COURSE: Numerical methods for fields and circuits

ACADEMIC YEAR: 2019/2020

TYPE OF EDUCATIONAL ACTIVITY: Characteristic

TEACHER: Raffaele Fresa

e-mail: raffaele.fresa@unibas.it
phone: 0971 205162

Language: Italian

<table>
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<tr>
<th>ECTS: (lessons e tutorials/practice) 9 (6/3)</th>
<th>n. of hours: (lessons e tutorials/practice) 78 (51/27)</th>
<th>Campus: Potenza School: Engineering Program: Computer and Information Engineering</th>
<th>Semester: II</th>
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EDUCATIONAL GOALS AND EXPECTED LEARNING OUTCOMES
The course is devoted to familiarize the student with the main numerical instruments for the solution of engineering problems by the computer and to increase his capability to give a correct interpretation of the numerical results on the basis of the physical phenomenology.

PRE-REQUIREMENTS
The contents of mathematics, physics and electrotechnics courses

SYLLABUS
- Errors and computer arithmetic
- Solution of non-linear equations
- Numerical methods for the solution of linear and non-linear systems
- Approximation of functions by interpolation
- Numerical integration
- Numerical solution of ODE systems.
- Formulations of electromagnetic models in terms of scalar and vector potentials.
- Numerical solution of electromagnetic models by FEM formulations.

TEACHING METHODS
Theoretical lessons, Classroom tutorials, Laboratory tutorials, Project works.

EVALUATION METHODS
Discussion of a project work, Oral examination.

TEXTBOOKS AND ON-LINE EDUCATIONAL MATERIAL
- Lectures of Prof. Fresa.
- F. Trevisan, F. Villone, Modelli numerici per campi e circuiti, SGE Padova.

INTERACTION WITH STUDENTS
At the start of the course the students will receive lectures and other learning material.
Professor’s office hour: Wednesday 11.30-12.30 in his office located on the fifth floor of the “Engineering school” in “Macchia Romana” Campus.

EXAMINATION SESSIONS (FORECAST)¹
22/01/2020, 26/02/2020; 8/04/2020; 13/05/2020; 24/06/2020; 9/07/2020; 22/07/2020; 16/09/2020; 14/10/2020; 11/11/2020

SEMINARS BY EXTERNAL EXPERTS YES ☐ NO ☞

FURTHER INFORMATION

¹ Subject to possible changes: check the web site of the Teacher or the Department/School for updates.