Biostatistics

The aim of the Graduate Program in Biostatistics or Master of Science (MSc) in Biostatistics is to train professionals to be able to translate a clinical or public health question in a scientifically rigorous research plan, acquire and analyze data with appropriate statistical models, interpret results, communicate methods and results to professionals from other disciplines, keep current with the most recent literature, and read, write and speak fluent English.
In addition, the *MSc* offers advanced training in design, management, analysis, statistical interpretation and evaluation of experimental studies, observational surveys and surveillance systems in health, including biology, biotechnology, population studies, veterinary medicine, preventive, clinical and rehabilitative medicine, and environmental sciences.

CONTENTS
The program consists of 12 courses and a thesis. To achieve the degree a student must take 120 credits. The normal duration of the course is 2 years.

In particular, 72 credits must be taken in the following subject areas:
Analysis and demographic patterns (6 credits)
Probability (6 credits)
or Introduction to Statistical Inference (6 credits)
Statistical inference (6 credits)
Statistical Models (12 credits)
Statistical Models and Bayesian Inference (12 credits)
Methodology of Clinical and Epidemiological Research (E-learning) (12 credits)
Statistical Models for Clinical Trials I (6 credits)
Statistical Models in Epidemiology (12 credits);

24 credits must be taken within the following subjects:
Medicine for Clinical Research (12 credits)
Biology (6 credits)
or
Introduction to Statistical Models (6 credits)
Databases (6 credits);

12 credits are electives within the department or other departments of the University of Milano-Bicocca or other universities affiliated with Milan -Bicocca.
Most lectures are offered in Italian.

COURSE STRUCTURE AND FINAL EXAM

Students can perform periods of study or research abroad, according to Erasmus and EXTRA_UE agreements stipulated by the University of Milano-Bicocca.

Once students have completed the activities, ECTS (European Credit Transfer and Accumulation System) credits are awarded. The ECTS is a credit system for higher education that allows comparison of study attainments of students across the European Union (in Italy, 1 ECTS credit = 25 work or study hours). ECTS credits are awarded to students when they successfully complete learning activities, usually as follows:

1. for the taught courses, students must pass a final exam (written, oral, or both written and oral), achieving a mark equal to or higher than 18/30;
2. students must prepare and discuss in open debate a dissertation based on a theoretical and / or experimental research activity on themes that are coherent with the training objectives of the course

The final degree grade depends on:

1. the weighted average of all grades obtained for all the learning activities, weighed by their ECTS credits;
2. the quality of final dissertation and defense.

SKILLS

Students who graduate in Biostatistics can achieve the following skills:

- a solid mathematical-statistical preparation, have good knowledge of the logical-conceptual and methodological tools of experimental and observational research, master computer tools and automatic calculation, have an adequate level of knowledge of the biomedical context and language, allowing them to collaborate with experts in biological, medical, social and environmental disciplines;
- ability to collaborate in the drafting of research protocols by contributing to the following activities:
  i) definition and selection of the study design and sample size by taking into account the significance level and power of the study;
  ii) choice of the selection criteria for the statistical units to be included in the study,
  iii) development of collection and measurement tools, statistical methods, techniques for the management of missing data, the detection of any deviation from the original statistical plan and the control and assurance of data quality,
  iv) presentation and statistical interpretation of the results by critically evaluating the scientific evidence generated by the study and collaborating in the subsequent decision-making process.

- career development as biostatisticians in both public and private organizations.
- professional opportunities in different types of companies and organizations like biological research institutes, clinical and epidemiological biotechnology, teaching hospitals, research hospitals, local health agencies, regional health agencies, epidemiological observatories, pathology registries, pharmaceutical companies and contract research organizations, regional agencies for environmental protection, service companies.
- fundamentals for undertaking PhD studies.