

Study programmes: Bachelor studies – Mathematics				
Course name: History and philosophy of mathematics				
Lecturers: Milan Božić, Zoran Petrović				
Status: Compulsory				
ECTS: 3				
Attendance prerequisites: Introduction to mathematical logic				
Course aims: Acquisition of general knowledge from history and philosophy of mathematics.				
Course outcome: Upon completion of the course, the students have knowledge about development of mathematics in different historical periods, from prehistory and up to 19 th century. The students understand the problems in foundation of mathematics and creation of modern philosophy of mathematics. The students know philosophy of mathematics as individual discipline and are familiar with directions in modern philosophy of mathematics. They know the history of mathematics in Serbia, as well as history of computer science.				
Course content:				
Introduction: About history of mathematics. Methods and literature. Historical sources. Chronology.				
Prehistorical period: Emergence of the concept of number. Geometrical figures, symmetry.				
Old age, before Greeks: Old Egypt: Numeration. Mathematical knowledge. Babylon: Sources. Numeration. Algebra. Geometry. Pythagoras' theorem				
Mathematics in ancient Greece: Tales. Pythagorean school. Integers. Algebra and arithmetic. Zeno's paradoxes. Eudoxus of Cnidus				
Mathematics and philosophy in ancient Greece: Ionians. Plato and Aristotle. Euclid's "Elements". School of Alexandria and Hellenistic cultural circle. Astronomy.				
Mathematics in Middle Ages: China, India. Islamic countries. Europe. Theology and mathematics. Infinity.				
New Age: Influences: Renaissance, discovery of Americas, trade and technical discoveries. Descartes, rationalists. Leibnitz. Kant, Hegel.				
Mathematics in 17th century: Development of new mathematical areas. Logarithms. Number theory. Fermat. Papers of Cavalieri, Gregory, Wallis, Kepler and Pascal. Newton and Leibniz. Applications in physics and astronomy.				
Mathematics in 18th century: Euler, Lagrange, Laplace. Development of new areas.				
Mathematics in 19th century: Gauss and Cauchy. Galois. Klein's program.				
Foundations of mathematics and emergence of modern philosophy of mathematics.				
Philosophy of mathematics as an independent scientific discipline: Weierstrass and Dedekind. Cantor and Frege. The first crisis. Russell. Hilbert's program. Gödel. The second crisis.				
Directions in modern philosophy of mathematics: Platonism. Logicism. Brouwer's intuitionism. Constructivism. Formalism. The current state.				
History of mathematics in Serbia: Middle Ages. Modern Serbian state and mathematics in 19 th century. Belgrade. Serbian mathematicians and their results in 19 th and 20 th century.				
History of computer science: History of development of computers. Logical and algorithmic foundations. Computer science as an independent discipline.				
Literature:				
1. M. Božić, <i>Pregled istorije i filozofije matematike</i> , Zavod za udžbenike i nastavna sredstva, Beograd, 2002.				
2. U.C. Merzbach, C. B. Boyer, <i>A History of Mathematics</i> , John Wiley & Sons, Inc. 2011				
3. D. M. Burton, <i>The History of Mathematics -An Introduction</i> , The McGraw-Hill, 1999.				
Number of hours: 3	Lectures: 3	Tutorials: -	Laboratory: -	Research: -
Teaching and learning methods: Lectures/ Essays				

Assessment (maximal 100 points)			
Course assignments	points	Final exam	points
Lectures	20	Written exam	-
Exercises / Tutorials	-	Oral exam	40
Colloquia	-	Written-oral exam	-
Essay / Project	40		