COURSE NAME	Set theory					
Code	PMM112	Year of study	2nd year of undergraduate study			
Course teacher	Nikola Koceić Bilan	Credits (ECTS)	6,0			
Associate teachers		Type of instruction (number of hours)	L	S	E	
			30		30	
Status of the course	Compulsory and elective	Percentage of application of e-learning	30			
COURSE DESCRIPTION						
Course objectives	Students will: -gain insight in Set theory necessary for understanding and learning other mathematical concepts -learn to conduct various set operations and operations with cardinals and ordinals -learn to compute cardinality of sets given in various ways - gain a deeper insight in a historical significance of Cantor's "naive" approach to Set theory -learn the Zermelo-Frankel system of axioms and understand its role in avoiding paradoxes.					
Course enrolment requirements and entry competences required for the course	None					
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	Upon successful completion of this course students will be able to: - explain and evaluate a historical role of Cantor's naive approach to Set theory - axiomatically describe Set theory by the Zermelo-Frankel system of axioms -compute cardinality of sets given in various ways -apply cardinal and ordinal numbers arithmetic and order between cardinals and ordinals -apply the Cantor-Bernstein theorem and other theorems on cardinality -characterize order types of the sets N, Z, Q and R -define the ordinal number and number class -apply Transfinite induction -state various theorems equivalent to Axiom of choice.					
Course content broken down in detail by weekly class schedule (syllabus)	- Introduction. Cantor's "naive" approach to Set theory. Paradoxes. (1) - The Zermelo-Frankel system of axioms .(4) -Relations and functions. (1) -Inductive and transitive sets. Peano axioms. The Recursion theorem. (3) -The Axiom of choice. The function of choice. A family of sets. The product of set family. (1) -Finite and infinite sets. (2) -Equipotent sets. Cardinal numbers. The Cantor-Bernstein theorem. (2) -Countable sets. The product and union of countable sets. (4) -Uncountable sets. Continuum. The continuum hypothesis. (2) -A partial order. A total order. Isomorphisms of ordered sets. Order types. (4) -Characterizations of the ordered sets N, Z, Q and R. (2) -Well-ordered sets. Ordinal numbers. Transfinite induction. The Buralli-Forti paradox. (2) -Number classes. Statement equivalent to the Axiom of choice. (2)					
Format of instruction	Lectures and exercises.					
Student	Attending classes. Students are expected to be present at least 70% of classes.					

responsibilities	
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)*	Attending classes: 2 ECTS. Partial exams/Written exam: 2 ECTS Final exam: 2 ECTS.
Grading and evaluating student work in class and at the final exam	Two partial written exams / one final written exam and final oral exam. There are 2 partial written exams during a semester. Passing both partial exams enables students to take an oral exam. Successfully passing the oral exam leads to successful completion of the course. Final grade is derived as the arithmetic mean of scores in partial exams (or a written exam) and the oral exam. In the case of failure in partial exams or the oral exam students must undergo a written exam before taking oral exam again. Written exam consists of practical and theoretical exercises.
Required literature (available in the library and via other media)	V. Matijević, *Uvod u teoriju skupova*, nastavni materijal-skripta P. Papić, *Uvod u teoriju skupova,* HMD, Zagreb,2000. H.B. Enderton, *Elements of Set Theory*, Academic Press, New York, 1977P
Optional literature (at the time of submission of study programme proposal)	K. Kuratowski, A. Mostowski, *Set Theory*, PWN, Warszawa, 1968.
Quality assurance methods that ensure the acquisition of exit competences	Summarizing test results and conducting an anonymous student survey at the end of the course. The survey is conducted according to the rules of the University of Split.
Other (as the proposer wishes to add)	