



ADVANCED NUMERICAL METHODS FOR PARTIAL DIFFERENTIAL EQUATIONS

Enrollment year	2018/2019
Academic year	2018/2019
Regulations	DM270
Academic discipline	MAT/06 (PROBABILITY AND MATHEMATICAL STATISTICS)
Department	DEPARTMENT OF MATHEMATICS "FELICE CASORATI"
Course	MATHEMATICS
Curriculum	PERCORSO COMUNE
Year of study	1°
Period	2nd semester (04/03/2019 - 14/06/2019)
ECTS	6
Lesson hours	48 lesson hours
Language	Italian
Activity type	ORAL TEST
Teacher	SANGALLI GIANCARLO (titolare) - 3 ECTS MOIOLA ANDREA - 3 ECTS
Prerequisites	Basic knowledge of numerical analysis, mathematical analysis, partial differential equations and Matlab language. Previous attendance of the Finite Element course is preferable.
Learning outcomes	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.
Course contents	The course will focus on some advanced techniques for the solution of partial differential equations that extend the programme of the Finite Element course. Some examples are: boundary element method (BEM), isogeometric analysis (IGA), virtual element method (VEM), discontinuous Galerkin

	method (DG), immersed boundary method (IBM), domain decomposition (DD), eigenvalue problems, space-time Galerkin methods, preconditioning techniques.
Teaching methods	Classroom lectures and tutorials in the computer lab.
Reccomended or required readings	Notes prepared by the lecturer. Scientific papers provided by the lecturer.
Assessment methods	Oral exam and Matlab report.
Further information	
Sustainable development goals - Agenda 2030	\$lbl legenda sviluppo sostenibile