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COURSES IN ENGLISH AT THE FACULTY OF MATHEMATICS AND COMPUTER SCIENCE

UNIVERSITY OF LODZ

SUMMER SEMESTER 2017/2018

REMARK: A course will be open for Erasmus or Mobility Direct students who choose at least 3 courses at the Faculty of Mathematics and Computer Science.

Otherwise, a course can be open for at least 15 students.

No.	COURSE	FORM	ECTS	USOS CODE	SHORT DESCRIPTION
1.	Mathematical Analysis 1	L/D	6	1100-MA1ENG	The aim of the subject is to introduce students to mathematical analysis concerning the function of one variable. The main ideas of integral calculus and differential calculus will be presented.
2.	Basic Programming	LAB	3	1100-CP0ENG	The main aim of the course is to provide a comprehensive introduction to a high-level programming language. The course is dedicated to one arbitrarily chosen language. The course introduces basic concepts and constructs of the programming language that enable students to write simple programs, analyse problems in relation to algorithmic design and verify programs correctness.
3.	Programming and Data Structures	L/LAB	6	1100-PD0ENG	The goal is to make students familiar with the basic programming and methods of design and analysing algorithms. Topics connected with the notion of computational complexity, basic algorithms and data structures will be presented.
4.	Introduction to Operating Systems	L/LAB	6	1100-IO0ENG	The aim of the course is twofold. On one hand, the course lectures aim at familiarizing student with basics of general theory of operating systems, with its basic terms, problems and their solutions. On the other hand, during laboratory classes students gain skills in use of multi-tasking, multi-user operating system, in the role of regular users and system administrators.

5.	Architecture of Computer Systems	L	3	1100-CA0ENG	The course presents the logical foundations of digital techniques and devices applied to processing and storing of information. There are discussed main computer sub-assemblies, its peripheral devices and problems concerning communication between these elements.
6.	Software Engineering	L/LAB	5	1100-SI0ENG	Classes present software life cycle and description of individual phases of this cycle with the use of waterfall model and incremental model. A structured and object-oriented approach is included. The lecture shows the importance of documentation and CASE tools.
7.	Computer Networks	L/LAB	5	1100-CN0ENG	The aim of this course is to familiarize students with basic and some of advanced knowledge in computer networks. A particular emphasis is put on networks based on the TCP/IP protocol suite.
8.	Advanced Algorithms	L/LAB	6	1100-AV0ENG	The main goal of the course is to develop the knowledge in the fields of graph algorithms, pattern searching algorithms, effective dictionary implementation, combinatorial algorithms and computational geometry.
9.	Methods of Probability and Statistics	L/D	5	1100-PS0ENG	The aim of the course is to teach students the foundations of probability theory and its applications. Basic facts and theorems of this theory are presented together with their use in the situations in which probability theory is applied.
10.	Operations Research	L/D	5	1100-BO0UEN	The aim of the course is to acquaint the student with theoretical and practical foundations of linear and nonlinear programming.
11.	Graph and Network Theory	L/LAB	5	1100-GF0UEN	The aim of the course is to transfer and consolidate the knowledge of graph and network theory. Students will be familiar with the broad implementation issues discussed in computer science and methods of formulating practical issues in the language of graph theory.
12.	Programming Paradigms and Languages	L/LAB	5	1100-PD0UEN	The main objective of the course is to familiarize the students with four primal/main paradigms included in imperative and declarative programming emerging in the modern programming, meaning: <ul style="list-style-type: none"> - paradigm of procedural and structural programming, - paradigm of object oriented programming , - paradigm of functional programming, - paradigm of programming in logic. The lecturer will briefly mention also other paradigms such as: paradigm of generic programming, paradigm of concurrent computing, paradigm of event-driven programming.

13.	Database Systems	LAB	3	1100-SBOUEN	This subject focuses on relational database systems design, object-oriented programming, object-relational mappings, basic design patterns. The software used in this course is Oracle 10g and Java EE 5.
14.	Application Servers	L/LAB	5	1100-SAOUEN	The aim of the course is to familiarize students with the programming services based on Microsoft server. Students gain knowledge of the design and implementation of modern web applications based on Microsoft platform .Net. Another goal is to provide practical information on the possible use of design patterns.
15.	Microcontrollers programming	LAB	3	1100-MCOENG	The aim of the course is to acquaint students with the basic concepts and elements occurring in the electronics and use them to build simple circuits based on a microcontroller (eg. Arduino).
16.	iOS programming, 1	LAB	4	1100-PP1ENG	The course is an introduction to creating applications on the iOS platform used in Apple's devices. The essential content of the course focuses on gaining skills programming in Objective-C and foundations working in XCode environment.
17.	Combinatorial Game Theory	D	3	1100-TKOUEN	The aim of the course is to actively acquaint students with combinatorial games, both in its theoretical and practical aspects. The subject is intended for students of mathematics and computer science, regardless of their preparation.
18.	Numerical Methods	L/LAB	5	1100-MNOUMM-Erasm	The aim of the lecture is to present basic concepts and practical methods of numerical analysis, which concerns the construction of algorithms for approximate solving various computational problems and the studying of their properties. Examples of practical application of introduced methods will be presented during the classes and their features will be investigated (based on programs delivered by teacher and using spreadsheet application or some popular computing environments, e.g. Matlab).
19.	Partial Differential Equations	L/D	5	1100-RCOUFM-Erasm	The course includes discussion of classical linear partial differential equations of the first order, and the three most important second-order differential equations: the wave equation, heat equation and Laplace's equation. The classes are devoted to practical methods of solving specific problems and are in addition to the lecture.

20.	Topology	L/D	5	1100-TOOUMM-Erasm	The aim of the course is to introduce the basics of general topology. At the end of the course the student should know: the definition of the topological space, examples of topological space, methods of introducing of the topology in a set and basic operations on topological spaces, various types of subsets in topological spaces, definition of continuous functions and homeomorphisms between topological spaces, definitions of separation axioms and related to them notions of the Hausdorff , regular and normal topological spaces, various types of topological spaces: separable, compact and connected, understand the relationship between various topological objects (different kinds of spaces, transformations, etc.).
21.	Stochastic Processes	L/D	5	1100-PSOUFM-Erasm	The aim of the course is to present basics of the stochastic processes theory including stochastic continuity, almost sure continuity of a process, strong and weak equivalence of processes, Kolmogorov existence theorem and its implications, Wiener process, martingales.

Abbreviations: L – lecture; D – discussion class; LAB – Information technology laboratory