

Study program :PhD			
Type and level of studies: Third			
Course unit: Stereochemistry			
Teacher in charge : Vukićević D. Rastko			
Статус предмета: <i>English</i>			
ECTS: 15			
Prerequisites: Filled all pre-exam obligations			
Semester <i>Winter Semester</i>			
Course unit objective			
The study of three-dimensional structure of molecules. Consideration of rules, definitions, terminology and basic concepts and principles of stereochemistry to completely describe the structure of molecules in three dimensions (static stereochemistry).			
Learning outcomes of Course unit			
Students who overcome the stereochemistry topics will gain knowledge that will allow them to, on the basis of fundamental principles and definitions established successfully analyze the stereochemical characteristics of molecules as static objects (without accent on dynamic processes), to predict the number of molecules stereoisomers given constitution, determine their structure (ie. the molecular architecture) and relative energy and to recognize the relationship between structure and properties of the compounds.			
Course unit contents			
Historical development and distribution of stereochemistry on the static and dynamic stereochemistry. Stereochemical principles, terminology and definition of stereochemical concepts. Structure. Constitution, configuration, conformation. Molecular models, writing and presentation of molecular structure. The chirality, optical activity, symmetry elements and symmetry, the relative and absolute configuration. The optical activity of molecules with no chiral centers. Allenes, alkylidenecycloalkanes, spiranes and biphenyles (atropisomers). Prostereoisomerism and prochirality. Homotopic, enantiotopic and diastereotopic ligands and faces. Stereochemical memory effect: stereochemical differentiation heterotopic ligands or faces in enzyme-catalyzed reactions. The conformational analysis. Conformational, steric and stereoelectronic effects. Klyne–Prelog system. Conformation of acyclic molecules. Pitzer or torsional strain. Configuration and conformation of the cyclic molecules. Baeyer strain. Conformational free energy. Stereostructures selected cycloalkanes. The conformational analysis of steroid molecules. Anchimeric assistance. Conformational effects and reactivity.			
Literature			
E. L.Eliel , S. H. Wilen, L. N Mander, Stereochemistry of organic compounds, Wiley Interscience Publication, NewYork, 1994.			
Number of active teaching hours			Other classes
Lectures: 6	Practice: -	Other forms of classes: -	
Teaching methods Lectures, seminar papers, written and oral part of examination			
Examination methods (maximum 100 points)			
Exam prerequisites	No. of points:	Final exam	No. of points:
Student's activity during lectures	10	oral examination	25
practical classes/tests	-	written examination	25
Seminars/homework	40	
Project	-		
Other	-		

(Table 5.2) Course unit description

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	≤ 50	Failing