Study plan

Name of study plan: Open Informatics - Computer Graphics

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_MOIDIP 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	Р

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

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BDIP25	Diploma Thesis	Z	25			
Independent final comp	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 compreher	sive final examination	ation.			

Code of the group: 2018_MOIP

Name of the group: Compulsory subjects of the programm 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
B4M35KO	Combinatorial Optimization Zden k Hanzálek Zden k Hanzálek (Gar.)	Z,ZK	6	3P+2C	L	Ρ
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	Ρ
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.)	κz	6		Z,L	Ρ
B4M01TAL	Theory of Algorithms Marie Demlová, Natalie Žukovec Marie Demlová Marie Demlová (Gar.)	Z,ZK	6	3P+2S	L	Р

Characteristics of the courses of this group of Study Plan: Code=2018_MOIP Name=Compulsory subjects of the programm

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Definition Ladislaw molik Ladislaw molik Ladislaw molik (Gar.) Z,ZK 0 ZFP2C L PO B4M39VG Computational Geometry Petr Felkel Petr Felkel Petr Felkel (Gar.) Z,ZK 6 2P+2S Z PO Characteristics of the courses of this group of Study Plan: Code=2018_MOIPO3 Name=Compulsory subjects of the branch B4M39APG Algorithms of Computer Graphics Z,ZK 6 2P+2S Z PO Characteristics of the courses of this group of Study Plan: Code=2018_MOIPO3 Name=Compulsory subjects of the branch B4M39DPG Algorithms of Computer Graphics In this course you will get acquainted with basic problems and their solutions in computer graphics. The main topic of the course are graphics primitives in 2D and 3D for modeling and rendering, color models, image representations, and basic photorealistic rendering algorithms. B4M33DPG Data Structures for Computer Graphics In ontrast to standard binary search trees used in one dimension, the presented theory focuses on multidimensional data used to describe 3D scense. In addition to the theory, the course emphasizes individual not and team projects. Z,ZK 6 B4M33CVG Geometry of Computer Vision and Graphics Z,ZK 6 2,ZK 6 Ve will explain fundamentals a pace geometry including Euclidean, affine and projecti	B4M39MMA		Z,ZK	6	2P+2L	Z	PO
Petr Felkel Petr Felkel Petr Felkel (Gar.) Z.P.R B Pro Characteristics of the courses of this group of Study Plan: Code=2018_MOIPO3 Name=Compulsory subjects of the branch B4M39APG Algorithms of Computer Graphics Z,ZK 6 In this course you will get acquainted with basic problems and their solutions in computer graphics. The main topic of the course are graphics primitives in 2D and 3D for modeling and rendering, color models, image representations, and basic photorealistic rendering algorithms. Z,ZK 6 B4M33DPG Data Structures for Computer Graphics Z,ZK 6 This course provides you with the fundamentals of data structures commonly used in computer graphics. In contrast to standard binary search trees used in one dimension, the presented theory focuses on multidimensional data are demonstrated on practical examples. The students will gain practical experience through their own individual projects. B4M33GVG Geometry of Computer Vision and Graphics We will explain fundamentals of image and space geometry including Euclidean, affine and projective geometry, the model of a perspective camera, image transformations induced by camera motion, and image normalization for object recognition. The theory will be demonstrated on practical task of creating mosaics from images. B4M33GVA Query L Z,ZK 6 B4M33GVG Geometry of Computer vision, computer graphics, digital image processing and recognition of objects in images. B4M33MMA Multimedia and Com	B4M39VIZ	Ladislav molík Ladislav molík Ladislav molík (Gar.)	Z,ZK	6	2P+2C	L	PO
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Name of the block: Elective courses

Code of the group: 2018_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 Peter Zamarovský Peter Zamarovský (Gar.)	Z,ZK	5	2P+2S	Z,L	V
B0M16HVT	History of science and technology 2 Marcela Efmertová, Jan Mikeš Marcela Efmertová Marcela Efmertová (Gar.)	Z,ZK	5	2P+2S	Z,L	V
B0M16HSD1	History of economy and social studies Marcela Efmertová	Z,ZK	5	2P+2S	Z,L	V
B0M16PSM	Psychology Jan Fiala Jan Fiala Jan Fiala (Gar.)	Z,ZK	5	2P+2S	Z,L	V
B0M16TEO	Theology Vladimír Sláme ka Vladimír Sláme ka Vladimír Sláme ka (Gar.)	Z,ZK	5	2P+2S	Z,L	V

Characteristics of the courses of this group of Study Plan: Code=2018_MOIH Name=Humanities subjects

B0M16FIL		Z,ZK	5
B0M16HVT	History of science and technology 2	Z,ZK	5
This subject traces his	storical developments in electrical engineering branches in the world and in the Czech Lands. Its ultimate goal is to stimulate s	tudents' interest in	n the history and
traditions of the subje	t, while highlighting the developments in technical education and professional organizations, the process of shaping scientific	life and the influe	nce of technical
engineers			
B0M16HSD1	History of economy and social studies	Z,ZK	5
This subject deals wit	the history of the Czech society in the 19th - 21th centuries. It follows the forming of the Czech political representation, its air	ns and achieved r	esults as well as
the social and cultural	development and coexistence of the various ethnical groups in the Czech countries.		
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 lectu	re the basic theol	ogic 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 l	know Christianity
are gone anough. The	Subject is determined not only to believer students who want to know the reliable theologic grounding but also above all to ones	s who want to get i	

