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## ELEMENTI DI ANALISI MATEMATICA 2 A - L

MAT/05 - 6 CFU - 1° Semester

### Teaching Staff

#### GIUSEPPA RITA CIRMI

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### LEARNING OBJECTIVES

The aim of the course is to improve the knowledge of Calculus learned in the course of EAM1. In particular the course objectives are:

Knowledge and understanding: students will learn integral calculus for one real variable functions, differential calculus for two real variables functions, numerical and functions series.

Applying knowledge and understanding: by means of examples related to applied sciences, students will focus on the central role of Mathematics within science and not only as an abstract topic. Furthermore, they will be able to calculate integrals, to identify and compare the most common series, to individuate the analytic properties of a two real variables function and to apply differential calculus to optimization problems.

Making judgements: students will be stimulated, individually or in groups, to work on specific topics they have not studied during the class, developing exercises related on the field knowledge with greater independence. Seminars and lectures are scheduled

to give students the chance to illustrate guided exercise on specific topics in order to share them with the other students and to find together the right solutions.

Communication skills: studying Mathematics and dedicating time to guided exercise and seminars, students will learn to communicate with clarity and rigour both, in the oral and written analysis. Moreover, students will learn that using a properly structured language means to find the key to a clear scientific and non-scientific communication.

Learning skills: students, in particular the more willing one, will be stimulated to examine in depth some

topics, thanks to individual activities or working in group.

## **COURSE STRUCTURE**

The principal concepts and learning outcomes will be structured by planning frontal lectures. Furthermore, to improve the making judgements and communication skills, students will dedicate time to guided exercises (e.g. multiple choice) and they can work in groups or individually .

The course is organized by lectures. There will be some team practices, during which students can work in groups or individually.

There will be some integrative activities with young tutors. Students will also participate in seminar discussions, developing exercises related on the field knowledge.

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## **DETAILED COURSE CONTENT**

1. Numerical series.
2. Complex numbers.
3. Integration.
4. Ordinary differential equations.
5. Real functions of more real variables.

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## **TEXTBOOK INFORMATION**

1. P.Marcellini, C. Sbordone, Analisi Matematica uno, Zanichelli.
  2. P.Marcellini, C. Sbordone, Esercitazioni di Matematica, Vol. 1, parte seconda e Vol. 2 parte prima, Zanichelli.
  3. C.D. Pagani, S. Salsa, Analisi Matematica1, Zanichelli, seconda edizione, 2015.
  4. C.D. Pagani, S. Salsa, Analisi Matematica 2, Zanichelli, seconda edizione, 2016.
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