<table>
<tr><td>COURSE NAME</td><td colspan="7">Mathematical analysis II</td></tr>
<tr><td>Code</td><td>PMM802</td><td>Year of study</td><td colspan="5">2nd undergraduate study</td></tr>
<tr><td>Course teacher</td><td>Snježana Braić</td><td>Credits (ECTS)</td><td colspan="5">8,0</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><td></td></tr>
<tr><td>45</td><td></td><td>45</td><td></td></tr>
<tr><td>Status of the course</td><td>Compulsory</td><td>Percentage of application of e-learning</td><td colspan="5">30%</td></tr>
<tr><td colspan="8">COURSE DESCRIPTION</td></tr>
<tr><td>Course objectives</td><td colspan="7">Students will:
- acquire fundamental knowledge of Euclidean space Rn
- expand their acquired knowledge about limit and continuity of real function of real variable upon real function of several real variables, so-called scalar function
- be introduced to concepts of partial derivative, derivability and differentiability of scalar functions, and learn how to examine derivability and differentiability of scalar functions
- learn fundamental theorems of differential calculus for scalar functions, and acquire knowledge of tangent planes, linear, differential and quadratic forms
- learn to calculate local, constrained and global extrema for scalar functions
- learn Riemann integral of real function of two variables over a rectangle and over a Jordan measurable set
- learn fundamental theorems of integral calculus and compute double and triple integrals using various systems in plane and space
- learn to calculate volume of solids, mass and the center of gravity of three dimensional solids
- acquire basic knowledges about multiple integrals</td></tr>
<tr><td>Course enrolment requirements and entry competences required for the course</td><td colspan="7">Course enrolment: successfully completed course Differential and Integral Calculus I
Entry competences: students should be comfortable with using concepts from Differential and integral calculus of functions of a single real variable</td></tr>
<tr><td>Learning outcomes expected at the level of the course (4 to 10 learning outcomes)</td><td colspan="7">Upon successful completion of this course students will be able to:
- define Euclidean space Rn and associate metric, normed and unitary structure of that space
- examine a convergence of sequence in Rn, to state and prove sequential characterization of limits and continuity of scalar functions
- compute partial derivatives and examine derivability and differentiability of scalar functions
- state, prove and apply theorems of differential calculus for scalar functions
- define linear, differential and quadratic forms and calculate local, constrained and global extrema for functions of two variables
- define Riemann integral of real function of two variables over a rectangle and J-measurable sets
- state, prove and apply theorems of integral calculus for scalar functions
- compute double and triple integrals and apply them when calculating volume, mass and the center of gravity of the solid body</td></tr>
<tr><td>Course content broken down in detail by weekly class schedule (syllabus)</td><td colspan="7">- Vectorial space Rn (1)
- Scalar product, norm and metric on Euclidean space Rn (3)
- Sequence in Rn (3)
- Surfaces of the second order (2)
- Limit of scalar function (2)
- Continuity of scalar function (3)
- Partial derivative and directional derivative (2)
- Schwarz' theorem (1)
- Derivative of composite functions (2)
- Mean value theorem (1)</td></tr>
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	- Differentiability of functions (3) - Tangent plane (1) - Differential form (1) - Implicit functions, system of equations (2) - Taylor's theorem for multivariate functions (1) - Local, constrained and global extrema for functions of several real variables (3) - Riemann integral of real functions of two variables over a rectangular (2) - Jordan measurable sets, sets of measure zero (2) - Lebesgue's criterion for Riemann integrability (2) - Riemann integral of real functions of two variables over a Jordan measurable sets (2) - Mean value theorem for integrals (1) - Fubini's theorem and functions defined by integrals (1) - The change of variable theorem (2) - Multiple integrals (2)
Format of instruction	Lectures, exercises.
Student responsibilities	Attendance.
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)*	Attendance – 2,5 ECTS Colloquium – 2,5 ECTS Oral exam – 4 ECTS
Grading and evaluating student work in class and at the final exam	The exam which requires solving practical and theoretical problems is taken in written form and is followed by an oral theoretical exam. A passed written exam is a prerequisite for the oral exam. The written exam can be taken partialy, in two parts, during class.
Required literature (available in the library and via other media)	1. S. Braić, *Diferencijalni i integralni račun II,* textbook PMF-a u Splitu 2. Š. Ungar, *Matematička analiza III*, Matematički odjel PMF, Zagreb 1994. 3. N. Uglešić: *Viša matematika II,* textbook PMF-a u Splitu.
Optional literature (at the time of submission of study programme proposal)	1. S. Lang, *A first Course in Calculus*, 5th ed., Springer, 1986. 2. M. Lovrić, *Vector Calculus*, Addison-Wesley Publ. Ltd., Don Mills, Ontario, 1997. 3. S. Kurepa, *Matematička analiza 2: Diferenciranje i integriranje*, Tehnička knjiga, Zagreb, 1989. 4. S. Kurepa, *Matematička analiza 3: Funkcije više varijabli*, Tehnička knjiga, Zagreb, 1981.

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