Study plan

Name of study plan: Open Informatics - Human-Computer Interaction

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: 85
Elective courses credits: 35
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: 49
The role of the block: P

Code of the group: 2018_MOIEP
Name of the group: Compulsory subjects of the programme
Requirement credits in the group: In this group you have to gain 24 credits
Requirement courses in the group: In this group you have to complete 4 courses
Credits in the group: 24
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
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
BE4M35KO	**Combinatorial Optimization** *Zden k Hanzálek* **Zden k Hanzálek** *Zden k Hanzálek (Gar.)*	Z,ZK	6	3P+2C	L	P
BE4MSVP	**Software or Research Project** *Ji í Šebek, Petr Pošík, Jaroslav Sloup, Katarína Žmolíková, Tomáš Drábek* **Petr Pošík**	KZ	6		Z,L	P
BE4M01TAL	**Theory of Algorithms** *Marie Demlová, Natalie Žukovec* **Marie Demlová** *Marie Demlová (Gar.)*	Z,ZK	6	3P+2S	L	P

Characteristics of the courses of this group of Study Plan: Code=2018_MOIEP Name=Compulsory subjects of the programme

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.			
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.			
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.			

Code of the group: 2018_MOIEDIP
Name of the group: Diploma Thesis

Requirement credits in the group: In this group you have to gain 25 credits
Requirement courses in the group: In this group you have to complete 1 course
Credits in the group: 25
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
BDIP25	**Diploma Thesis**	Z	25	22s	L	P

Characteristics of the courses of this group of Study Plan: Code=2018_MOIEDIP Name=Diploma Thesis

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.					

Name of the block: Compulsory courses of the specialization
Minimal number of credits of the block: 36
The role of the block: PO

Code of the group: 2018_MOIEPO1
Name of the group: Compulsory subjects of the branch
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,* **authors** *and guarantors (gar.)*	Completion	Credits	Scope	Semester	Role
BE4M39PUR1	**Psychology in HCI**	Z,ZK	6	2P+2S	Z	PO
BE4M36ZKS	**Software Quality Assurance** *Karel Frajták, Miroslav Bureš, Mat j Klíma* **Miroslav Bureš** *Miroslav Bureš (Gar.)*	Z,ZK	6	2P+2C	Z	PO
BE4M39PTV	**Spatial Design**	Z,ZK	6	2P+2L	L	PO
BE4M36SAN	**Statistical data analysis** *Ji í Kléma* **Ji í Kléma** *Ji í Kléma (Gar.)*	Z,ZK	6	2P+2C	Z	PO
BE4M39NUR	**User Interface Design** *Zden k Míkovec* **Zden k Míkovec** *Zden k Míkovec (Gar.)*	Z,ZK	6	2P+2S	Z	PO
BE4M39VIZ	**Visualization** *Ladislav molík* **Ladislav molík** *Ladislav molík (Gar.)*	Z,ZK	6	2P+2C	L	PO

Characteristics of the courses of this group of Study Plan: Code=2018_MOIEPO1 Name=Compulsory subjects of the branch

BE4M39PUR1	Psychology in HCI			Z,ZK	6
The aim of the course is that students will master all phases of the research process starting from initial planning up to the translation of their observations into innovative design concepts, so they are able to run applied research projects themselves. Overall the emphasis is laid on practitioner's approach and developing skills needed for adopting these technique in daily design practice across various domains.					
BE4M36ZKS	Software Quality Assurance			Z,ZK	6
BE4M39PTV	Spatial Design			Z,ZK	6
Course aim is to evoke interest in shape, material and its spatial characteristic with help of sophisticated spatial tasks and studies. It is not intended to educate a sculptor or designer. Another aspect is to turn students' attention from restricted form of flat computer screens towards free real space and let them by means of basic techniques like drawing and modeling to create spontaneously. Students will be confronted with basic composition and form creation principles of Gestalt psychology. Student will verify knowledge gained by means of sophisticated composition tasks. This course will take place in the sculptural and design workshop of Faculty of Architecture.					
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.					
BE4M39NUR	User Interface Design			Z,ZK	6
Students will get acquainted with the theory of human-computer communication and interaction (formal description of user interfaces, formal user models, the fundamentals of perception, cognition, and user information evaluation).					
BE4M39VIZ	Visualization			Z,ZK	6
In this course, you will get the knowledge of theoretical background for visualization and the application of visualization in real-world examples. The visualization methods are aimed at exploiting both the full power of computer technologies and the characteristics (and limits) of human perception. Well-chosen visualization methods can help to reveal hidden dependencies in the data that are not evident at the first glance. This in turn enables a more precise analysis of the data or provides a deeper insight into the core of the particular problem represented by the data.					

Name of the block: Elective courses
Minimal number of credits of the block: 0

The role of the block: V

Code of the group: 2018_MOIEVOL
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: ~Student can choose arbitrary subject of themagister's program (EEM - Electrical Engineering, Power Engineering and Management, EK - Electronics and Communications, KYR - Cybernetics and Robotics, OI - Open Informatics, OES - Open Electronics Systems) which is not part of his curriculum. Student can choose with consideration of recommendation of the branch guarantee.You can find a selection of optional courses organized by the departments on the web site http://www.fel.cvut.cz/cz/education/volitelne-predmety.html

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.			
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.			
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
BE4M39NUR	User Interface Design	Z,ZK	6
Students will get acquainted with the theory of human-computer communication and interaction (formal description of user interfaces, formal user models, the fundamentals of perception, cognition, and user information evaluation).			
BE4M39PTV	Spatial Design	Z,ZK	6
Course aim is to evoke interest in shape, material and its spatial characteristic with help of sophisticated spatial tasks and studies. It is not intended to educate a sculptor or designer. Another aspect is to turn students' attention from restricted form of flat computer screens towards free real space and let them by means of basic techniques like drawing and modeling to create spontaneously. Students will be confronted with basic composition and form creation principles of Gestalt psychology. Student will verify knowledge gained by means of sophisticated composition tasks. This course will take place in the sculptural and design workshop of Faculty of Architecture.			
BE4M39PUR1	Psychology in HCI	Z,ZK	6
The aim of the course is that students will master all phases of the research process starting from initial planning up to the translation of their observations into innovative design concepts, so they are able to run applied research projects themselves. Overall the emphasis is laid on practitioner's approach and developing skills needed for adopting these technique in daily design practice across various domains.			
BE4M39VIZ	Visualization	Z,ZK	6
In this course, you will get the knowledge of theoretical background for visualization and the application of visualization in real-world examples. The visualization methods are aimed at exploiting both the full power of computer technologies and the characteristics (and limits) of human perception. Well-chosen visualization methods can help to reveal hidden dependencies in the data that are not evident at the first glance. This in turn enables a more precise analysis of the data or provides a deeper insight into the core of the particular problem represented by the data.			
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.			

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