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## ELEMENTI DI ANALISI MATEMATICA 1 A - L

MAT/05 - 6 CFU - 2° Semester

### Teaching Staff

#### GIUSEPPA RITA CIRMI

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### LEARNING OBJECTIVES

The objectives of the course are the following:

**Knowledge and understanding:** the student will learn some basic concepts of Mathematical Analysis and will develop both computing ability and the capacity of manipulating some common mathematical structures among which limits and derivatives for functions of real variable.

**Applying knowledge and understanding:** by means of examples related to applied sciences, the student will learn the central role of Mathematical Analysis within science and not only as an abstract topic. This will expand his cultural horizon.

**Making judgements:** the student will tackle with rigour some simple meaningful methods of Mathematical Analysis. This will sharpen his logical ability. Many proofs will be exposed in an intuitive and schematic way, to make them more usable also to students that are not committed to Mathematics.

**Communication skills:** By studying Mathematics and doing guided exercises, the student will learn to communicate with clarity and rigour both, verbally and in writing. The student will learn that the use of a properly structured language is the key point to clear and effective scientific, and non-scientific, communication.

**Learning skills:** the students, in particular the more willing, will be stimulated to examine in depth some topics, alone or working in team.

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### DETAILED COURSE CONTENT

The detailed program will be published at the end of the course.

The topics covered are:

- Real numbers. Numerical sets.
- Real functions of a real variable
- Numerical sequences and series
- Limits of real functions of a real variable
- Continuous functions
- Differential calculus and applications.

All the above topics allow the student to acquire a good knowledge of the subject and will be the object of examination. The proof of some theorems can be omitted.

Regular attendance and active participation to lessons and other activities are recommended to improve learning and to know how each topic will be presented.

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## **TEXTBOOK INFORMATION**

Theory:

1. P. Marcellini, C. Sbordone: *Analisi Matematica*, vol. I ed. Liguori.

Exercise:

2. M. Bramanti: *Esercizi di Analisi Matematica 1*, Esculapio

3. P. Marcellini, C. Sbordone: *Esercitazioni di Analisi 1*, Vol.1, Parte 1 e 2, Liguori.

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