<table>
<tr><td>COURSE NAME</td><td colspan="5">Mathematics III</td></tr>
<tr><td>Code</td><td>PMM853</td><td>Year of study</td><td colspan="3">2. year of undergraduate study</td></tr>
<tr><td>Course teacher</td><td>Tanja Vučičić</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>compulsory</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 course objective is to introduce students to the fundamentals of Fourier analysis, vector calculus and descriptive and inferential statistics. The emphasis is on intuitive understanding of the theory and on examples illustrating important theoretical results. By attending tutorial sessions, the student gains sufficient technical skills for solving problems and applying the theory in practice.</td></tr>
<tr><td>Course enrolment requirements and entry competences required for the course</td><td colspan="5">Completed courses Mathematics I and Mathematics II</td></tr>
<tr><td>Learning outcomes expected at the level of the course (4 to 10 learning outcomes)</td><td colspan="5">It is expected that the student will be able to:
1. determine the Fourier series of a given function;
2. calculate line integrals;
3. calculate surface integrals;
4. calculate directional derivative of a scalar field;
5. recognize conservative vector fields;
6. find potential of a conservative vector field;
7. apply Green's, Stokes's and Gauss's theorems;
8. carry out a simple statistical data analysis and interpret the output;
9. recognize and apply correctly the most frequently used discrete and continuous probability distributions;
10. comprehend the idea of a statistical test and apply a few well-known tests.</td></tr>
<tr><td>Course content broken down in detail by weekly class schedule (syllabus)</td><td colspan="5">1. Fourier series (3 hours)
2. Fourier transformation (3 hours)
3. Vector valued functions (3 hours)
4. Space curves (2 hours)
5. Scalar and vector fields (2 hours)
6. Gradient, directional derivative (2 hours)
7. Scalar and vector line integrals (3 hours)
8. Conservative vector fields, potential function (2 hours)
9. The vector operators curl and div (2 hours)
10. Green's theorem (2 hours)
11. Parametrized surfaces (2 hours)
12. Surface integrals of scalar and vector fields (3 hours)
13. Stokes's and Gauss's theorem (3 hours)
14. Descriptive statistics: population vs. sample, graphical displaying data, measuring central tendency, spread and shape. (3 hours)
15. Sample space. Classical and statistical definition of probability. Rule of addition. Conditional probability. Independent events. Rule of multiplication. (2 hours)
16. Discrete random variable, probability density function and (cumulative) distribution function. Parameters of a random variable. Bernoulli, binomial and Poisson random variable. (3 hours)
17. Continuous random variable. Normal, chi-square and t-distribution. (2 hours)
18. Statistical inference: confidence intervals, testing a hypothesis, Pearson's chi-square test. (3 hours)</td></tr>
<tr><td>Format of instruction</td><td colspan="5">Lectures and tutorial sessions.</td></tr>
</table>

Student responsibilities	Class attendance and partial written exams.
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)*	Class attendance: 2 ECTS Partial written exams: 2,5 ECTS Final exam: 2,5 ECTS
Grading and evaluating student work in class and at the final exam	Monitoring and grading students' achievements lasts throughout the semester. The exam comprises two partial written tests and a final written test. The portion of theoretical questions in a test goes up to 30%. So as to pass the exam, the summarized score should be at least 50%. Students whose summarized score is less than 50% are admitted to take a "classical" exam in two autumn exam terms. Such an exam consists of a written and an oral part, both equally weighted in the final grade. Passing written test (score ≥50%) is a necessary condition for taking up an oral exam.
Required literature (available in the library and via other media)	1) N. Elezović, *Fourierov red i integral, Laplaceova transformacija*, Element, Zagreb, 2015. 2) T. Burić et al., *Vektorska analiza*, Element, Zagreb, 2014. 3) N. Koceić Bilan, *Primijenjena statistika*, skripta, PMF Split, 2012.
Optional literature (at the time of submission of study programme proposal)	1. S. Colley, *Vector Calculus*, 4th edition, Pearson, 2006. 2. I. Slapničar, *Matematika 3*, FESB, Split, 2006. (http://lavica.fesb.unist.hr/mat3/) 3. B.P. Demidovič, *Zadaci i riješeni primjeri iz više matematike*, Tehnička knjiga, Zagreb, 1989. 4. D.S. Moore, G.P. McCabe, B.A. Craig, *Introduction to the Practice of Statistics*, 6th edition, W. H. Freeman and Co., N.Y., 2009.
Quality assurance methods that ensure the acquisition of exit competences	Exam results statistics. Students' quality assessment at the end of the semester carried out by the University authorized committee through anonymous polls.
Other (as the proposer wishes to add)	