

# Study plan

## Name of study plan: Open Informatics - Computer Engineering

Faculty/Institute/Others: Faculty of Electrical Engineering

Department:

Branch of study guaranteed by the department: Welcome page

Garantor of the study branch:

Program of study: Open Informatics

Type of study: Follow-up master full-time

Required credits: 90

Elective courses credits: 30

Sum of credits in the plan: 120

Note on the plan:

Name of the block: Compulsory courses in the program

Minimal number of credits of the block: 54

The role of the block: P

Code of the group: 2026\_MOIDIP

Name of the group: Diploma Thesis

Requirement credits in the group: In this group you have to gain 18 credits

Requirement courses in the group: In this group you have to complete 1 course

Credits in the group: 18

Note on the group:

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, <b>authors</b> and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
BDIP18	<b>Diploma Thesis</b>	Z	18	22s	L	P

### Characteristics of the courses of this group of Study Plan: Code=2026\_MOIDIP Name=Diploma Thesis

BDIP18	Diploma Thesis				Z	18
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.						

Code of the group: 2026\_MOIP

Name of the group: Compulsory subjects of the programm

Requirement credits in the group: In this group you have to gain 36 credits

Requirement courses in the group: In this group you have to complete 6 courses

Credits in the group: 36

Note on the group:

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, <b>authors</b> and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
B4MDPR	<b>Diploma Project</b>	Z	10	190ZP	Z	P
B4M35KO	<b>Combinatorial Optimization</b> Zdeněk Hanzálek <b>Zdeněk Hanzálek</b> Zdeněk Hanzálek (Gar.)	Z,ZK	6	3P+2C	L,Z	P
B4M33PAL	<b>Advanced algorithms</b> Ondřej Drbohlav, Daniel Průša <b>Daniel Průša</b> Daniel Průša (Gar.)	Z,ZK	6	2P+2C	Z	P
B4M36DPP	<b>Diploma Project Results</b>	ZK	2		Z	P
B4MSVP	<b>Software or Research Project</b> Ivan Jelínek, Jaroslav Sloup, Jiří Šebek, Martin Šipoš, Drahomíra Hejtmanová, Jana Zichová, Petr Pošík, Martin Hlinovský, Katarína Žmolíková, ..... <b>Ivan Jelínek</b> Ivan Jelínek (Gar.)	KZ	6		Z,L	P
B4M01TAL	<b>Theory of Algorithms</b> Marie Demlová, Natalie Žukovec <b>Marie Demlová</b> Marie Demlová (Gar.)	Z,ZK	6	3P+2S	L	P

### Characteristics of the courses of this group of Study Plan: Code=2026\_MOIP Name=Compulsory subjects of the programm

B4MDPR	Diploma Project				Z	10
--------	-----------------	--	--	--	---	----

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.			
B4M33PAL	Advanced algorithms	Z,ZK	6
Basic graph algorithms and graph representation. Combinatorial algorithms. Application of formal languages theory in computer science - pattern matching.			
B4M36DPP	Diploma Project Results	ZK	2
B4MSVP	Software or Research Project	KZ	6
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 ZPP introduced.			

Name of the block: Compulsory courses in the specialization

Minimal number of credits of the block: 36

The role of the block: PS

Code of the group: 2026\_MOIPS4

Name of the group: Compulsory subjects of the specialization

Requirement credits in the group: In this group you have to gain 36 credits

Requirement courses in the group: In this group you have to complete 6 courses

Credits in the group: 36

Note on the group: Specializace "Počítačové inženýrství"

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
B4M38AVS	<b>Embedded Systems Application</b> Jan Sobotka, Radek Sedláček <b>Radek Sedláček</b> Jan Fischer (Gar.)	Z,ZK	6	2P+2L	L	PS
B4M36BSY	<b>Introduction to Computer Security</b> Sebastián García, Tomáš Pevný, Verónica Valeros, Maria Rigaki, Ondřej Lukáš, Martin Řepa, Lukáš Forst, Muris Sladić <b>Tomáš Pevný</b> Tomáš Pevný (Gar.)	Z,ZK	6	2P+2C	Z	PS
B4M36ESW	<b>Effective Software</b> Jakub Dupák, David Šišlák <b>David Šišlák</b> David Šišlák (Gar.)	Z,ZK	6	2P+2C	L	PS
B4M38KRP	<b>Computer Interfaces</b> Jan Sobotka, Jiří Novák <b>Jiří Novák</b> Jiří Novák (Gar.)	Z,ZK	6	2P+2L	Z	PS
B4M35PAG	<b>Parallel algorithms</b> Přemysl Šůcha <b>Přemysl Šůcha</b> Přemysl Šůcha (Gar.)	Z,ZK	6	2P+2S	Z	PS
B4M35PAP	<b>Advanced Computer Architectures</b> Pavel Piša, Karel Kočí <b>Pavel Piša</b> Pavel Piša (Gar.)	Z,ZK	6	2P+2C	Z	PS

Characteristics of the courses of this group of Study Plan: Code=2026\_MOIPS4 Name=Compulsory subjects of the specialization

