

Module Name	Radio Frequency Integrated Circuits
Module Number	Eul-ET-E-RFICE, Eul-IST-E-RFICE
Responsible Lecturer	Prof. Dr. sc. techn. Frank Ellinger frank.ellinger@tu-dresden.de
Qualification Objectives	After completing the module, students master the methods for designing analog integrated radio frequency circuits. They are familiar with the basic circuits and system architectures. They are proficient in analyzing and optimizing these circuits and learn to use design tools for circuits.
Contents	The module covers architectures for radio frequency frontends – transmitters and receivers – for high-speed mobile data communication, as well as integrated radio frequency circuits such as low-noise amplifiers, power amplifiers, mixers, and oscillators based on active and passive components. Furthermore, the module includes aggressively scaled CMOS, BiCMOS, More-than-Moore, and Beyond-Moore semiconductor technologies in relation to circuit design.
Teaching and Learning Forms	3 hours per week of lectures, 1 hour per week of exercises, 2 hours per week of practical lab courses, and self-study. The language of instruction for lectures, exercises, and practical sessions is English.
Prerequisites for Participation	The competencies to be acquired in the module "Circuit Design" are required.
Usability	The module is an elective module in the elective area "Competence Deepening" according to § 6 paragraph 3 SO and § 33 paragraph 4 PO of the main study program in the fields of Information Technology and Microelectronics in the diploma program Electrical Engineering. Furthermore, it is an elective module in the elective area "Competence Deepening" according to § 6 paragraph 3 SO and § 33 paragraph 3 PO of the main study program in the field of Microelectronics, Electronic Circuits, and Systems in the diploma program Information Systems 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 120 minutes in English. Students may choose to answer the exam in either English or German.
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 summer semester.
Workload	The total workload is 210 hours.
Duration of the Module	The module lasts one semester.