2.3.1 Basics of Analog and Digital Electronics

Lecturer	Prof. Dr. Marc Weber
Content	Basics of analog and digital electronics including: • passives, linear networks, Thevenin's theorem, passive filters, Bode plot • Operational amplifiers, negative feed-back, gain-bandwidth-product • Lab exercise: circuit simulation • Field-effect transistor basics, elementary 1T- and 2T-circuits • Basic digital electronics blocks, logic gates, flip-flops, memory and programmable logic • Technology trends and roadmap • Packaging and interconnect technology
Course Objectives	Brush-up of analog and digital electronics for electrical engineers; Quick course of basic analog and digital electronics for physicists and computer scientists
Learning Targets/ Skills	After participation in the course participants will: a) have gained an intuitive understanding of electronics, b) be able to simulate simple analog circuits, c) be able to write firmware and use FPGAs, d) be familiar with basic microelectronics technologies and trends.
Pre-Requisites	Keen interest in electronics.
Teaching Method	Interactive lectures combined with practical exercises. The pace of the lecture will tend to be fast. Pace and depth will depend very much on the requirements of the audience.
Course Material	Slides and lab work material
Literature	No text book is required. An extensive script in German is available.
Contact Lecturer	E-Mail: marc.weber@kit.edu