PROGRAM

Students choose between attending for one week or two weeks. For the first week a student can choose one course from Block 1 and one from Block 2, OR choose the course offered in Block 3. For the second week, students can choose one course from Block 4 and one from Block 5, OR choose the course offered in Block 6. No afternoon sessions will be held on Saturdays. Stata® is the statistical software used in most courses. The Sunday Stata® courses are extra courses, and are independent of courses in other blocks.

JUNE 1			
Sunday Courses 1 (9:00-17:00)			
Basics of Stata®	Meta-analysis with Stata®	Simulation studies with Stata®	Data Visualization with Stata®
JUNE 2- 7			
Block 1 (8:30-10:30, 14:00-15:30)			
Principles of Biostatistics	Regression models for continuous outcomes	Causal Inference in Epidemiology	
Block 2 (11:00-13:00, 16:00-17:30)			
Principles of Epidemiology	Logistic Regression for Medical Research	Joint Modelling of Longitudinal and Survival Data	
Block 3 (8:30-17:30)			
Statistical Methods for Population Based Cancer Survival Analysis			
JUNE 8			
Sunday Courses 2 (9:00-17:00)			
Basics of Stata®	Basics of R	Applied Machine Learning with Python	Multiple Imputation to handle missing data
JUNE 9 – 14			
Block 4 (8:30-10:30, 14:00-15:30)			
Research Methods in Health: Biostatistics	Longitudinal Data Analysis	Design of Registry-Based Studies and Randomized Clinical Trials	
Block 5 (11:00-13:00, 16:00-17:30)			
Research Methods in Health: Epidemiology	Survival data Analysis	Mediation and Interaction Analysis	
Block 6 (8:30-17:30)			
Environmental Epidemiology			

REGISTRATION FEE

The registration fee covers only the course tuition. **The final deadline for registration is 24th of May 2025**. Fees depend on: the number of course weeks; the timing of enrollment; and whether the applicant is currently a student at an accredited university, or not.

	Registration up to Feb 28, 2025		Registration after Feb 28, 2025	
	Student	**General**	**Student**	**General**
1 week	1400€	1650€	1600€	1850€
2 weeks	2600€	3000€	2900€	3350€

Standard fee for Stata® courses is 450€ each, but Summer School students pay a fee of 300€ per course.

A discount of 10% on tuition will be applied to returning students, or to multiple candidates applying simultaneously from the same department or research group. **A discount of 15%** on tuition will be applied to members of SISMEC, IBS, and SIS. **Discounts are not cumulable**.

SCHOLARSHIPS

A limited number of scholarships are available for accredited university students. **Students from EU, UK or North America are not eligible for scholarships**. Deadline for application is **29th of January 2025**. The decision will be made within a week. Scholarships cover at most half of the tuition cost, and no other expenses. Please see the application form for more information.

ACCOMMODATION

Standard lodging expenses in a double room are 172€ per person (course participant only), per day, including all meals and coffee breaks. To ensure you preferred accommodation, we suggest early application. More information can be found in the course application form and in the hotel accommodation form - see the application section of the website.

SUMMER SCHOOL DIRECTORS

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SUMMER SCHOOL ON MODERN METHODS IN BIOSTATISTICS AND EPIDEMIOLOGY

2 June -14 JUNE 2025

CISON DI VALMARINO-TREVISO, ITALY
CASTELLO BRANDOLINI COLOMBAN

The School is held in the Brandolini Colomban castle located in Cison di Valmarino, in the Northeast of Italy.

The School offers introductory and advanced courses in biostatistics and epidemiology, and their applications to clinical and etiology research and public health.

The castle is a conference center with meeting, sporting, recreational and well-being facilities and yet, conducive to study. For more information, visit its homepage www.castelbrando.it.

In collaboration with the Italian Society of Medical Statistics and Clinical Medicine **(SISMEC)**, Italian Statistical Society **(SIS)**, and International Biometric Society **(IBS)**

www.bioepiedu.org

Goals and Rationale

The School offers introductory and advanced courses in medical statistics and epidemiology, and their application to clinical and etiology research and public health.

Modern medical research is becoming increasingly formalized. Today researchers, physicians and health professionals are encouraged to use scientific data, including controlled experiments and well-structured observational data as the source for decision making. Evidence based medicine is entering into many subspecialties, including public health science.

This School provides participants insight into available analytical tools for planning research, handling data and interpreting results. Better understanding of scientific medical papers is also a goal and it requires not only knowledge of the topic being investigated but also an understanding of the research methods being used.

Week-long, Full-day Courses

Environmental Epidemiology – M. Stafoggia, J. De Bont and F. Nobile

The course introduces students to the discipline of environmental epidemiology. They will be briefed on the literature evidence regarding acute and chronic effects of multiple environmental stressors (extreme ambient temperatures, air pollutants, noise, built environment, lack of green spaces). Study designs for the evaluation of short-term effects will be presented, including time-series and case-crossover methods.

Statistical Methods for Population Based Cancer Survival Analysis – P. Dickman, P. Lambert, T. Andersson, M. Rutherford and E. Syriopoulou

The course will address the principles, methods, and application of statistical methods to studying the survival of cancer patients using data collected by population-based cancer registries. We cover central concepts, such as how to estimate and model relative/net survival. We will cover the use of flexible parametric survival models, cure models, loss in expectation of life, and estimation in the presence of competing risks.

