

Module Name	Signal Theory
Module Number	Eul-ET-C-SigTh
Responsible Lecturer	Prof. Dr.-Ing. Peter Birkholz peter.birkholz@tu-dresden.de
Qualification Objectives	After completing the module, students master the fundamental principles and practical application of signal processing methods in the time and frequency domains. They are familiar with the differences and interrelations between the processing of continuous-time and discrete-time signals. They know the various forms of spectral analysis and are able to decide under which conditions each form should be applied. In particular, they master the analysis of non-stationary signals, the design of digital filters, and methods for determining temporal and spectral envelopes. They are proficient in the methods for describing stochastic signals as realizations of stochastic processes. Students master the fundamental principles and practical applications of digital signal transmission methods in the baseband and bandpass regions. They understand the effects of linear distortions and noise disturbances on transmission quality. They know the difference between spectrally efficient and power-efficient modulation methods and can evaluate their essential properties. They also have basic knowledge of decision theory.
Contents	The module covers the analysis of continuous-time and discrete-time signals in the time and frequency domains, the description and analysis of stochastic signals and processes, as well as digital signal transmission.
Teaching and Learning Forms	4 hours per week of lectures, 2 hours per week of exercises, and self-study.
Prerequisites for Participation	The competencies to be acquired in the module Systems Theory are required.
Usability	The module is a compulsory module of the main study program in the field of Information Technology in the diploma program Electrical Engineering. It creates the prerequisites for the modules that list this module in the field "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 180 minutes.
Credit Points and Grades	7 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 winter semester.
Workload	The total workload is 210 hours.
Duration of the Module	The module lasts one semester.