

Study programmes: Bachelor studies – Mathematics			
Course name: M4.12 – Mathematical Modeling Basics			
Lecturer: Milan Dražić			
Status: Compulsory			
ECTS: 5			
Attendance prerequisites: none			
Course aims: Acquiring general and specific knowledge of basic principals in mathematical modeling.			
Course outcome: Upon completion of the course, the student is able to apply the principles of mathematical modeling and develop mathematical models in various fields of sciences and engineering.			
Course content: What is mathematical model. Model examples. Basic principles in model development. Models in population dynamics and economy. Modeling with ordinary and partial differential equations. Models in mechanics and astronomy. Dynamical systems. Probabilistic and stochastic models.			
Literature: M. Dražić: Matematičko modeliranje, Matematički fakultet, Beograd, 2017. A. A. Самарский, А. П. Михайлов: Математическое моделирование, Физматлит, Москва, 2002. E. A. Bender: An Introduction to Mathematical Modeling, Dover Publications, New York, 2000. W. Gander, J. Hrebicek: Solving Problems in Scientific Computing Using Maple and Matlab, Springer, 2004.			
Number of hours: 4	Lectures: 2	Tutorials: 2	
Teaching and learning methods: Frontal / Interactive / Lectures / Exercises			
Assessment (maximal 100 points)			
Course assignments	points	Final exam	points
Lectures	-	Written exam	30
Exercises / Tutorials	-	Oral exam	40
Colloquia	-	Written-oral exam	-
Essay / Project	30		