

Module Name	Statistics
Module Number	Eul-ET-E-STAT, Eul-IST-E-STAT
Responsible Lecturer	Dr.-Ing. Rico Radeke rico.radeke@tu-dresden.de
Qualification Objectives	After completing the module, students are able to conduct scientific investigations of mass phenomena based on combinatorics and probability theory. They derive statements about the population of the considered objects or processes from specific samples, incorporating probabilistic models. Students can identify the models required for statistical investigations and subject them to analytical treatment. They are capable of determining sample functions, estimating statistical parameters, confidence intervals, and prediction intervals, testing hypotheses about distribution parameters or laws using statistical methods, and identifying stochastic relationships between multiple parameters.
Contents	The module covers the theoretical and practical foundations and methods of descriptive statistics, such as moments and calculation rules, important specific probability distributions, limit theorems, as well as estimation and testing methods of inferential statistics, including point and interval estimations, hypothesis testing, and investigations of statistical relationships.
Teaching and Learning Forms	3 hours per week of lectures, 1 hour per week of exercises, and self-study.
Prerequisites for Participation	The competencies to be acquired in the modules Introduction to Analysis and Algebra, Partial Differential Equations and Probability Theory (part Probability Theory), and Systems Theory are required.
Usability	The module is an elective module in the elective area "Competence Deepening" according to § 6 paragraph 3 of the study regulations and § 33 paragraph 4 of the examination regulations of the main study program in the field of Information Technology in the diploma program Electrical Engineering. Furthermore, it is an elective module in the elective area "Competence Deepening" according to § 6 paragraph 3 of the study regulations and § 33 paragraph 3 of the examination regulations of the main study program in the field of Communication Technology in the diploma program Information Systems Engineering. The module creates the prerequisites for the modules that list it under "Prerequisites for Participation."
Prerequisites for the Award of Credit Points	Credit points are awarded when the module examination is passed. The module examination consists of a written exam lasting 120 minutes.
Credit Points and Grades	5 credit points can be earned through the module. The module grade corresponds to the grade of the examination performance.
Frequency of the Module	The module is offered every summer semester.
Workload	The total workload is 150 hours.
Duration of the Module	The module lasts one semester.