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# FISICA STATISTICA E INFORMATICA - channel 1

6 CFU - 1° Semester

## Teaching Staff

**ELENA BRUNO** - Module Physics - FIS/07 - 2 CFU

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## LEARNING OBJECTIVES

### ▪ Physics

The course has the stated goal of providing adequate knowledge and understanding of fundamental physical laws that govern biomedical processes, and skills in applying knowledge

### ▪ Medical Statistics

The course will provide basic elements to let the student be able to describe individual and population based biological events through synthetic indexes. Moreover, the student should be able to identify and use elementary methodologies of analysis of numerical data

### ▪ Computer science

This course provides the basic theoretical knowledge about the use of a computer, hardware and software, about the applications of informatics in health care settings, as well as providing practical knowledge on the use of an operative system and of the office suite (Word, Excel).

## COURSE STRUCTURE

- **Physics**  
Frontal lessons
  - **Medical Statistics**  
Classroom lecturers using blackboard and tracing papers
  - **Computer science**  
Classroom lessons
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## DETAILED COURSE CONTENT

- **Physics**
  1. Recall and basic introductory notions
  2. The mechanics of rigid bodies
  3. Fluids and their applications
  4. Thermology
  5. Electric and magnetic phenomena and their applications
  6. Wave phenomena and their applications
  7. Electromagnetic and corpuscular radiation and applications
- **Medical Statistics**
  1. Measurers: numerical, ordinal and nominal
  2. Descriptive measurers: central tendency and variability
  3. Probability and Bayes Theorem
  4. Probability distributions: binomial, Poisson and gaussian
  5. Hypothesis tests and their meaning
  6. Epidemiology: sensitivity, specificity, predictive values, incidence and prevalence rates
- **Computer science**
  1. Introduction to computer science.
  2. Encoding and representation of information.
  3. Architecture of computer.
  4. The operating system and application software.
  5. Computer networks and the internet.
  6. Introduction to databases.
  7. Elements of medical informatics.
  8. Word processors: Microsoft Word.
  9. Spreadsheets: Microsoft Excel.

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## TEXTBOOK INFORMATION

- **Physics**

D. Scannicchio, E. Giroletti "Elementi di Fisica Biomedica" Ed. EdiSES

F. Borsa, A. Lascialfari "Principi di Fisica per indirizzo biomedico e farmaceutico" Ed. EdiSES

A. Giambattista, B. Richardson, R. Richardson "Fisica generale" Ed. Graw Hill

- **Medical Statistics**

J. Fowler, P. Jarvis, M. Chevannes "Statistica per le professioni sanitarie" Ed. EdiSES

Other elementary statistic texbooks

- **Computer science**

Teacher's slides and any *European Computer Driving Licence* books.

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