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.			
B4M36BSY	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.			
B4M36ESW	Effective Software	Z,ZK	6
Students will become familiar with the issues of software and algorithm optimization under limited resources. The course focuses on the efficient use of modern hardware architectures, namely multi-core and multiprocessor shared-memory systems. Students will learn to implement the techniques presented in the lectures in C and Java. The main topics include code optimization, efficient data structures and the use of CPU cache memory, data structures in multithreaded applications, and the implementation of high-performance network servers.			
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.			
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

Name of the block: Elective courses  
 Minimal number of credits of the block: 0  
 The role of the block: V

Code of the group: 2026\_MOIH  
 Name of the group: Humanities subjects  
 Requirement credits in the group:  
 Requirement courses in the group:  
 Credits in the group: 0  
 Note on the group:

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
B0M16FIL	Peter Zamarovský <b>Peter Zamarovský</b> Peter Zamarovský (Gar.)	Z,ZK	5	2P+2S	Z,L	v
B0M16HVT	<b>History of science and technology 2</b> Marcela Efmertová <b>Marcela Efmertová</b> Marcela Efmertová (Gar.)	Z,ZK	5	2P+2S	Z,L	v
B0M16HSD1	<b>History of economy and social studies</b> Marcela Efmertová	Z,ZK	5	2P+2S	Z,L	v
B0M16PSM	<b>Psychology</b> Jan Fiala <b>Jan Fiala</b> Jan Fiala (Gar.)	Z,ZK	5	2P+2S	Z,L	v
B0M16TEO	<b>Theology</b> Vladimír Slámečka <b>Vladimír Slámečka</b> Vladimír Slámečka (Gar.)	Z,ZK	5	2P+2S	Z,L	v

**Characteristics of the courses of this group of Study Plan: Code=2026\_MOIH Name=Humanities subjects**

B0M16FIL		Z,ZK	5
B0M16HVT	History of science and technology 2 This subject traces historical developments in electrical engineering branches in the world and in the Czech Lands. Its ultimate goal is to stimulate students' interest in the history and traditions of the subject, while highlighting the developments in technical education and professional organizations, the process of shaping scientific life and the influence of technical engineers	Z,ZK	5
B0M16HSD1	History of economy and social studies This subject deals with the history of the Czech society in the 19th - 21th centuries. It follows the forming of the Czech political representation, its aims and achieved results as well as the social and cultural development and coexistence of the various ethnical groups in the Czech countries.	Z,ZK	5
B0M16PSM	Psychology	Z,ZK	5
B0M16TEO	Theology This subject provides to students the basic orientation in christian theology and requires no special previous education. After short philosophic lecture the basic theologic disciplines are gone through. The subject is determined not only to believer students who want to know the reliable theologic grounding but also above all to ones who want to get know Christianity - religion from which grows our civilization up.	Z,ZK	5

Code of the group: 2026\_MOIVOL  
 Name of the group: Elective subjects  
 Requirement credits in the group:  
 Requirement courses in the group:  
 Credits in the group: 0  
 Note on the group:

~The offer of elective courses arranged by departments can be found on the website  
<https://fel.cvut.cz/en/education/volitelne-predmety.html>

**List of courses of this pass:**

Code	Name of the course	Completion	Credits
B0M16FIL		Z,ZK	5
B0M16HSD1	History of economy and social studies This subject deals with the history of the Czech society in the 19th - 21th centuries. It follows the forming of the Czech political representation, its aims and achieved results as well as the social and cultural development and coexistence of the various ethnical groups in the Czech countries.	Z,ZK	5
B0M16HVT	History of science and technology 2 This subject traces historical developments in electrical engineering branches in the world and in the Czech Lands. Its ultimate goal is to stimulate students' interest in the history and traditions of the subject, while highlighting the developments in technical education and professional organizations, the process of shaping scientific life and the influence of technical engineers	Z,ZK	5
B0M16PSM	Psychology	Z,ZK	5

B0M16TEO	Theology	Z,ZK	5
This subject provides to students the basic orientation in christian theology and requires no special previous education. After short philosophic lecture the basic theologic disciplines are gone through. The subject is determined not only to believer students who want to know the reliable theologic grounding but also above all to ones who want to get know Christianity - religion from which grows our civilization up.			
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 ZP 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.			
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
B4M36BSY	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.			
B4M36DPP	Diploma Project Results	ZK	2
B4M36ESW	Effective Software	Z,ZK	6
Students will become familiar with the issues of software and algorithm optimization under limited resources. The course focuses on the efficient use of modern hardware architectures, namely multi-core and multiprocessor shared-memory systems. Students will learn to implement the techniques presented in the lectures in C and Java. The main topics include code optimization, efficient data structures and the use of CPU cache memory, data structures in multithreaded applications, and the implementation of high-performance 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.			
B4MDPR	Diploma Project	Z	10
B4MSVP	Software or Research Project	KZ	6
BDIP18	Diploma Thesis	Z	18
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.			

For updated information see <http://bilakniha.cvut.cz/en/f3.html>

Generated: day 2026-05-29, time 00:22.