

Study programme(s): Mathematics (M3)			
Level: bachelor			
Course title: Group Theory (M3-20)			
Lecturer: Milan Z. Grulović, Igor V. Dolinka			
Status: obligatory			
ECTS: 7			
Requirements: Algebra 2, Linear algebra			
Learning objectives To introduce the basic concepts of the group theory and to emphasise its importance within the system of mathematical disciplines.			
Learning outcomes <i>Minimal:</i> Students should master the basic principles of abstract algebra and acquire skills of independent solving of simpler exercises related to groups and their properties. <i>Desirable:</i> The ability of independent solving of the more complex problems, and a comprehensive understanding of all the key parts of the theoretical material, including the applications of groups in other areas of mathematics (in particular in geometry).			
Syllabus <i>Theoretical instruction</i> Groups. Subgroups. Cyclic groups. Normal subgroups and congruences. Isomorphism theorems. Direct and semidirect products of groups. Permutation groups and group actions. Sylow's theorems and their application in classifying finite groups. Finitely generated Abelian groups. Normal and composition series. Soluble groups. Some classes of soluble groups. Nilpotent groups. <i>Practical instruction</i> Discovering basic properties of groups. Properties of normal subgroups. Permutation groups. Computing the Sylow subgroups of a given group. Methods for proving that a certain group is (non-)soluble.			
Literature 1. M.Grulović, Osnovi teorije grupa, Univerzitet u Novom Sadu, 1997. 2. S.Crvenković, I.Dolinka, R.S.Madaras, Odabrane teme opšte algebra, Univerzitet u Novom Sadu, 1998. 3. V.Perić, Algebra I-II, Svjetlost, Sarajevo, 1991. (3.izd.) 4. Z.Stojaković, Đ.Paunić, Zbirka zadataka iz algebre, Univerzitet u Novom Sadu, 1998. 5. Ž.Mijajlović, N.Božović, Uvod u teoriju grupa, Naučna knjiga, Beograd, 1990.			
Weekly teaching load			Other: 0
Lectures: 3	Exercises: 3	Other forms of teaching: 0	Student research: 0
Teaching methodology Lectures are conducted in classical teaching methods and supported by beamer presentations. Exercises are used to practise and analyse typical problems and their solutions. The ability of application of theoretical knowledge is checked through independent solving of exercises on two colloquia. The final exam is oral and students are supposed to demonstrate general understanding of the presented theoretical material.			
Grading (maximum number of points 100)			
Pre-exam obligations	points	Final exam	points
Colloquia	50	Oral exam	50