## 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	Р
B4M33PAL	Advanced algorithms Ond ej Drbohlav, Daniel Pr ša Daniel Pr ša (Gar.)	Z,ZK	6	2P+2C	Z	Р
B4M34ISC	Systems on Chip Tomáš Teplý, Ji í Jakovenko, Vladimír Janí ek, Jan Novák <b>Ji í Jakovenko</b> Ji í Jakovenko (Gar.)	Z,ZK	6	2P+2L	Z	РО
B4M35PAG	Parallel algorithms Pemysl Š cha Pemysl Š cha (Gar.)	Z,ZK	6	2P+2S	Z	РО
2018_MOIVOL	Volitelné odborné p edm ty	Min. cours.	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 (Gar.)	Z,ZK	6	3P+2C	L	Р
B4M01TAL	Theory of Algorithms Marie Demlová, Natalie Žukovec Marie Demlová Marie Demlová (Gar.)	Z,ZK	6	3P+2S	L	Р
B4M38AVS	Embedded Systems Application  Jan Sobotka, Radek Sedlá ek Radek Sedlá ek (Gar.)	Z,ZK	6	2P+2L	L	РО
B4M36ESW	Effective Software Michal Sojka, David Šišlák David Šišlák (Gar.)	Z,ZK	6	2P+2C	L	РО
2018_MOIVOL	Volitelné odborné p edm ty	Min. cours.	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	Р
B4M38KRP	Computer Interfaces  Jan Sobotka, Ji í Novák <b>Ji í Novák</b> Ji í Novák (Gar.)	Z,ZK	6	2P+2L	Z	РО

B4M35PAP	Advanced Computer Architectures Pavel Píša, Karel Ko í Pavel Píša Pavel Píša (Gar.)	Z,ZK	6	2P+2C	Z	PO
2049 MOIVOI		Min. cours.	Min/Max			.,
2018_MOIVOL	Volitelné odborné p edm ty	0	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	Р
2018_MOIVOL	Volitelné odborné p edm ty	Min. cours.	Min/Max			.,
		0	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.	Min/Max			,,
		0	0/999			, <b>v</b>

## 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	s, secondly on the	correctness
of algorithms. Fur	ther it is dealt with the theory of complexity; the classes P, NP, NP-complete, PSPACE and NPSPACE are treated and properties of th	em investigated. P	robabilistic
	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 - p	pattern matching.	
B4M34ISC	Systems on Chip	Z,ZK	6
Main responsibil	ities of integrated circuits designer; design abstraction levels - Y chart. Specification designation, feasibility study, criteria for technolog	gy and design kits	selection.
Analogue and digit	al integrated systems design and simulation methodologies. Main features of application specific ICs - full custom design, gate arrays,	standard cells, pro	grammable
array logic. Desig	ın aspects mobile and low power systems. Hardware Description languages (HDL). Logic and physical synthesis. Frond End and Bac	k End design. Floo	rplanning,
	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 of	perations research	ı). Following
the courses on li	near algebra, graph theory, and basics of optimization, we show optimization techniques based on graphs, integer linear programmin	g, heuristics, appr	oximation
algorithms and s	tate space search methods. We focus on application of optimization in stores, ground transportation, flight transportation, logistics, pl	anning of human r	esources,
	scheduling in production lines, message routing, scheduling in parallel computers.		
B4M35PAG	Parallel algorithms	Z,ZK	6
In the introductory	ectures, we will focus on general approaches to design of parallel algorithms and their properties important for understanding the fun	damental principle	s of parallel
and distributed al	gorithms. Subsequently we will talk about fundamental parallel algorithms; typically, constituting cornerstones of algorithms for real-w	orld 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	of Efficient software you will get familiar with the area of software and algorithm optimization under limited resources. The course is for	cused on the efficie	ent usage of
modern hardware	architectures - multi-core and multi-processor systems with shared memory. Students will practically implmenet and use presented te	chniques 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 networ	k servers.
B4M38AVS	Embedded Systems Application	Z,ZK	6
This course preser	its applications of embedded systems and their specifics. It is expected that the students have had a programming course, and thus t	he course is more	oriented on
explaining and de	escribing the blocks and functions of embedded systems and their use in signal processing, rather than writing code. After completing	this course, stude	nts 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 des	sign embedded sys	stems for a
	wide spectrum of applications.		
B4M38KRP	Computer Interfaces	Z,ZK	6
Students are acq	uainted with functional principles of computers and embedded systems communication interfaces and with a design of typical peripho	erals. Technologies	ilke USB,
	ress, wired and wireless computer and sensor networks as well as industrial distributed systems like CAN and LIN are introduced. Proceedings of the computer and sensor networks as well as industrial distributed systems like CAN and LIN are introduced.	•	
allow stu	dents to become familiar with implementation of communication hardware and software into the real devices, including their support in	n operating system	is.
B4MSVP	Software or Research Project	KZ	6
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BDIP25	Diploma Thesis	Z	25					
Independent final	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 we have a contraction of the study of the student will choose a topic from a range of topics related to his or her branch of study, which we have a contraction of the student will be a student wil							
be specified b	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 <a href="http://bilakniha.cvut.cz/en/f3.html">http://bilakniha.cvut.cz/en/f3.html</a> Generated: day 2025-11-13, time 00:07.