UNIVERSITY OF PÉCS
Rector's Cabinet
International Centre

Computer Science 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)
Mathematics for Information Technology 1.	Fall	6
Foundations of Electrical Signals of Hardware	Fall	5
Algorithm Design	Fall	2
Introduction to Computing Science	Fall	4
Enterprises and Labour Market	Fall	3
Foundation of Informatics 1.	Fall	3
Programming 1.	Fall	3
Digital Logic Design	Fall	4
Project Management 1.	Fall	3
Computer Architectures 1.	Fall	4
Web Design	Fall	3
Modelling of Transport Processes	Spring	5
Applied Mathematics 1.	Spring	6
Databases 1.	Spring	4
Quality Management 1.	Spring	3
Industrial Law	Spring	3
Work, Fire and Health Safety	Spring	4

7622 Pécs Vasvári Pál u. 4. Hungary
Telephone: +36 72 501 500/12418
E-mail: studyabroadpecs@pte.hu

Detailed information about the courses:

Mathematics for Information Technology 1.

Language of instruction:	English
Form of teaching:	lecture, practice
Class hours per week:	2+2
Credits (ECTS):	6
Course description:	Sets of numbers (natural, whole, rational and real numbers); vectors and operations with vectors, scalar and vector products and their applications; sets and operations with sets; projections; definition of functions; presentation of functions; polinoms; rational- fractional functions; algebraic functions; sequences of real numbers (definition of monotonity, limitedness, convergence and divergence); limit value and continuity of functions; types of discontinuity; definition of tangents; differential calculus of functions in one variable, differential quotients, derivative, relation between differentiability and continuity; rules of derivation, derivatives of algebraic functions; integral calculus: definition of the primitive function and indefinite integral, properties of indefinite integrals, basic integrals, integral processes, definition of the Riemann integral, its geometric and physical meaning, integral function, Newton-Leibniz theory.
Assessment methods:	exam
Semester:	Fall Semester

Foundations of Electrical Signals of Hardware

Language of instruction:	English
Form of teaching:	lecture, practice
Class hours per week:	2+2
Credits (ECTS):	5
Course description:	The goal of the course for the IT students to evolve the basic knowledge of electrical engineering and electrical circuit design approach, the basic relationships and methods of calculation awareness. Electrostatics. The electrical field. Circuits Basics. The stationary magnetic field. The time-varying electromagnetic field. Electromagnetic waves. Poynting vector. Sinusoidal alternating quantities. DC and sinusoidal varying voltage networks, and the presentation and application of calculation methods of two-gates.
Assessment methods:	exam
Semester:	Fall Semester

Algorithm Design

Language of instruction:	English
Form of teaching:	lecture
Class hours per week:	2
Credits (ECTS):	2
Course description:	The course provides an introduction to basic algorithms, their design and basic analysis. The course also aims to provide an overview of several different data structures, their advantages and disadvantages, and their uses. Introduction to algorithm design. Algorithm analysis. The Big Oh Notation. Data structures: queues, stacks, lists, binary trees, hash tables, dictionaries, associative tables. Basic algorithms. Sorting and searching. Graphs and graph algorithms.
Assessment methods:	semester mark
Semester:	Fall Semester

Introduction to Computing Science

Language of instruction:	English
Form of teaching:	lecture, practice
Class hours per week:	2+2
Credits (ECTS):	4
Course description:	This course intends to introduce students to some of the classical and important number theoretic problems and to different areas of number theory. Primes, Divisibility and the Fundamental Theorem of Arithmetic. Greatest Common Divisor (GCD), Euclidean Algorithm. Congruences, Chinese Remainder Theorem, Hensel's Lemma, Primitive Roots. Quadratic Residues and Reciprocity. Arithmetic Functions, Diophantine Equations, Continued Fractions.
Assessment methods:	semester mark
Semester:	Fall Semester

Enterprises and Labour Market

Language of instruction:	English
Form of teaching:	lecture
Class hours per week:	2
Credits (ECTS):	3
Course description:	The purpose of the class is to introduce the adaptability of the connection between enterprises and engineering. The most important connections between engineering innovation and organizational management and integration within labour market; Challenges and opportunities related with the a fore mentioned topics. The course does not include practice.
Assessment methods:	exam
Semester:	Fall Semester

Digital Logic Design

Language of instruction:	English
Form of teaching:	lecture, laboratory
Class hours per week:	2+2
Credits (ECTS):	4
Course description:	The majority of the instruments in information technology are digital systems. The course helps the students to understand the mathematical and electronic basics of these systems, and gives instructions for the planning and creation of them. Starting from the simplest building elements, the level of digital computers is reached systematically.
Assessment methods:	semester mark
Semester:	Fall Semester

Project Management 1.

Language of instruction:	English
Form of teaching:	lecture
Class hours per week:	2
Credits (ECTS):	3
Course description:	The goal of the course is to introduce how the professional project management works in large enterprise environment using the related processes (like Integration management, Scope management, Quality management, HR management, Communication Management, Risk management and Change management). Over the basic project management we will also have a focus on the agility as well, will introduce some international business processes and show them how important are the strategy, the organization development and the leading in our changing world where the digitalization's role is bigger day by day. The course is based on up-to-date practical knowledge and on the operating methods of IT Services Hungary Kft.
Assessment methods:	semester mark
Semester:	Fall Semester

Computer Architectures 1.

