UNIVERSITÀ DI PAVIA

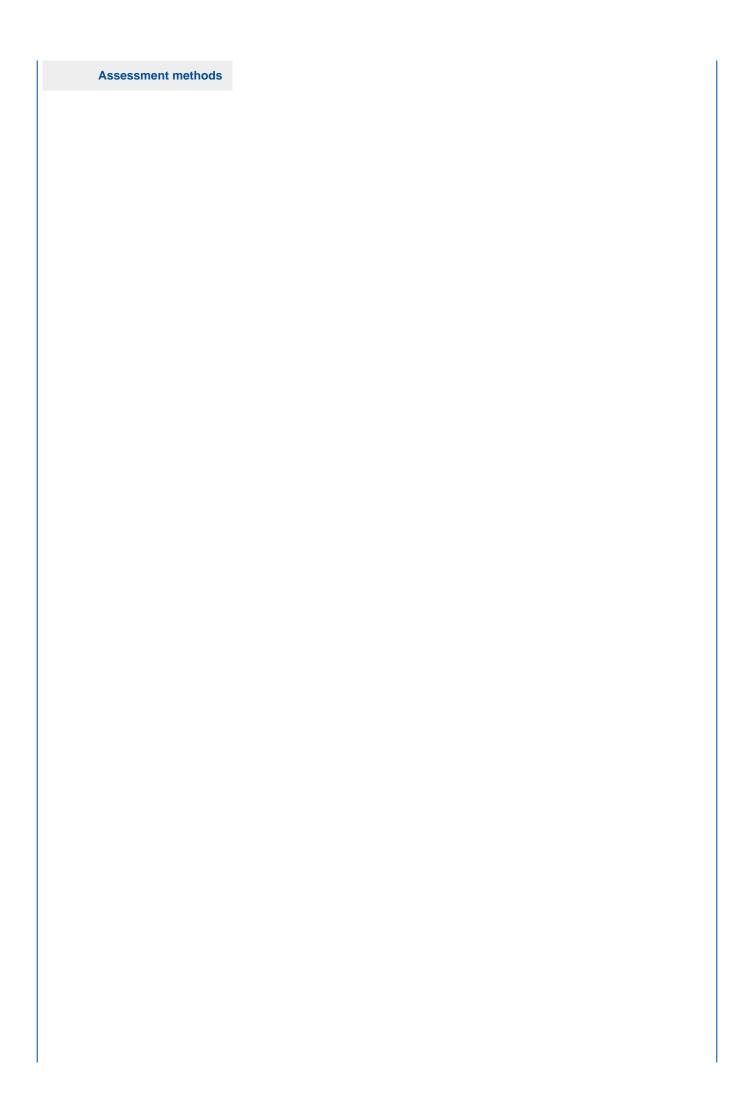## Anno Accademico 2019/2020

INTRODUCTION TO SCIENTIFIC COMPUTING FOR ENGINEERS

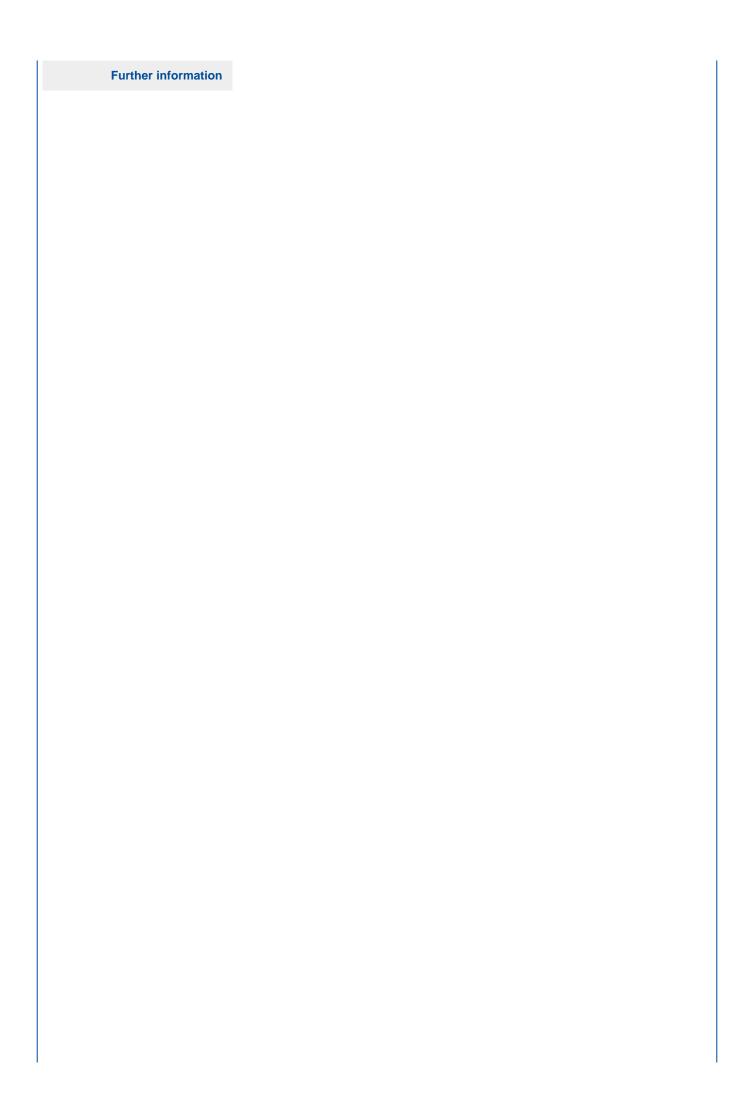|	
Enrollment year	2018/2019
Academic year	2019/2020
Regulations	DM270
Academic discipline	MAT/08 (NUMERICAL ANALYSIS)
Department	DEPARTMENT OF CIVIL ENGINEERING AND ARCHITECTURE
Course	CIVIL AND ENVIRONMENTAL ENGINEERING
Curriculum	PERCORSO COMUNE
Year of study	2°
Period	1st semester (30/09/2019 - 20/01/2020)
ECTS	12
Lesson hours	112 lesson hours
Language	Italian
Activity type	WRITTEN AND ORAL TEST
Teacher	GUGLIELMANN RAFFAELLA (titolare) - 6 ECTS MARTINELLI MASSIMILIANO - 6 ECTS
Prerequisites	Students are required to be familiar with basic concepts of Linear Algebra, Analytic Geometry, and mathematical Analysis.
Learning outcomes	At the end of the course, students should be capable of applying the basic numerical methods for scientific computing, as well as skilled in programming in Matlab.
Course contents	- Introduction to scientific computing - Function zero finding - Polynomial interpolation and least square methods - Numerical quadrature - Numerical linear algebra, eigenproblems, direct and iterative methods for linear systems - Numerical methods for ordinary differential equations

