Recomended pass through the study plan

Name of the pass: Specialization Computer Engineering - Passage through study

Faculty/Institute/Others: Faculty of Electrical Engineering
Department:
Pass through the study plan: Open Informatics - Computer Engineering
Branch of study guranteed by the department: Welcome page
Guarantor of the study branch:
Program of study: Open Informatics
Type of study: Follow-up master full-time
Note on the pass:

Coding of roles of courses and groups of courses:
P - compulsory courses of the program, **PO** - compulsory courses of the branch, **Z** - compulsory courses, **S** - compulsory elective courses, **PV** - compulsory elective courses, **F** - elective specialized courses, **V** - elective courses, **T** - physical training courses

Coding of ways of completion of courses (KZ/Z/ZK) and coding of semesters (Z/L):
KZ - graded assesment, **Z** - assesment, **ZK** - examination, **L** - summer semester, **Z** - winter semester

Number of semester: 1

Code	Name of the course / Name of the group of courses *(in case of groups of courses the list of codes of their members)* *Tutors, authors and guarantors (gar.)*	Completion	Credits	Scope	Semester	Role
BEZM	**Safety in Electrical Engineering for a master´s degree** *Vladimír K la, Radek Havlí ek, Ivana Nová, Josef ernohous, Pavel Mlejnek* **Radek Havlí ek** *Vladimír K la (Gar.)*	Z	0	2BP+2BC	Z	P
B4M33PAL	**Advanced algorithms** *Marko Genyk-Berezovskyj, Daniel Pr ša, Ond ej Drbohlav* **Daniel Pr ša** *Daniel Pr ša (Gar.)*	Z,ZK	6	2P+2C	Z	P
B4M34ISC	**Systems on Chip** *Tomáš Teplý, Ji í Jakovenko, Vladimír Janí ek, Jan Novák* **Ji í Jakovenko** *Ji í Jakovenko (Gar.)*	Z,ZK	6	2P+2L	Z	PO
B4M35PAG	**Parallel algorithms** *P emysl Š cha* **P emysl Š cha** *P emysl Š cha (Gar.)*	Z,ZK	6	2P+2S	Z	PO
2018_MOIVOL	**Volitelné odborné p edm ty**	Min. cours. 0	Min/Max 0/999			V

Number of semester: 2

Code	Name of the course / Name of the group of courses *(in case of groups of courses the list of codes of their members)* *Tutors, authors and guarantors (gar.)*	Completion	Credits	Scope	Semester	Role
B4M35KO	**Combinatorial Optimization** *Zden k Hanzálek* **Zden k Hanzálek** *Zden k Hanzálek (Gar.)*	Z,ZK	6	3P+2C	L	P
B4M01TAL	**Theory of Algorithms** *Marie Demlová, Natalie Žukovec* **Marie Demlová** *Marie Demlová (Gar.)*	Z,ZK	6	3P+2S	L	P
B4M38AVS	**Embedded Systems Application** *Jan Sobotka, Radek Sedlá ek* **Radek Sedlá ek** *Radek Sedlá ek (Gar.)*	Z,ZK	6	2P+2L	L	PO
B4M36ESW	**Effective Software** *Michal Sojka, David Šišlák* **David Šišlák** *David Šišlák (Gar.)*	Z,ZK	6	2P+2C	L	PO
2018_MOIVOL	**Volitelné odborné p edm ty**	Min. cours. 0	Min/Max 0/999			V

Number of semester: 3

Code	Name of the course / Name of the group of courses *(in case of groups of courses the list of codes of their members)* *Tutors, authors and guarantors (gar.)*	Completion	Credits	Scope	Semester	Role
B4MSVP	**Software or Research Project** *Ivan Jelínek, Jaroslav Sloup, Ji í Šebek, Martin Šipoš, Drahomíra Hejtmanová, Jana Zichová, Petr Pošík, Martin Hlinovský, Katarína Žmolíková, ...* **Ivan Jelínek** *Ivan Jelínek (Gar.)*	KZ	6		Z,L	P
B4M38KRP	**Computer Interfaces** *Ji í Novák* **Ji í Novák** *Ji í Novák (Gar.)*	Z,ZK	6	2P+2L	Z	PO

B4M35PAP	**Advanced Computer Architectures** *Pavel Píša, Karel Ko í* **Pavel Píša** *Pavel Píša (Gar.)*	Z,ZK	6	2P+2C	Z	PO
2018_MOIVOL	**Volitelné odborné p edm ty**	Min. cours. 0	Min/Max 0/999			V

Number of semester: 4

Code	Name of the course / Name of the group of courses *(in case of groups of courses the list of codes of their members)* *Tutors,* **authors** *and guarantors (gar.)*	Completion	Credits	Scope	Semester	Role
BDIP25	**Diploma Thesis**	Z	25	22s	L	P
2018_MOIVOL	**Volitelné odborné p edm ty**	Min. cours. 0	Min/Max 0/999			V