Language of instruction:	English
Form of teaching:	lecture, laboratory
Class hours per week:	3
Credits (ECTS):	4
Course description:	The aim of the course is to introduce the lower abstract layers of computer architectures. After presenting the main peripherals and computer components, these abstract layers will be examined. Going from the pure hardware, from transistors, we head through digital logic, microarchitecture and further layers toward the higher level abstract layers. Introduction (data, information, algorithm), computer architecture types, Neumann-Harvard architecture, Basic computer architecture – CPU, bus, RAM, peripheries.Microcontroller, microprocessor, microcomputer, CISC, RISC. Development of computers. Memory types, buses. Microarchitecture, IJVM, Mic-2, Mic-3, and Instruction sets.
Assessment methods:	exam
Semester:	Fall Semester

Web Design

Language of instruction:	English
Form of teaching:	Laboratory
Class hours per week:	2
Credits (ECTS):	4
Course description:	The purpose of this course is to make students understand and able to utilize fundamental concepts and tools of different programming paradigms in Python programming language, including object oriented programming for solving most common administrative and programming tasks. They will learn most used modules and how to find the appropriate for special tasks, including artificial intelligence based ones. Students will also learn to handle Bash, GAWK, and PowerShell scripting languages to automate different development or administration tasks.
Assessment methods:	exam
Semester:	Fall Semester

Modelling of Transport Processes

Language of instruction:	English
Form of teaching:	lecture, practice
Class hours per week:	2+2
Credits (ECTS):	5
Course description:	The aim of this basic scientific course to give the subject some expert knowledge of specific subjects and give a general assistance to the technical issues to better understand the approach of the phenomenon from another point of view. During the lecture modern physics chapters will be processed, including the mechanical, optical and thermodynamic phenomena general context, foundations of quantum mechanics, nuclear physics, basic concepts and the dynamics of elementary particles, electrical conductivity of metals, superconductivity, basics of nano-electronics. The topics of the exercises are related to the lectures and the tasks from the topics of mechanics, thermodynamics, the topic of optical waves. Selected tasks in the topic of modern physics (piezo.electricity, electro-and magneto-striction).
Assessment methods:	exam
Semester:	Spring Semester

Applied Mathematics 1.

Language of instruction:	English
Form of teaching:	lecture, practice
Class hours per week:	2+2
Credits (ECTS):	6
Course description:	Matrices and vectors. Systems of linear equations. Matrix inversion and determinants. Ranks, range and linear equations. Vector spaces. Linear independence, bases and dimension. Linear transformations and change of basis. Diagonalisation. Inner products and orthogonality. Solution techniques of linear system of equations. Eigenvalues and eigenvectors. Application of linear algebra.
Assessment methods:	semester mark
Semester:	Spring Semester

Databases 1.

Language of instruction:	English
Form of teaching:	lecture, laboratory
Class hours per week:	2+2
Credits (ECTS):	4
Course description:	This course provides the students with an introduction to the core concepts in databases. It is centered around the core skills of identifying organizational information requirements, modeling them using conceptual data modeling techniques, converting the conceptual data models into relational data models and verifying its structural characteristics with normalization techniques, and implementing and utilizing a relational database using an industrial-strength database management system.
Assessment methods:	exam
Semester:	Spring Semester

Quality Management 1.

Language of instruction:	English
Form of teaching:	lecture
Class hours per week:	2
Credits (ECTS):	3
Course description:	The purpose of the class is to introduce the way quality oriented approach should be implemented in engineering practice; the way quality, quality assurance and quality management appears in technical development processes and in the general technological fields; how non-special innovative developing projects can be supported via professional quality-centered practices. The course focuses on the concept of "quality" and the way it appears concerning products and services.
Assessment methods:	exam
Semester:	Spring Semester

Industrial Law

Language of instruction:	English
Form of teaching:	lecture
Class hours per week:	2
Credits (ECTS):	3
Course description:	To familiarize students with the basic types of intellectual property protection, to help participate in R&D activities. 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:	exam
Semester:	Spring Semester

Work, Fire and Health Safety

Language of instruction:	English
Form of teaching:	Lecture, laboratory
Class hours per week:	2 L, 1 Lab
Credits (ECTS):	3
Course description:	The fields and basics of the work safety. Institutes and regulation in Hungary and the EU. The main role of work and fire safety in the system of human. Definitions of the security system. Job hazards and hurts. Prevention of the accidents. Human health. Types of the fire and the classes of flammability. Rules of the fire safety. Methods and Equipments of the fire fighting. Important accidental and fire safety rules on the work places. Requirements of the work safety and the using of the life support system. Transport and storage of the dangerous and toxical materials. Ergonomical views and rules. Types of coveralls. First aid. The using of BLS (Basic Life Support), reanimation technics, rules and the life supporting systems.
Assessment methods:	exam
Semester:	Spring Semester

7622 Pécs Vasvári Pál u. 4. Hungary
Telephone: +36 72 501 500/12418
E-mail: studyabroadpecs@pte.hu