Recomended pass through the study plan

Name of the pass: Branch Cyber Security - Passage through study

Faculty/Institute/Others: Faculty of Electrical Engineering
Department:
Pass through the study plan: Open Informatics - Cyber Security
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
BE4M33PAL	**Advanced Algorithms** *Ond ej Drbohlav, Marko Genyk-Berezovskyj, Daniel Pr ša **Daniel Pr ša** Daniel Pr ša (Gar.)*	Z,ZK	6	2P+2C	Z	P
BEEZM	**Safety in Electrical Engineering for a master´s degree** *Vladimír K la, Ivana Nová, Josef ernohous, Radek Havlí ek **Radek Havlí ek** Vladimír K la (Gar.)*	Z	0	2BP+2BC	Z	P
BE2M32PST	**Advanced Networking Technologies** *Leoš Bohá **Leoš Bohá** Leoš Bohá (Gar.)*	Z,ZK	6	2P + 2L	Z,L	PO
BE4M36BSY	**Introduction to Computer Security** *Sebastián García, Tomáš Pevný, Veronica Valeros, Ond ej Lukáš, Maria Rigaki, Martin epa, Lukáš Forst, Muris Sladi **Tomáš Pevný** Tomáš Pevný (Gar.)*	Z,ZK	6	2P+2C	Z	PO
BE4M36SAN	**Statistical data analysis** *Ji í Kléma **Ji í Kléma** Ji í Kléma (Gar.)*	Z,ZK	6	2P+2C	Z	PO
2018_MOIEVOL	**Elective subjects**	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
BE4M35KO	**Combinatorial Optimization** *Zden k Hanzálek **Zden k Hanzálek** Zden k Hanzálek (Gar.)*	Z,ZK	6	3P+2C	L	P
BE4M01TAL	**Theory of Algorithms** *Marie Demlová, Natalie Žukovec **Marie Demlová** Marie Demlová (Gar.)*	Z,ZK	6	3P+2S	L	P
BE4M36KBE	**Communications Security** *Tomáš Van k **Peter Macejko** Tomáš Van k (Gar.)*	Z,ZK	6	3P+2C	L	PO
BE4M01MKR	**Mathematical Cryptography** *Alena Gollová **Alena Gollová** Ji í Velebil (Gar.)*	Z,ZK	6	4P+2S	L	PO
2018_MOIEVOL	**Elective subjects**	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
BE4MSVP	**Software or Research Project** *Ji í Šebek, Petr Pošík, Jaroslav Sloup, Katarína Žmolíková, Tomáš Drábek **Petr Pošík***	KZ	6		Z,L	P

BE4M36ZKS	**Software Quality Assurance** *Karel Frajták, Miroslav Bureš, Mat j Klíma* **Miroslav Bureš** *Miroslav Bureš (Gar.)*	Z,ZK	6	2P+2C	Z	PO
2018_MOIEVOL	**Elective subjects**	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_MOIEVOL	**Elective subjects**	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_MOIEVOL	**Elective subjects**	Min. cours. 0	Min/Max 0/999			V

List of courses of this pass:

Code	Name of the course	Completion	Credits
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.		
BE2M32PST	Advanced Networking Technologies	Z,ZK	6
	The "Advanced Network Technologies" course is designed to expand students' insights into modern network technologies and deepen their understanding of advanced networking protocols within data networks. Students will engage in practical exercises involving Internet unicast routing, multicast routing, IPv6, and MPLS network design, using network simulation tools such as PacketTracer and EveNG. Given the course's emphasis on remote lab activities, instruction will predominantly be delivered online.		
BE4M01MKR	Mathematical Cryptography	Z,ZK	6
	The lecture will set mathematical foundations of modern cryptography (RSA, El-Gamal, elliptic curve cryptography, hashing). Also, the related algorithms for primality testing (numbers sieves) and discrete logarithms will be treated.		
BE4M01TAL	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.		
BE4M33PAL	Advanced Algorithms	Z,ZK	6
	Basic graph algorithms and graph representation. Combinatorial algorithms. Application of formal languages theory in computer science - pattern matching.		
BE4M35KO	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.		
BE4M36BSY	Introduction to Computer Security	Z,ZK	6
	This course aims to teach students cybersecurity fundamentals by combining penetration testing with defense strategies. Using an innovative blend of lectures and practical tutorials, students engage in highly interactive classes. Each new concept is immediately reinforced with hands-on exercises, allowing students to apply what they have learned in real-time. Throughout the semester, the course integrates both attack and defense techniques. In realistic scenarios accessed via a cyber range, students will practice a wide range of skills: reconnaissance, scanning, exploiting vulnerabilities, privilege escalation, lateral movement, exfiltration, malware analysis, network security forensics, binary reversing, log analysis, intrusion detection systems, honeypots, and applications of machine learning and AI in cybersecurity. Classes are in English. Teachers speak English, Czech, Spanish, Greek, and Bosnian.		
BE4M36KBE	Communications Security	Z,ZK	6
	The course provides a complete source of information on the field of security of information systems and information technologies. The most of information in today's world is created, transferred, stored in electronic form so information security is very important part of it. On successful completion of this course, students should be able to define the cryptographic primitives symmetric / asymmetric encryption, digital signatures, cryptographic hash function, and message authentication codes. They should be able to explain the security features offered by the latest versions of the most important security protocols operating on the TCP/IP stack (IPsec, TLS, SSH, PGP) and describe known attacks against these security protocols.		

BE4M36SAN	Statistical data analysis	Z,ZK	6
This course builds on the skills developed in introductory statistics courses. It is practically oriented and gives an introduction to applied statistics. It mainly aims at multivariate statistical analysis and modelling, i.e., the methods that help to understand, interpret, visualize and model potentially high-dimensional data. It can be seen as a purely statistical counterpart to machine learning and data mining courses.			
BE4M36ZKS	Software Quality Assurance	Z,ZK	6
BE4MSVP	Software or Research Project	KZ	6
Independent work on a problem under the guidance of an advisor. Usually but not mandatory, the problem being solved is a subproblem of approaching diploma thesis and the project advisor is the diploma thesis supervisor too. Therefore, we recommend choosing the topic of the diploma thesis at the beginning of the 3rd semester and not underestimating its timely selection. The topic of the project should be relevant to the major branch of the study. The software and research project course must have a clearly defined output, such as a technical report or a computer program. The output is defended, evaluated and graded. Important note: - By default, it is not possible to complete more than one subject of this type. - An exception may be granted by the guarantor of the major branch of the study. A possible reason for granting an exemption is that the work-project has a different topic and is led by another supervisor. A typical example is working on a project abroad. Note: The student enrolls in the course of SVP at the department of the supervisor. If the course does not list the course, then at the department 13139 (variant A4M39SVP). The contact email in case of further questions: oi@fel.cvut.cz. More instructions for entering and elaborating the project can be found on the website of the Department of Computer Graphics and Interaction http: //dcgi.felk. cvut.cz/cs/study/predmetprojekt.			
BEEZM	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 2025-08-11, time 15:40.