<table>
<tr><td>NAME OF THE COURSE</td><td colspan="5">Introduction to Fluid Mechanics</td></tr>
<tr><td>Code</td><td>PMP261</td><td>Year of study</td><td colspan="3">GU-1
GU-2</td></tr>
<tr><td>Course teacher</td><td>Ante Bilušić, PhD, Professor</td><td>Credits (ECTS)</td><td colspan="3">6</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>F</td></tr>
<tr><td>30</td><td></td><td>30</td><td></td></tr>
<tr><td>Status of the course</td><td>Obligatory and elective course</td><td>Percentage of application of e-learning</td><td colspan="3">20%</td></tr>
<tr><td colspan="6">COURSE DESCRIPTION</td></tr>
<tr><td>Course objectives</td><td colspan="5">Understanding the physical properties of fluids and their influence on fluid kinematics, accurate application of the law of conservation of mass, momentum and energy to fluid flow, and application of mathematical tools needed to describe fluid flow.</td></tr>
<tr><td>Course enrolment requirements and entry competences required for the course</td><td colspan="5">The student must have adopted the following learning outcomes:
apply the laws of classical mechanics to a particle system
apply the laws of conservation of momentum, angular momentum and energy
solve problems of motion in one dimension and motion in a medium with resistance
solve physical problems using Lagrange's and Hamilton's formulation of classical mechanics
define and discuss the laws of thermodynamics
understand the physical interpretations of differential operators
use vector analysis in rectangular and curved coordinates
explain the basics of tensor analysis
apply methods for solving linear differential equations of the second order</td></tr>
<tr><td>Learning outcomes expected at the level of the course (4 to 10 learning outcomes)</td><td colspan="5">to classify fluids based on their physical properties
to calculate the kinematic properties of the fluid element
when describing fluid flow, to apply the laws of conservation of mass, momentum and energy
to explain the formation of a boundary layer in a fluid
to apply dimensional analysis to the obtained results</td></tr>
<tr><td>Course content broken down in detail by weekly class schedule (syllabus)</td><td colspan="5">The content is divided into the following twelve teaching units:
Lagrange and Euler's description of motion (2 hours of lectures and 2 hours of exercises)
Fluid properties (4 hours of lectures and 4 hours of exercises)
Fluid statics (4 hours of lectures and 4 hours of exercises)
Control volume (2 hours of lectures and 2 hours of exercises)
Laminar flow (2 hours of lectures and 2 hours of exercises)
Equation of continuity (2 hours of lectures and 2 hours of exercises)
The first law of thermodynamics for fluid (2 hours of lectures and 2 hours of exercises)
Viscosity (2 hours of lectures and 2 hours of exercises)
Motion equations for fluid (4 hours of lectures and 4 hours of exercises)
Turbulent flow (2 hours of lectures and 2 hours of exercises)
A boundary layer (2 hours of lectures and 2 hours of exercises)
Dimensional analysis (2 hours of lectures and 2 hours of exercises)</td></tr>
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<tr><td>Format of instruction</td><td>☒ lectures
☐ seminars and workshops
☒ exercises
☐ on line in entirety
☐ partial e-learning
☐ field work</td><td>☐ independent assignments
☐ multimedia
☐ laboratory
☐ work with mentor
☒ homework assignments
☐</td></tr>
<tr><td>Student responsibilities</td><td colspan="2">Writing reports on the conducted experiments. Attendance.</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="2">
<table>
<tr><th>Name</th><th>Ects</th><th>Name</th><th>Ects</th><th>Name</th><th>Ects</th></tr>
<tr><td>Class attendance</td><td>1.5</td><td>Research</td><td></td><td>Experimental work</td><td></td></tr>
<tr><td>Oral exam</td><td>2.0</td><td>Report</td><td></td><td>Homework assignments</td><td>0.5</td></tr>
<tr><td>Seminar essay</td><td></td><td>Essay</td><td></td><td></td><td></td></tr>
<tr><td>Tests</td><td></td><td>Practical training</td><td></td><td></td><td></td></tr>
<tr><td>Written exam</td><td>2.0</td><td>Project</td><td></td><td></td><td></td></tr>
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<tr><td>Grading and evaluating student work in class and at the final exam</td><td colspan="2">Twice during the semester, students take a written pre-exam. Students that reach more than 50% of possible points were acquitted of taking the written exam and can access the oral exam directly. Furthermore, those students that in the first written pre-exam achieve 50% points or more, can take the oral exam in two parts The final grade is based on written (pre-)exam (1/2 of the score) and the oral exam (1/2 of the score).</td></tr>
<tr><td>Required literature (available in the library and via other media)</td><td colspan="2">
<table>
<tr><th>Title</th><th>Number of copies in the library</th><th>Availability via other media</th></tr>
<tr><td>Philip J. Pritchard, John W. Mitchell, „Fox and McDonald's Introduction to Fluid Mechanics“, 9th Edition, John Wiley & Sons, Inc., 2011.</td><td>0</td><td>yes</td></tr>
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</td></tr>
<tr><td>Optional literature (at the time of submission of study programme proposal)</td><td colspan="2">1. D. J. Acheson, „Elementary Fluid Dynamics“, Clarendon Press, Oxford, 2005.
Y. Nakayama, R. F. Boucher, „Introduction to Fluid Mechanics“, Butterworth, Heineman, 2000.</td></tr>
<tr><td>Quality assurance methods that ensure the acquisition of exit competences</td><td colspan="2">Statistics of students' results and students' evaluation via anonymous questionnaires at the end of the course. The survey is conducted according to the rules of the University of Split.</td></tr>
<tr><td>Other (as the proposer wishes to add)</td><td colspan="2"></td></tr>
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