<table>
<tr><td>COURSE NAME</td><td colspan="5">Constructive methods in geometry</td></tr>
<tr><td>Code</td><td>PMM014</td><td>Year of study</td><td colspan="3">1st, 2nd year of graduate study</td></tr>
<tr><td>Course teacher</td><td>Nikola Koceić Bilan</td><td>Credits (ECTS)</td><td colspan="3">5,0</td></tr>
<tr><td rowspan="2">Associate teachers</td><td rowspan="2"></td><td rowspan="2">Type of instruction (number of hours)</td><td>L</td><td>S</td><td>E</td></tr>
<tr><td>30</td><td></td><td>30</td></tr>
<tr><td>Status of the course</td><td>Compulsory and elective</td><td>Percentage of application of e-learning</td><td colspan="3">30</td></tr>
<tr><td colspan="6">COURSE DESCRIPTION</td></tr>
<tr><td>Course objectives</td><td colspan="5">Students will:
- acquire a basic knowledge on constructive geometry
-learn to apply constructive methods to geometric problems, known form analytic and synthetic point of view
--learn the standard methodology for solving constructive geometry assignments
-be introduced with some especial methods of constructive geometry
-be introduced with the circle inversion and its properties
-be introduced with the notion of solvability of the constructive geometry problem and its algebraic characterization
-be introduced with the historical role of classical greek problems
-learn the Mohr-Mascheroni constructions, construction with the straightedge only and other important geometric constructions with allowed instruments
-be introduced with some basic (synthetic) conic sections properties and their applications in constructive geometry problems which involve ellipse, hyperbola and parabola.</td></tr>
<tr><td>Course enrolment requirements and entry competences required for the course</td><td colspan="5">Course enrolment : Successfully completed courses Elementary geometry.
Entry competences : Student should be comfortable with using all concepts of Euclidean plane geometry.</td></tr>
<tr><td>Learning outcomes expected at the level of the course (4 to 10 learning outcomes)</td><td colspan="5">Upon successful completion of this course students will be able to:
-apply the methodology for solving constructive geometry assignments to given geometric problems
-apply some especial methods of constructive geometry
-prove properties of the circle inversion
-characterize the solvability of the constructive geometry problem using algebraic tools
-describe the classical greek problems
-apply Mohr-Mascheroni constructions, constructions with the straightedge only and other important geometric constructions with allowed instruments
-prove some basic conics properties
-apply conic sections properties to constructive geometry problems which involve ellipse, hyperbola and parabola.</td></tr>
<tr><td>Course content broken down in detail by weekly class schedule (syllabus)</td><td colspan="5">-Constructive geometry axioms. Basic and elementary constructions with the straightedge and compass. (2)
- Methodology for solving constructive geometry assignments.(1)
- Some especial methods of constructive geometry (methods of intersection, isometric and homothetic transformation). (5)
-Circle inversion. (4)
-Solvability of the constructive geometry problem. (3)
- Classical greek problems. Squaring the circle, angle trisection and doubling the cube. (2)
-Constructions of regular convex polygons. (2)
- Mohr-Mascheroni constructions. (2)
- Constructions with the straightedge only. (2)
- Some important geometric constructions with allowed instruments. (1)
- Ellipse. (2)
- Hyperbola. (2)</td></tr>
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	-Parabola. (2) -Papus-Bošković approach to the conic sections. (1)
Format of instruction	Lectures and exercises.
Student responsibilities	Attending classes. Students are expected to be present at least 70% of classes.
Screening student work *(name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)*	Attending classes: 2 ECTS. Partial exams/Written exam: 2ECTS Final exam: 1 ECTS.
Grading and evaluating student work in class and at the final exam	Two partial written exams / one final written exam and final oral exam. There are 2 partial written exams during a semester. Passing both partial exams enables students to take an oral exam. Successfully passing the oral exam leads to successful completion of the course. Final grade is derived as the arithmetic mean of scores in partial exams (or a written exam) and the oral exam. In the case of failure in partial exams or the oral exam students must undergo a written exam before taking oral exam (again). Written exam consists of practical and theoretical exercises.
Required literature (available in the library and via other media)	N. Koceić Bilan, nastavni materijal iz Konstruktivne geometrije D. Palman, *Geometrijske konstrukcije*, Element, Zagreb, 1996. Pavković, Veljan, *Elelementarna matematika 1,* Školska knjiga, Zagreb, 1995. N. Koceić Bilan, L. Trombetta Burić, A. Lebedina, *Klasični grčki problemi*, Zbornik radova 2012. FSR Sveučilište u Mostaru N. Koceić Bilan, L. Trombetta Burić, N. Smajić, *Konstruktivna geometrija u nastavi matematike*, Osječki matematički list 13 (2013) I. Mirošević, N. Koceić Bilan, J. Jurko, *Različiti pristupi čunjosječnicama*, 27. e.math
Optional literature (at the time of submission of study programme proposal)	D. Palman, *Trokut i kružnica*, Element, Zagreb, 1994. D. Palman, *Planimetrija*, Element, Zagreb, 1999.
Quality assurance methods that ensure the acquisition of exit competences	Summarizing test results and conducting an anonymous student survey at the end of the course. The survey is conducted according to the rules of the University of Split.
Other (as the proposer wishes to add)	