<table>
<tr><td>COURSE NAME</td><td colspan="5">Numerical analysis</td></tr>
<tr><td>Code</td><td>PMM118</td><td>Year of study</td><td colspan="4">1st and 2nd year of graduate study</td></tr>
<tr><td>Course teacher</td><td>Jurica Perić</td><td>Credits (ECTS)</td><td colspan="4">5</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>30</td><td></td><td>30</td><td></td></tr>
<tr><td>Status of the course</td><td>COMPULSORY AND ELECTIVE COURSE</td><td>Percentage of application of e-learning</td><td colspan="4">40%</td></tr>
<tr><td colspan="6">COURSE DESCRIPTION</td></tr>
<tr><td>Course objectives</td><td colspan="5">Students will acquire knowledge and skills in numerical analysis, especially in the field of analysis of errors in computer arithmetic, numerical solution of ordinary differential equations and partial differential equations. This will enable them to solve problems that arise in practice, especially in the natural sciences (such as, physics), technical sciences, … Also they will become familiar with some of the existing software packages which can be used in solving such problems.</td></tr>
<tr><td>Course enrolment requirements and entry competences required for the course</td><td colspan="5">Successfully completed course „Introduction to numerical mathematics“.</td></tr>
<tr><td>Learning outcomes expected at the level of the course (4 to 10 learning outcomes)</td><td colspan="5">The student is able to:
- estimate and classify errors when executing algorithms in computer
- explain and analyze advanteges and disadvanteges of representation of real and integer numbers into computer, IEEE arithmetic
- choose one of the studied methods and solve the initial (or boundary) problem for ordinary differential equation
- compare and relate concepts method order, consistency, convergence, stability
- explain studied methods for numerical solving of partial differential equations</td></tr>
<tr><td>Course content broken down in detail by weekly class schedule (syllabus)</td><td colspan="5">Representation of the number in computer, computer arithmetic - 4 hours
Analysis of errors - 4 hours
Ordinary differential equations: initial problem (one-step and multi-step methods, especially Runge-Kutta methods), boundary problem, variational approach – 14 hours
Introduction to numerical solution of partial differential equations: elliptic, parabolic and hyperbolic differential equations - 8 hours</td></tr>
<tr><td>Format of instruction</td><td colspan="5">Lectures, exercises.</td></tr>
<tr><td>Student responsibilities</td><td colspan="5">Attendance at 70% of lectures and 70% of exercises.</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">Attendance – 1 ECTS
Colloquium – 1.5 ECTS
Written exam – 1 ECTS
Oral exam – 1.5 ECTS</td></tr>
</table>

Grading and evaluating student work in class and at the final exam	The exam is taken in written and oral form. Written exam is preliminary part of the exam and requirement for the oral exam is to pass a written exam. The written form of the exam can be taken partially, during class, where curriculum provided. Activity in class, solving homework, colloquium, written and oral examination are the elements from which form the final grade is formed.
Required literature (available in the library and via other media)	V. Hari at all, Numerička analiza, PMF-MO, Zagreb, 2003. J. Stoer, R. Bulirsch, Introduction to Numerical Analysis, Springer, New York, 1993. Nicholas J. Higham, Accuracy and Stability of Numerical Algorithms, SIAM, 2002.
Optional literature (at the time of submission of study programme proposal)	D. Kincaid, W. Cheney, Numerical Analysis - Mathematics of Scientific Computing, Brooks/Cole Publishing Company, 2002. D. N. Arnold, A Concise Introduction to Numerical Analysis, University of Minnesota, Minneapolis, 2001.
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)	