



MATHEMATICAL ANALYSIS 1	
Enrollment year	2019/2020
Academic year	2019/2020
Regulations	DM270
Academic discipline	MAT/05 (MATHEMATICAL ANALYSIS)
Department	DEPARTMENT OF CIVIL ENGINEERING AND ARCHITECTURE
Course	
Curriculum	PERCORSO COMUNE
Year of study	1°
Period	1st semester (30/09/2019 - 20/01/2020)
ECTS	6
Lesson hours	60 lesson hours
Language	Italian
Activity type	WRITTEN AND ORAL TEST
Teacher	ROCCA ELISABETTA (titolare) - 6 ECTS
Prerequisites	Entry requirements are the ones of the university admission
Learning outcomes	The aim of this course is to give the basic knowledge of differential and integral calculus for real-valued functions of one real variable, of numerical sequences and series and of complex numbers. There will be several examples and exercises.
Course contents	<ol style="list-style-type: none"><li>1. Basic properties of numerical sets and in particular of the real numbers (total ordered field, continuity axiom). The field of complex numbers.</li><li>2. Functions: definition, properties, graphs. Invertible functions. Even, odd, periodic functions. Elementary functions and their graphs. Limits of functions. Continuous functions and their properties. Discontinuities.</li><li>3. Derivative of a function; applications to Geometry and Physics. Basic</li></ol>

	<p>rules for computing derivatives. Principal theorems. Higher order derivatives; Taylor approximation; extremal points of functions; De l'Hopital rule.</p> <p>4. Sequence and limits. Numerical series: definition, properties, and convergence criteria.</p> <p>5. Definite integral: definition, properties and applications. Theorems on integral calculus. Computing integrals. Improper integrals.</p>
<b>Teaching methods</b>	<p>Lectures (hours/year in lecture theatre): 37 Practical class (hours/year in lecture theatre): 23 Practicals / Workshops (hours/year in lecture theatre): 0</p>
<b>Reccomended or required readings</b>	<p>M. Bramanti, C.D. Pagani, S. Salsa, Analisi Matematica 1, Zanichelli, Bologna, 2009. M. Bramanti, Esercitazioni di Analisi Matematica 1, Ed. Esculapio, Bologna, 2011.</p>
<b>Assessment methods</b>	<p>The final exam consists in a written test and an oral examination on the course topics. For more detailed information see <a href="http://matematica.unipv.it/rocca/">http://matematica.unipv.it/rocca/</a></p>
<b>Further information</b>	<p>The final exam consists in a written test and an oral examination on the course topics. For more detailed information see <a href="http://matematica.unipv.it/rocca/">http://matematica.unipv.it/rocca/</a></p>
<b>Sustainable development goals - Agenda 2030</b>	<p><a href="#">\$Ibl legenda sviluppo sostenibile</a></p>