

Study program: Electrical and Computing Engineering				
Type and level of studies: Doctoral studies (third level of studies)				
Course unit: Abstract Algebra - Selected Chapters				
Teacher in charge: Nada Damljanović				
Language of instruction: English				
ECTS: 15				
Prerequisites: -				
Semester: Winter				
Course unit objective				
Training students to think abstractly and acquire fundamental knowledge in the field of linear algebra and its application in engineering.				
Learning outcomes of Course unit				
Acquired knowledge is used in further education through specialized professional subjects in various areas of mathematics, engineering and materials.				
Course unit contents				
<i>Theoretical classes</i>				
Linear algebra, vector space, determinants, matrices, systems of linear equations, Euclidean and unitary spaces, linear operators, relational structures, ordered sets, lattices as ordered structures, algebras, algebraic operations and structures, languages, terms, algebraic laws, homomorphisms, congruences and factor algebras, free algebras, lattices as algebraic structures, semigroups, groups, semirings, max-plus algebras, rings and fields, polynomial ring, modules.				
<i>Practical classes</i>				
Solving concrete problems which involve exposed theoretical concepts and principles. Part of the teaching takes place through self-study research, which includes active monitoring of scientific sources and their systematization, analyzing, solving specific problems, and preparing papers for publication.				
Literature				
[1] S. Burris, H. P. Sankappanavar, <i>A Course in Universal Algebra</i> , Springer-Verlag, New York, 1981, http://www.math.uwaterloo.ca/~snburris/htdocs/UALG/univ-algebra2012.pdf				
[2] D. Pigozzi, <i>General Theory of Algebras</i> , http://bigcheese.math.sc.edu/~mcnulty/alglatvar/pigozzinotes.pdf R.				
Number of active teaching hours				Other classes
Lectures: 3	Practice: 5	Other forms of classes	Independent work: 2	
Teaching methods Lessons, consultations, study and research work				
Examination methods (maximum 100 points)				
Exam prerequisites	No. of points:	Final exam	No. of points:	
Student's activity during lectures		oral examination	70	
Practical classes/tests	20	written examination		
Seminars/homework	10		
Project	-			
Other				
Grading system				
Grade	No. of points		Description	
10	91-100		Excellent	
9	81-90		Exceptionally good	
8	71-80		Very good	
7	61-70		Good	
6	51-60		Passing	
5	less than 50		Failing	