Electrical Engineering BSc

Study Abroad Course List

Tuition-fee/credit: 110 USD

For course syllabi, please contact the Study Abroad Office!

Course title	Semester	Credits (ECTS)
Electrical Materials	Fall	4
Engineering Mathematics 1.	Fall	4
Computer Programming 1.	Fall	3
Electrical Engineering 1.	Fall	5
Basic IT 1.	Fall	3
Basic Laws, Equations and Models 1.	Fall	4
Basic Laws, Equations and Models 3.	Fall	4
Digital Logic Design 1.	Fall	4
Design and Production Technology	Fall	4
Project Management 1.	Fall	3
Enterprises and Labour Market	Fall	3
Electronics 1.	Spring	4
Basic Laws, Equations and Models 2.	Spring	4
Quality Management 1.	Spring	3
Industrial Law	Spring	3
Work, Fire and Health Safety	Spring	3

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Detailed information about the courses:

Electrical Materials

Language of instruction:	English
Form of teaching:	lecture
Class hours per week:	2
Credits (ECTS):	4
Course description:	The main aim of this course is to introduce the students to the fundamentals and the practical knowledge of the material science. Categories and subdivision of material sciences. Evolution of knowledge on material structure, atomic models. Structure of the table of elements. Occurrence of elements in terrestrial crust, atmosphere and the universe. Main properties and usage of various materials. Properties and preparation of X- rays. Fundamentals and taxonomy of crystals, defects in crystals, single crystal growth. Destructive and non-destructive methods of structural investigation in material science. Liquids, synthetic materials and polymers.
Assessment methods:	semester mark
Semester:	Fall Semester

Electrical Engineering 1.

Language of instruction:	English
Form of teaching:	lecture, practice
Class hours per week:	2L, 2P
Credits (ECTS):	5
Course description:	The aim of the subject is to convey fundamental knowledge on the governing relations of electrical and magnetic fields as well as characteristics, laws and computation methods of linear, time-invariant electrical circuits. Modeling of electrical networks with concentrated parameters, fundamentals of dipole theory and network topology. Computation procedures and methods of network analysis for linear, time- invariant dipole networks. Transient state analysis, phenomena accompanying switching events in direct current circuits.
Assessment methods:	exam
Semester:	Fall Semester

Computer Programming 1.

Language of instruction:	English
Form of teaching:	lecture
Class hours per week:	2
Credits (ECTS):	3
Course description:	This course provides an introduction to all of the fundamental aspects of the C programming language, including elementary data types; arithmetic, logical and bitwise operators; control-flow statements; functions; structures; pointers; program scope rules; good program design practices; and C debugging techniques. Emphasis is on the ANSI-standard C. Variables and data types, operators. Control flow. Functions and modular programming. Variable scope. Static and global variables. Pointers and memory addressing. Arrays and pointer arithmetic. Strings. Searching and sorting algorithms. User-defined data types, structures, unions, bitfields. Memory allocation. Linked lists, binary trees. Pointers to pointers, pointer and string arrays, multidimensional arrays. Stacks and queues. I/O, using files. C standard library: stdio.h, ctype.h, stdlib.h, assert.h, stdarg.h, time.h. Students will learn the basic concepts of program design and data structures. They will learn fundamental C concepts such as algorithmic thinking, problem solving, control structures (if, if…else, switch, while, do…while, for), data types, operators, input/output, functions (user-defined and library) and arrays.
Assessment methods:	semester mark
Semester:	Fall Semester

Electronics 1.

Language of instruction:	English
Form of teaching:	lecture, tutorial
Class hours per week:	2L, 2T
Credits (ECTS):	4
Course description:	This course provides basic knowledge and design principles of electronic circuits based on operational amplifiers. Advanced applications include analogue and switched capacitance active filters, linear and switching power supplies, analogue-digital and digital-analogue converters.
Assessment methods:	exam
Semester:	Spring Semester

Basic Laws, Equations and Models 1.

Language of instruction:	English
Form of teaching:	lecture, practice
Class hours per week:	4 L, 2 P
Credits (ECTS):	4
Course description:	Mechanics: basic principles and definitions, position, displacement, velocity, motion along a line, uniform motion, velocity, acceleration, free fall, circular motion, projectiles motion, Newton's laws, work done, power, work-kinetic energy theorem, conservation of energy, gravitational force, simple harmonic motion, pendulum, damped oscillations, sound waves, the speed of sound waves, ultrasound, surface tension of liquids, capillarity. Electrodynamics: electric charge, electric field, field lines, electric potential energy, electric potential, electric current, electric current density, direct current, alternating current, thermo-electricity, electrolysis, magnetic fields. Optics: speed of light, the laws of reflection and refraction, optical fibers, optical imaging, plane mirrors, spherical mirrors, lenses, aberrations, optical instruments, cameras, microscopes, telescopes, the human eye, seeing, color sensitivities, interference of light, multilayered (antireflection) coatings, diffraction, polarization, dichroism, lasers, the main types of lasers, holography.
Assessment methods:	exam
Semester:	Fall Semester

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Engineering Mathematics 1.

Language of instruction:	English
Form of teaching:	lecture, practice
Class hours per week:	2L, 2P
Credits (ECTS):	4
Course description:	This lecture and practical based course aims to give students a solid mathematics basis through covering the following topics: sets of numbers (natural, integer, rational, real and complex numbers); vectors and operations with vectors, scalar and vector products and their applications; sets and operations with sets; matrix and determinant, solving linear equation systems definition of functions. Presentation of elementary functions; polynomials; rational functions; algebraic functions, trigonometric and logarithmic functions. Sequences of real numbers (definition of monotonicity, limit, convergence and divergence); limit and continuity of functions; types of discontinuity; definition of tangents; differential calculus of functions in one variable, differential coefficient, derivatives, relations between differentiability and continuity; rules of derivation, derivatives of elementary functions; osculating circles, tangent of the plane curve at a given point. Students learn the basics of mathematics enabling them to interpret and understand engineering sciences and through solving elementary tasks they deepen their basic theoretical knowledge in the field of engineering. The practical sessions are designed to complement the requirements of different specialisations.
Assessment methods:	Active participation, homework, test
Semester:	Fall Semester

Industrial Law

Language of instruction:	English
Form of teaching:	lecture
Class hours per week:	2
Credits (ECTS):	3
Course description:	The course focused on topics such as the European patent system, developing IP strategies, patent search and research success stories. The programme included lectures and presentations, Q&A sessions, hands-on exercises and case studies on success stories from the field.
Assessment methods:	Participation, tests
Semester:	Spring Semester