List of groups of courses of this pass with the complete content of members of individual groups

Kód	Name of the group of courses and codes of members of this group (for specification see here or below the list of courses)	Completion	Credits	Scope	Semester	Role
2018_MOIVOL	**Volitelné odborné p edm ty**	Min. cours. **0**	Min/Max 0/999			**V**

List of courses of this pass:

Code	Name of the course	Completion	Credits
B4M01TAL	Theory of Algorithms	Z,ZK	6
	The course brings theoretical background of the theory of algorithms with the focus at first on the time and space complexity of algorithms and problems, secondly on the correctness of algorithms. Further it is dealt with the theory of complexity; the classes P, NP, NP-complete, PSPACE and NPSPACE are treated and properties of them investigated. Probabilistic algorithms are studied and the classes RP and ZZP introduced.		
B4M33PAL	Advanced algorithms	Z,ZK	6
	Basic graph algorithms and graph representation. Combinatorial algorithms. Application of formal languages theory in computer science - pattern matching.		
B4M34ISC	Systems on Chip	Z,ZK	6
	Main responsibilities of integrated circuits designer; design abstraction levels - Y chart. Specification designation, feasibility study, criteria for technology and design kits selection. Analogue and digital integrated systems design and simulation methodologies. Main features of application specific ICs - full custom design, gate arrays, standard cells, programmable array logic. Design aspects mobile and low power systems. Hardware Description languages (HDL). Logic and physical synthesis. Frond End and Back End design. Floorplanning, place and route, layout, parasitic extraction, time analysis, testbenche construction and verification.		
B4M35KO	Combinatorial Optimization	Z,ZK	6
	The goal is to show the problems and algorithms of combinatorial optimization (often called discrete optimization; there is a strong overlap with the term operations research). Following the courses on linear algebra, graph theory, and basics of optimization, we show optimization techniques based on graphs, integer linear programming, heuristics, approximation algorithms and state space search methods. We focus on application of optimization in stores, ground transportation, flight transportation, logistics, planning of human resources, scheduling in production lines, message routing, scheduling in parallel computers.		
B4M35PAG	Parallel algorithms	Z,ZK	6
	In the introductory lectures, we will focus on general approaches to design of parallel algorithms and their properties important for understanding the fundamental principles of parallel and distributed algorithms. Subsequently we will talk about fundamental parallel algorithms; typically, constituting cornerstones of algorithms for real-world problems. The laboratory exercise will be aimed at hardware platform commonly used in practice.		
B4M35PAP	Advanced Computer Architectures	Z,ZK	6
B4M36ESW	Effective Software	Z,ZK	6
	Within the course of Efficient software you will get familiar with the area of software and algorithm optimization under limited resources. The course is focused on the efficient usage of modern hardware architectures - multi-core and multi-processor systems with shared memory. Students will practically implmenet and use presented techniques in C and Java. Main topics are: code optimization, effective data structures and processor cache usage, data structures in multi-threaded applications and implementation of efficient network servers.		
B4M38AVS	Embedded Systems Application	Z,ZK	6
	This course presents applications of embedded systems and their specifics. It is expected that the students have had a programming course, and thus the course is more oriented on explaining and describing the blocks and functions of embedded systems and their use in signal processing, rather than writing code. After completing this course, students should have an overview of usability and power of available processors, and their peripherals, on the basis of which, they should be able to independently design embedded systems for a wide spectrum of applications.		
B4M38KRP	Computer Interfaces	Z,ZK	6
	Students are acquainted with functional principles of computers and embedded systems communication interfaces and with a design of typical peripherals. Technologies like USB, PCI, and PCI Express, wired and wireless computer and sensor networks as well as industrial distributed systems like CAN and LIN are introduced. Project oriented laboratories will allow students to become familiar with implementation of communication hardware and software into the real devices, including their support in operating systems.		
B4MSVP	Software or Research Project	KZ	6

BDIP25		Diploma Thesis	Z	25
Independent final comprehensive work for the Master's degree study programme. A student will choose a topic from a range of topics related to his or her branch of study, which will be specified by branch department or branch departments. The diploma thesis will be defended in front of the board of examiners for the comprehensive final examination.				
BEZM		Safety in Electrical Engineering for a master´s degree	Z	0
The course provides for students of all programs periodic training guidelines for health and occupational safety and gives knowledge of electrical hazard of given branch of study. Students receive indispensable qualification according to the current Directive of the Dean.				

For updated information see http://bilakniha.cvut.cz/en/f3.html
Generated: day 2025-07-21, time 20:39.