Code of the group: MTV Name of the group: Physical education 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
TVV	Physical education	Z	0	0+2	Z,L	V
A003TV	Physical Education Ji í Drnek	Z	2	0+2	L,Z	V
TV-V1	Physical education	Z	1	0+2	Z,L	V
TVV0	Physical education	Z	0	0+2	Z,L	V
TVKLV	Physical Education Course	Z	0	7dní	L	V
TVKZV	Physical Education Course	Z	0	7dní	Z	V

Characteristics of the courses of this group of Study Plan: Code=MTV Name=Physical education

TVV	Physical education	Z	0
A003TV	Physical Education	Z	2
TV-V1	Physical education	Z	1
TVV0	Physical education	Z	0
TVKLV	Physical Education Course	Z	0
TVKZV	Physical Education Course	Z	0

~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
A003TV	Physical Education	Z	2
B0M16FIL		Z,ZK	5
B0M16HSD1	History of economy and social studies	Z,ZK	5
This subject deals	vith the history of the Czech society in the 19th - 21th centuries. It follows the forming of the Czech political representation, its aims a	ind achieved result	s as well as
	the social and cultural development and coexistence of the various ethnical groups in the Czech countries.		
B0M16HVT	History of science and technology 2	Z,ZK	5
-	historical developments in electrical engineering branches in the world and in the Czech Lands. Its ultimate goal is to stimulate stude		-
traditions of the sui	oject, while highlighting the developments in technical education and professional organizations, the process of shaping scientific life engineers	and the influence	of technical
B0M16PSM	Psychology	Z,ZK	5
B0M16TEO	Theology	Z,ZK	5
	les to students the basic orientation in christian theology and requires no special previous education. After short philosophic lecture t	, ,	1
	he subject is determined not only to believer students who want to know the reliable theologic grounding but also above all to ones wh	-	-
	- religion from which graws our civilization up.		
B4M01TAL	Theory of Algorithms	Z,ZK	6
-	heoretical background of the theory of algorithms with the focus at first on the time and space complexity of algorithms and problems		
of algorithms. Furt	her it is dealt with the theory of complexity; the classes P, NP, NP-complete, PSPACE and NPSPACE are treated and properties of th algorithms are studied and the classes RP and ZZP introduced.	em investigated. P	rodadilistic
B4M33GVG	Geometry of Computer Vision and Graphics	Z,ZK	6
	damentals of image and space geometry including Euclidean, affine and projective geometry, the model of a perspective camera, in		1
	n, and image normalization for object recognition. The theory will be demonstrated on practical task of creating mosaics from images	-	
objects by a came	era, and reconstructing geometrical properties of objects from their projections. We will build on linear algebra and optimization and l	ay down foundation	n for other
	subjects such as computational geometry, computer vision, computer graphics, digital image processing and recognition of objects	in images.	
B4M33PAL	Advanced algorithms	Z,ZK	6
	graph algorithms and graph representation. Combinatorial algorithms. Application of formal languages theory in computer science -	1	1
B4M35KO	Combinatorial Optimization	Z,ZK	6
-	the problems and algorithms of combinatorial optimization (often called discrete optimization; there is a strong overlap with the term of	-	
	near algebra, graph theory, and basics of optimization, we show optimization techniques based on graphs, integer linear programmin ate space search methods. We focus on application of optimization in stores, ground transportation, flight transportation, logistics, pl		
	scheduling in production lines, message routing, scheduling in parallel computers.	anning of Hamarr	00001000,
B4M39APG	Algorithms of Computer Graphics	Z,ZK	6
	ill get acquainted with basic problems and their solutions in computer graphics. The main topic of the course are graphics primitives i		1
	rendering, color models, image representations, and basic photorealistic rendering algorithms.		
B4M39DPG	Data Structures for Computer Graphics	Z,ZK	6
	s you with the fundamentals of data structures commonly used in computer graphics. In contrast to standard binary search trees used in		
-	ultidimensional data used to describe 3D scenes. In addition to the theory, the course emphasizes individual and team projects, where the invalid intervention of the second scenes of the second scen	-	advantages
	multidimensional data are demonstrated on practical examples. The students will gain practical experience through their own individ		6
B4M39MMA	Multimedia and Computer Animation sed on methods often applied in the area of computer animation. Studens will get an overview of algorithms and methods solving typ	Z,ZK	6 animation
	ics, animation of human body, dynamics, etc.). Part of the course is devoted to principles used during creative work with sound. The		
,	information about methods and technologies used in movie production (MOCAP, stereoscopy, visual effects).		5
B4M39VG	Computational Geometry	Z,ZK	6
The goal of comput	ational geometry is analysis and design of efficient algorithms for determining properties and relations of geometric entities. The lecture		etric search,
	ex hull construction for sets of points in d-dimensional space, searching nearest neighbor points, computing intersection of polygonal area		-
	ections in algorithmic design. Computational geometry is applied not only in geometric applications, but also in common database se	0.	
B4M39VIZ	Visualization	Z,ZK	6
-	will get the knowledge of theoretical background for visualization and the application of visualization in real-world examples. The visu h the full power of computer technologies and the characteristics (and limits) of human perception. Well-chosen visualization method		
	he 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	-	
	problem represented by the data.		
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 l	her branch of study	, which will
be specified b	by branch department or branch departments. The diploma thesis will be defended in front of the board of examiners for the compreh	ensive final exami	nation.
TV-V1	Physical education	Z	1
TVKLV	Physical Education Course	Z	0
TVKZV	Physical Education Course	Z	0
TVV	Physical education	Z	0
TVV0	Physical education	Z	0

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