Module name	**Computer Architecture and Hardware Lab**
Module number	INF-IST-C-RA
Lecturer in charge	Dr. Robert Schöne robert.schoene@tu-dresden.de
Objectives	After completing the module, students have a basic understanding of the structure and functioning of information processing systems and the implementation of simple analog and digital circuits. They have a balanced theoretical and methodological understanding of the structure and organization of computers and their basic components, including an understanding of complex computer systems, the application of parallelism, and performance evaluation.
Contents	The module covers the structure and analysis of simple analog and digital circuits, such as RC elements, combinational circuits and flip-flops, sequential and machine-controlled circuits, and the Von Neumann architecture. Other topics include the structure and function of the individual components of a computer structure, their organization, and their interaction. This includes information representation, encoding, and processing; the implementation of switching networks and switching circuits at the gate level; the instruction set as a link to the software; and the components of a computer, such as the control unit, arithmetic unit, registers, and memory; the various types of parallelism, networking, and performance evaluations of complex computer systems.
Modes of teaching and learning	3 hours per week lectures, 2 hours per week exercises, 2 hours per week practical lab courses and self-study.
Prerequisites	The skills to be acquired in the module **Basics of Electrical Engineering** are required.
Usability	The module is a compulsory module in the basic studies of the degree programmes Information Systems Engineering. It creates the prerequisites for the modules that list that module in the "Prerequisites" field.
Requirements for the award of credit points	The credit points are awarded when the module assessment is passed. The module assessment consists of a written exam of 240 minutes.
Credit points and grades	10 credit points can be obtained by the module. The module grade is the grade of the examination.
Frequency	The module is offered every academic year beginning in the winter semester.
Workload	The total effort is 300 hours.
Duration	The module takes two semesters.