<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>Kurzweil-Henstock integral</td></tr>
<tr><td>Course name in Polish</td><td>Całka Kurzweila-Henstocka</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>Marek Balcerzak</td></tr>
<tr><td>Course instructors</td><td>Marek Balcerzak</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>0,00</td><td></td><td></td><td></td><td></td><td>0,00</td><td></td></tr>
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<tr><td>Course objective</td><td>Course objective:

1.Acquiring knowledge about definition of Kurzweil-Henstock integral and its applications

2 Acquiring knowledge about fundamental theorem of calculus for Kurzweil-Henstock integral

3. Acquiring knowledge about convergence theorems for Kurzweil-Henstock integral</td></tr>
<tr><td>Learning outcomes</td><td>Having completed the course student can:

1. Apply the Kurzweil-Henstock for selected classes of functions - effects W4, U4, K1

2. Give the respective version of the fundamental theorem of calculus with argumentation - effects W4, K1

3. Describe selected convergence theorems for the Kurzweil-Henstock integral - effects U4, K1</td></tr>
<tr><td>Assessment methods</td><td>W4 - oral exam

U4, K1 - project seminar presentation

W4, U4 - written project

The final evaluation is based on:

Exam - 50%

Presentation - 20%

Project evaluation - 30%</td></tr>
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Prerequisites	Foundations of theory of the Riemann and the Lebesgue integrals
Course content with delivery methods	Course content divided into two forms: LECTURE 1. The Causin lemma. Definition of the Kurzweil-Henstock integral on [a,b]. 2. Properties of functions integrable in the Kurzweil-Henstock sense. 3.Fundamental theorem of calculus. The Saks-Henstock lemma and its consequences. 4. Convergence theorems for the Kurzweil-Henstock integral. PROJECT 5. Examples of integration of functions in the Kurzweil-Henstock sense.
Basic reference materials	1. R. G. Bartle, A modern theory of integration, AMS 2001. 2. R. A. Gordon, The integrals of Lebesgue, Denjoy, Perron and Henstock, AMS 1994.
Other reference materials	
Average student workload outside classroom	10 h
Comments	
Last update	11.05.2023