Week-long, half-day Courses

Design of Registry-Based Studies and Randomized Clinical Trials – G. Savarese

By the end of this course, participants will have a comprehensive understanding of how to structure and implement various types of registries. They will be equipped with the skills to design registry-based studies, effectively handling confounding factors. Additionally, attendees will learn to design and conduct clinical trials, analyze and interpret trial data, and address key statistical issues such as adjustments for confounders, biases, and performing subgroup analyses.

Causal Inference in Epidemiology – M. Santacatterina

Are you curious about learning new ways to improve your decision-making skills using causal inference and observational data? By the end of this course, you will be able to identify, estimate and compute causal effects using observational data. Lab sessions in Stata and real-life research problems will provide an opportunity for "hands-on" training in causal inference.

Joint Modelling of Longitudinal and Survival Data – M. Crowther

This course will introduce the joint modelling of longitudinal and survival data through real applications to clinical trial data and electronic health records, describing the methodological framework, underlying assumptions, estimation, model building and predictions.

Regression models for continuous outcomes – M. Bottai

This course is suitable for anyone who wish to learn about linear regression and quantile regression, which are flexible and popular statistical tools to investigate continuous health outcomes and the effect that other factors may have on them.

Logistic Regression for Medical Research – D. Wypij

The course introduces students to the practice and application of logistic regression modeling for binary outcomes. Students will estimate, evaluate, and interpret binary data models arising from epidemiological studies, clinical trials, or other application areas.

Longitudinal Data Analysis - G. Fitzmaurice

This course focuses on methods for analyzing longitudinal and repeated measures data. The defining feature of longitudinal studies is that measurements of the same individuals are taken repeatedly through time, thereby allowing the direct study of change over time. This type of study design encompasses epidemiological follow-up studies as well as clinical trials.

Mediation and interaction Analysis - A. Bellavia

The course will introduce traditional and novel approaches for mediation and interaction analysis in clinical and epidemiologic research. By investigating the mechanisms and the heterogeneity of causal effects, mediation and interaction analysis sit at the core of modern public health methodologies for precision medicine and causal inference.

Principles of Epidemiology - M. Mittleman

This course introduces the skills needed by public health professionals and clinicians to critically interpret the epidemiological literature.

Principles of Biostatistics – N. Orsini

This course introduces you to the fundamental principles and methods of statistics, specifically tailored for applications in the health sciences. You will master descriptive statistics, learn to apply Bayes theorem for updating probabilities, evaluate the accuracy and reliability of diagnostic tests, and understand the differences between population parameters and sample estimates.

Research Methods in Health: Biostatistics - M. Bonetti

Students are introduced to more advanced statistical methods for the comparison of outcomes among groups (ANOVA), correlation and linear regression, contingency tables (t-test, chi-square test and non-parametric tests), and study design.

Research Methods in Health: Epidemiology - M. Mittleman

This course will explore in greater depth the fundamental epidemiologic concepts introduced in Principles of Epidemiology (Week 1). The course will be taught with an emphasis on causal inference in epidemiologic research with a focus on chronic disease epidemiology.

Survival Analysis - S. Eloranta

The course introduces statistical methods for survival analysis, that is, the analysis of studies where the outcome is time-to-event. Measures covered are survival probabilities, event rates, and survival percentiles. The methods include non-parametric Kaplan-Meier, parametric survival, semi-parametric Cox regression, spline-based covariate adjustment and some approaches to address competing risks.

One-day Sunday Courses

Applied Machine Learning with Python - A. Giussani

Starting with an introduction to ML, the course will discuss techniques like cross-validation and hyperparameter tuning, which ensure the accuracy and generalization of models. Participants will understand the importance of clean, well-structured datasets in producing reliable outcomes.

Basics of R – J. De Bont, F. Nobile

The one-day course introduces R language, focusing on basic data management and statistical analysis techniques. Students will learn how to create a project and import, clean, manipulate and combine data using vectors, matrices, and data frames.

Simulation studies with Stata® - N. Orsini

By using simulations to design a study, we can understand how to generate random data and mechanisms underlying it, such as random allocation, confounding, interaction, or missingness. During this one-day course, students are introduced performing computer experiments using the Monte-Carlo method in Stata®.

Basics of Stata® - R. Thiesmeier (June 1st and June 8th)

The course aims to introduce participants to the basic tools of the Stata program and is designed for participants without or with very little experience using Stata®. An overview of the main Stata functions will be provided. Specific topics include data management, data reporting, graphics and basic use of do-files. Participants will practice the application of these functions with real data examples.

Data Visualization with Stata® - G. Capelli

The course provide an introduction to the logic and the strategies for visualizing data in Stata®, including issues in the choice of the graphic for different data and aims, and tips and tricks to prepare data for different graphical schemes. The power and flexibility of multiple "layers" in two-way Stata® panels will be exploited.

Meta-analysis with Stata® - R. D'Amico

The course covers Stata® commands for a variety of tasks regarding the combination of results from randomized controlled trials that consider binary, continuous and time to event outcomes: data preparation and input, fixed- and random-effects models, forest plots, heterogeneity across studies, publications bias, sensitivity analysis, and meta-regression models.

Multiple Imputation to handle missing data – T. Morris

This course will describe the problems caused by missing data and outline a principled approach to analysis. The emphasis will be on multiple imputation as a general purpose and popular tool for handling missing data. Participants will learn about full conditional specification as a way of imputing multiple missing variables and learn to use it in Stata®.