity. N-year temporary life annuity.	2	The life annuity. N-year temporary life annuity.	2
	The life assurance. The different types of life assurance.	2	The life assurance. The different types of life assurance.	2
	Combined insurance.	2	Combined insurance.	2
	Different types of premium annuities.	2	Different types of premium annuities.	2
	Gross premium calculation	2	Gross premium calculation	2
	Mathematical reserves. Prospective and retrospective calculations.	2	Mathematical reserves. Prospective and retrospective calculations.	2
	Multiple-life contracts	2	Multiple-life contracts	2
	Severance pay	2	Severance pay	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 attend classes and actively participate in classes. 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 two self-evaluation quizzes during the semester and attends less than 50% of lectures and exercises, 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 equal to the ECTS value of the course)*						
	Class attendance	2	Research		Practical training	
	Experimental work		Report		Self-evaluation quizzes	0.5
	Essay		Seminar essay		(Other)	
	Tests	2.5*	Oral exam	1	(Other)	
	Written exam	1,5	Project		(Other)	

Grading and evaluating student work in class and at the final exam

1. Tests during classes.
2. Exam: written (Excel) and oral.

* 4 tests during semester: 2 Excel tests and 2 theoretical tests.
Students who pass all four tests are free of going for an examination. Students who pass two Excel tests are free of written - Excel part of the exam; Students who pass two theoretical tests are free of theoretical part of the exam. The condition for taking the test is that the student has solved all the self-evaluation quizzes from the part of the material that is evaluated by the test.
Exercises and the written part of an exam are on the computer.
Points and appropriate marks:
0% - 49% - insufficient (1)
50% - 64% - sufficient (2)
65% - 75% - good (3)
76% - 89% - very good (4)
90% - 100% - excellent (5)

Required literature (available in the	**Title**	**Number of copies in the library**	**Availability via other media**

library and via other media)	Marasović, B., Pivac, S., Kalinić, T., Aktuarska matematika, Sveučilište u Splitu, Ekonomski fakultet, Split, 2019.	10	
Optional literature (at the time of submission of study programme proposal)	Knjige: S. David Promislow, Fundamentals Of Actuarial Mathematics (3rd Edition), Wiley, 2015. Gerber, H.U., Life Insurance Mathematics, Springer-Verlag Berlin and Swiss Association of Actuaries Zurich, 1997. Bowers, N. et al., Actuarial Mathematics, 2nd edition, Society of Actuaries, 1997. Vranić, V., Osnove financijske i aktuarske matematike, Školska knjiga, Zagreb, 1985. Andrijašević, S., Petranović, V., Ekonomika osiguranja, Alfa, Zagreb, 1999. Članci: Pivac, S., B. Marasović, D. Kovać (2015): Economic and Demographic Determinants of Demand for Life Insurance, Proceedings of the 13th International Symposium on Operational Research SOR'15, Bled, Slovenia, September 23-25, pp 317-322		
Quality assurance methods that ensure the acquisition of exit competences	Registering students' 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.		
Other (as the proposer wishes to add)	The course is taught in Croatian.		