Teaching methods

1. Frontal lectures to illustrate the definition and properties of the numerical methods

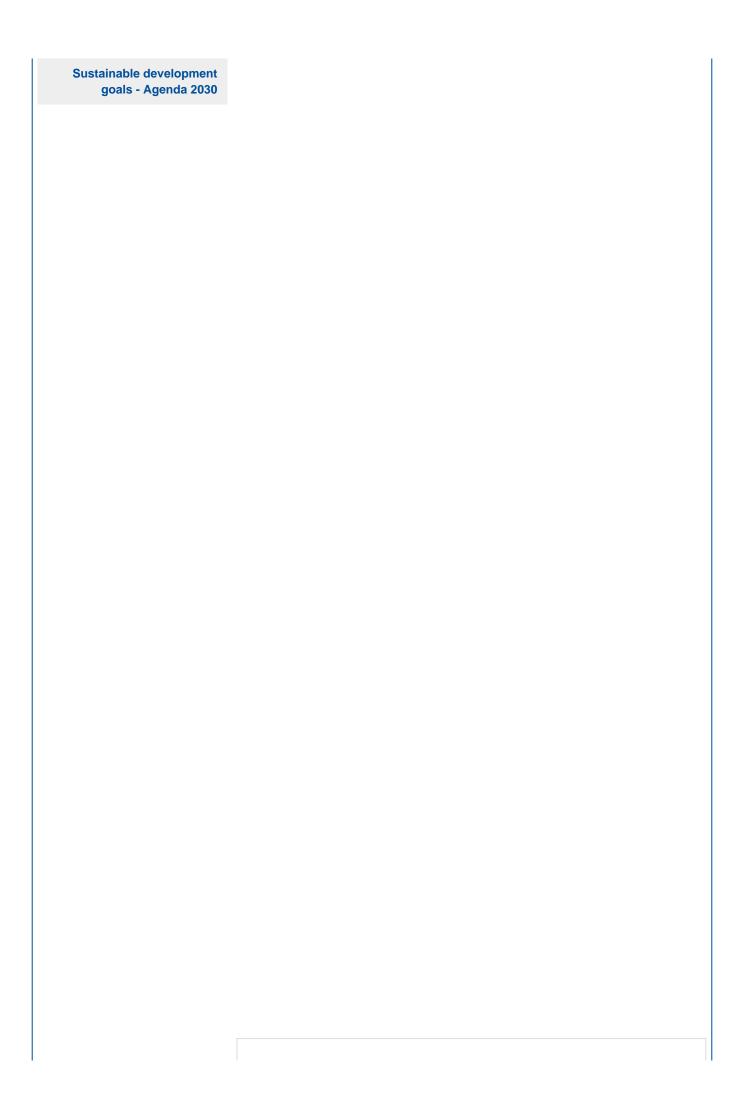2. Matlab sessions for the implementation of the numerical methods

Reccomended or required readings

Quarteroni, Alfio, Saleri, F., Gervasio, Paola, "Calcolo Scientifico, Esercizi e problemi risolti con MATLAB e Octave", Springer, 2016

Assessment methods

final written exam + possible oral exam

Further information

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