

Only the german version of the module description as part of the study regulations is legally binding.

Module name	Probability theory and statistics
Module number	INF-25-Ba-Ma4
Responsible lecturer	Prof. Dr. Ulrike Baumann ulrike.baumann@tu-dresden.de
Qualification objectives	Students know the concepts of discrete and continuous probability spaces, can derive them and handle them confidently in terms of mathematical working methods. In particular they can map real problems to abstract probability spaces and describe them correctly using mathematical methods. They can apply simple statistical tests appropriately. Students are able to bring the theoretical elements they have worked on into a meaningful context with applied questions from computer science and solve problems.
Content	The module covers the basics of integral calculus required for probability theory and statistics, discrete and continuous probability spaces as well as applications in computer science. Further content includes the axiomatic foundations, properties of discrete and continuous random variables and their parameters, the concept of estimating variables, the maximum likelihood principle, testing hypotheses and the development and application of statistical tests for computer science-related content.
Teaching and learning methods	The module comprises lectures of 2 SWS, exercises of 2 SWS and the self-studium. The language of instruction for the lectures and exercises is German.
Prerequisites for participation	In the Diploma degree program in Computer Science, in the Bachelor's degree program in Computer Science and in the Bachelor's degree program in Applied Computer Science, the competences to be acquired in the modules INF-25-Ba-Ma1 Linear Algebra and Analysis and INF-25-Ba-Ma2 Discrete Structures are a prerequisite.
Applicability	The module is a compulsory module in the Diploma degree program in Computer Science in the foundation course. The module is a compulsory module in the Bachelor's degree course in Computer Science and in the Bachelor's degree course in Applied Computer Science. The module creates the prerequisites for the modules that name it among the prerequisites for participation.
Requirements for earning credit points	The credit points are earned if the module examination is passed. The module examination consists of a written examination lasting 90 minutes. The examination language is German.
Credit points and grades	6 credit points can be earned through the module. The module grade corresponds to the grade of the examination.
Module frequency	The module is offered every summer semester.
Workload	The total workload is 180 hours.

Module duration	The module comprises one semester.
-----------------	------------------------------------