<table>
<tr><td>COURSE NAME</td><td colspan="5">Vector spaces II</td></tr>
<tr><td>Code</td><td>PMM811</td><td>Year of study</td><td colspan="3">1st and 2nd year of graduate study</td></tr>
<tr><td>Course teacher</td><td>Joško Mandić</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>15</td><td></td></tr>
<tr><td>Status of the course</td><td>Required and elected</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">The aim of the course is to acquaint students with various concepts of the theory of vector spaces. The emphasis is on the construction of a variety of mathematical structures using bilinear forms and tensor products. Also, tensor products will be used to construct algebras and bilinear forms will be associated with groups.</td></tr>
<tr><td>Course enrolment requirements and entry competences required for the course</td><td colspan="5">Requirements: Course passed: Vector Spaces I.

Required competences: basic knowledge of mathematical structures.</td></tr>
<tr><td>Learning outcomes expected at the level of the course (4 to 10 learning outcomes)</td><td colspan="5">Student is able to:
-define bilinear and quadratic forms
-explain different tensor products
-apply tensor products on construction of algebras
-analyse set of all invertible linear operators that preserve given bilinear, hermitian or quadratic form</td></tr>
<tr><td>Course content broken down in detail by weekly class schedule (syllabus)</td><td colspan="5">-Dual vector space (2)

-Bilinear forms (2)

-Symmetric forms (2)

- Quadratic forms (2)

-Alternating i skew-symetric forms (2)

-Hermitian forms (2)

-Tensor product (3)

-Symmetric product (2)

-Exterior product (2)

-Basic properties of algebras (2)

-Tensor algebra (2)

-Symmetric algebra (2)

-Exterior algebra (2)

- Clifford algebras (2)

-Lie algebras (2)</td></tr>
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	-Nonassociative algebras (2) -Linear groups (2) -General linear group (2) -Symplectic groups (2) -Unitary groups (2) -Orthogonal groups (2) -Matrix Lie groups (2)
Format of instruction	Lectures and seminars
Student responsibilities	Attending classes and writing seminar paper
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: 1 ECTS, Seminar paper: 1 ETCS. Oral exam: 3 ETCS,
Grading and evaluating student work in class and at the final exam	Seminar paper and final oral exam
Required literature (available in the library and via other media)	J.Mandić, Vektorski prostori 2, script
Optional literature (at the time of submission of study programme proposal)	1.M.Artin, Algebra, Prentice Hall,1991. 2. S. Lang, Algebra, Springer,2002. 3.P.A.Grillet, Abstract algebra, Springer,2007. 4.A.W.Knapp, Basic algebra, Cornerstones, 2006. 5.S. Kurepa, Konačno dimenzionalni vektorski prostori i primjene, Liber, Zagreb, 1992. 6.K. Horvatić, Linearna algebra, script, Zagreb, 1992
Quality assurance methods that	Statistics of test results and student evaluation via anonymous questionnaires at the end of the course. The survey is conducted according to the rules of the

ensure the acquisition of exit competences	University of Split.
Other (as the proposer wishes to add)	