<table>
<tr><td>COURSE NAME</td><td colspan="5">Mathematics I</td></tr>
<tr><td>Code</td><td>PMM851</td><td>Year of study</td><td colspan="3">1st year of undegraduate study</td></tr>
<tr><td>Course teacher</td><td>doc. dr. sc. Ivo Ugrina</td><td>Credits (ECTS)</td><td colspan="3">7</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>45</td><td></td><td>45</td></tr>
<tr><td>Status of the course</td><td>REQUIRED COURSE</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">Focus on intuitive presentation of mathematical theory and on illustrative examples in order to prepare students for future courses.</td></tr>
<tr><td>Course enrolment requirements and entry competences required for the course</td><td colspan="5"></td></tr>
<tr><td>Learning outcomes expected at the level of the course (4 to 10 learning outcomes)</td><td colspan="5">Successful students will be able to:<br>- define and explain real and complex numbers<br>- explain what mathematical induction is<br>- describe properties of elementary real functions<br>- apply differential calculus and explain it<br>- define integral and apply it<br>- define sequences and series of real numbers<br>- work with matrices and explain their basic properties</td></tr>
<tr><td>Course content broken down in detail by weekly class schedule (syllabus)</td><td colspan="5">1. Sets, axioms for the real numbers, functions, supremum, infimum, mathematical induction (3)<br>2. Sequence, subsequence, sequence limits in R, Cauchy sequence, countability (3)<br>3. Function limits in R, continuous functions, basic examples (3)<br>4. Differentiability, derivative of a function, rules of computation, continuity and differentiability, implicit differentiation (6)<br>5. Higher-order derivatives, basic theorems about differetionation, applications (6)<br>6. Indefinite integral, basic rules of integration, integration of elementary functions (6)<br>7. Definite integral, Newton-Leibniz formula, , applications (6)<br>8. Series of real numbers, convergent series, convergence tests, Taylor series, Fourier series (6)<br>9. Matrices, matrix algebra, inverse matrix, rank, determinant, elementary transformations, systems of linear equations, Cramer's rule, singular value decomposition (6)</td></tr>
<tr><td>Format of instruction</td><td colspan="5">Exercises section and lectures</td></tr>
<tr><td>Student responsibilities</td><td colspan="5">Students are expected to be present for every lecture and exercise section.</td></tr>
<tr><td>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)</td><td colspan="5">Attending lectures and exercises (2)<br>Written final exam/mid-term exams (5)</td></tr>
</table>

| | |
|---|---|
| Grading and evaluating student work in class and at the final exam | During the semester, students will write three tests with practical and theoretical tasks. To successfully meet the requirements of the course students must pass all three tests. |
| Required literature (available in the library and via other media) | I. Slapničar, Matematika 1, FESB, Split, 2002.<br>I. Slapničar, Matematika 2, FESB, Split, 2002.<br>B.P. Demidovič, Zadaci i riješeni primjeri iz više matematike, Tehnička knjiga, Zagreb, 1989.<br>I. Slapničar, J. Barić, M. Ninčević, Matematika 1 – zbirka zadataka, FESB, Split, 2010. |
| Optional literature (at the time of submission of study programme proposal) | K. Horvatić, Linearna algebra, 9. izdanje, Tehnička knijga, Zagreb, 2004.<br>N. Uglešić, Viša matematika I and II, skripta, PMF, Split.<br>Bradič, Pečarić, Matematika za tehnološke fakultete, Element, Zagreb<br>P.V. Minorski, Zbirka zadataka iz više matematike, Tehnička knijga, Zagreb, 1990. |
| Quality assurance methods that ensure the acquisition of exit competences | Detailed statistics of student results, gathering feedback from students through official questionnaires and lecturer's self-evaluation. |
| Other (as the proposer wishes to add) | |