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COURSE: Numerical methods for fields and circuits

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TEACHER: Raffaele Fresa

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website:

<http://informatica.unibas.it/moodle/mod/page/view.php?id=7259>

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Language Italian

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ECTS: 9

n. of hours: 78

Academic year: 2015-2016

Campus: Potenza

Semester: II

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#### TOPICS

The course furnish to the student an integrated approach to the solution of engineering problems in which the mathematical model of the problem is derived foreseeing that the solution will be found numerically.

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#### TEACHING METHODS (please tick one or more options)

- Theoretical lessons
- Tutorials in classroom
- Tutorials in laboratory
- Project works
- Technical visits

Other activities (please specify) \_\_\_\_\_

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#### TEXTBOOKS

- Lectures of Prof. Fresa.
  - F. Trevisan, F. Villone, Modelli numerici per campi e circuiti, SGE Padova.
  - S. C. Chapra, R. P. Canale, Metodi Numerici per l'Ingegneria, McGraw-Hill.
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#### ON-LINE EDUCATIONAL MATERIAL

web address: \_\_\_\_\_

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#### 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.

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#### REQUIREMENTS

The contents of mathematics, physics and electrotechnics courses

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#### EVALUATION METHODS (please tick one or more options)

- Intermediate verifications
- Written examination
- Discussion of a project work
- Practical test
- Oral examination

Other methods (please specify) \_\_\_\_\_

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#### DETAILED CONTENT

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.

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#### EXAMINATION SESSIONS (FORECAST)

09/02/2016; 15/03/2016; 12/04/2016; 31/05/2016; 28/06/2016; 05/07/2016; 19/07/2016; 20/09/2016; 18/10/2016;

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Università degli Studi della Basilicata  
**Scuola di Ingegneria**

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22/11/2016; 13/12/2016;

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SEMINARS BY EXTERNAL EXPERTS    YES     NO

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FURTHER INFORMATION

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