<table>
<tr><td>Course code</td><td></td></tr>
<tr><td>Type and description</td><td>Elective Course</td></tr>
<tr><td>ECTS credit</td><td>1</td></tr>
<tr><td>Course name</td><td>Basics of Computational Fluid Dynamics in Civil Engineering</td></tr>
<tr><td>Course name in Polish</td><td>Podstawy obliczeniowej mechaniki płynów w budownictwie</td></tr>
<tr><td>Language of instruction</td><td>English</td></tr>
<tr><td>Course level</td><td>8 PRK</td></tr>
<tr><td>Course coordinator</td><td>Witold Grymin</td></tr>
<tr><td>Course instructors</td><td>Witold Grymin, Marcin Koniorczyk</td></tr>
<tr><td>Delivery methods and course duration</td><td>
<table>
<tr><th></th><th>Lecture</th><th>Tutorials</th><th>Laboratory</th><th>Project</th><th>Seminar</th><th>Other</th><th>Total of teaching hours during semester</th></tr>
<tr><td>Contact hours</td><td>0</td><td>0</td><td>0</td><td>15</td><td>0</td><td>0</td><td>15</td></tr>
<tr><td>E-learning</td><td>No</td><td>No</td><td>No</td><td>No</td><td>No</td><td>No</td><td></td></tr>
<tr><td>Assessment criteria (weightage)</td><td></td><td></td><td></td><td>1,00</td><td></td><td></td><td></td></tr>
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<tr><td>Course objective</td><td>1.Acquiring theoretical knowledge concerning the computational fluid dynamics.

2.Acquiring knowledge about application of the CFD to the problems encountered in the civil engineering, such as determining the air flow in the air voids in building components or calculating pressure exerted by the wind on the buildings of complicated geometry.</td></tr>
<tr><td>Learning outcomes</td><td>Having completed the course student can:

1. Explain the problems of the laminar and turbulent flow modelling W4, U4, K1
2. Prepare numerical simulations of simple fluid flow cases and heat transfer calculations W4, U1
3. Determine quality of the solution and critically evaluate the results of the models U4, K1</td></tr>
<tr><td>Assessment methods</td><td>W4, K1 – presentation

U4, K1 – project evaluation

The final grade

Project evaluation - 80%

Presentation - 20%</td></tr>
<tr><td>Prerequisites</td><td></td></tr>
<tr><td>Course content with delivery methods</td><td>1. Basic equations of the computational fluid dynamics
2. Mesh preparation: different types of elements, refinement, generation of the mesh in the engineering problems at different scales
3. Boundary and initial conditions
4. Turbulence modelling
5. Convergence of numerical calculations, monitoring of the simulations
6. Analysis of the results quality</td></tr>
</table>

	7. Preparing the simulation results using the Postprocessor
Basic reference materials	Hirsch, Charles. Numerical computation of internal and external flows, 2007
Other reference materials	
Average student workload outside classroom	10h
Comments	
Last update	Brak informacji