



## ADVANCED NUMERICAL METHODS FOR PARTIAL DIFFERENTIAL EQUATIONS

<b>Enrollment year</b>	2021/2022
<b>Academic year</b>	2021/2022
<b>Regulations</b>	DM270
<b>Academic discipline</b>	MAT/08 (NUMERICAL ANALYSIS)
<b>Department</b>	DEPARTMENT OF MATHEMATICS "FELICE CASORATI"
<b>Course</b>	MATHEMATICS
<b>Curriculum</b>	PERCORSO COMUNE
<b>Year of study</b>	1°
<b>Period</b>	2nd semester (01/03/2022 - 10/06/2022)
<b>ECTS</b>	6
<b>Lesson hours</b>	48 lesson hours
<b>Language</b>	Italian
<b>Activity type</b>	ORAL TEST
<b>Teacher</b>	MOIOLA ANDREA (titolare) - 3 ECTS BREZZI FRANCO - 3 ECTS
<b>Prerequisites</b>	Basic knowledge of numerical analysis, mathematical analysis, partial differential equations and Matlab language. It is preferable to have attended, or to attend during the same term, the Finite Elements class.
<b>Learning outcomes</b>	The course aims at studying in detail some modern methods for the numerical approximation of partial differential equation that are relevant for applications. The methods under consideration will be analysed theoretically and implemented numerically.
<b>Course contents</b>	The course will focus on some advanced techniques for the solution of partial differential equations that complement and extend the programme of the Finite Element course. Some examples are: boundary element method (BEM), isogeometric

	analysis (IGA), virtual element method (VEM), discontinuous Galerkin (DG) method, immersed boundary method (IBM), domain decomposition (DD), eigenvalue problems, space-time Galerkin methods, preconditioning techniques.
<b>Teaching methods</b>	Classroom lectures, tutorials in the computer lab, study of research papers, seminars.
<b>Reccomended or required readings</b>	Notes prepared by the lecturer. Scientific papers provided by the lecturer.
<b>Assessment methods</b>	Oral exam and report.
<b>Further information</b>	
<b>Sustainable development goals - Agenda 2030</b>	<a href="#">\$lbl legenda sviluppo sostenibile</a>