Recomended pass through the study plan

Name of the pass: Specialization Computer Games and Graphics - Passage through study

Faculty/Institute/Others: Faculty of Electrical Engineering

Department:

Pass through the study plan: Open Informatics - Computer Games and Graphics 2025

Branch of study guranteed by the department: Welcome page

Guarantor of the study branch: Program of study: Open Informatics Type of study: Bachelor 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
B4B01DMA	Discrete Mathematics Petr Habala Petr Habala (Gar.)	Z,ZK	5	2P+2S	Z	Р
B0B01LAG	Linear Algebra Daniel Gromada, Ji í Velebil, Jakub Rondoš, Natalie Žukovec, Mat j Dostál Ji í Velebil Ji í Velebil (Gar.)	Z,ZK	8	4P+2S	Z	Р
B4B33PSY	Computer systems Jakub Dupák, Mat j Kafka, Pavel Píša, Petr Št pán Petr Št pán Petr Št pán (Gar.)	KZ	5	2P+2C	Z	Р
B0B36PRP	Procedural Programming Jan Faigl Jan Faigl (Gar.)	Z,ZK	6	2P+2C	Z	Р
B4B33RPH	Solving Problems and other Games Tomáš Svoboda, Petr Pošík Petr Pošík Tomáš Svoboda (Gar.)	KZ	6	2P+3C	Z	Р
BEZZ	Basic Health and Occupational Safety Regulations Vladimír K la, Radek Havlí ek, Ivana Nová Radek Havlí ek Vladimír K la (Gar.)	Z	0	2BP+2BC	Z	Р

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
B4B35APO	Computer Architectures Pavel Píša	Z,ZK	6	2P+2L	L	Р
BEZB	Safety in Electrical Engineering for a Bachelor's Degree Vladimir K la, Radek Havlí ek, Ivana Nová Radek Havlí ek Vladimír K la (Gar.)	Z	0	2BP+2BC	Z,L	Р
B0B01LGR	Logic and Graphs Natalie Žukovec, Mat j Dostál, Alena Gollová Mat j Dostál Marie Demlová (Gar.)	Z,ZK	5	3P+2S	Z,L	Р
B0B01MA1	Mathematical Analysis 1 Martin K epela, Josef Tkadlec, Josef Dvo ák, Veronika Sobotíková Josef Tkadlec Josef Tkadlec (Gar.)	Z,ZK	7	4P+2S	Z,L	Р
B4B38PSIB	Computer Networks Jií Novák, Jan Holub Jií Novák Jií Novák (Gar.)	Z,ZK	6	2P+2L	L	Р
B0B36PJV	Programming in Java Martin Mudroch, Ji í Vok ínek, Ladislav Serédi Ji í Vok ínek Ji í Vok ínek (Gar.)	Z,ZK	6	2P+3C+7D	L	Р

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
B4B33ALG	Algorithms Daniel Pr ša, Robert P ni ka Daniel Pr ša Daniel Pr ša (Gar.)	Z,ZK	6	2P+2C	Z	Р
B0B01MA2	Mathematical Analysis 2 Martin Bohata, Miroslav Korbelá, Petr Hájek, Jaroslav Tišer, Karel Pospíšil, Paola Vivi, Hana Tur inová Martin Bohata Jaroslav Tišer (Gar.)	Z,ZK	7	4P+2S	L,Z	Р
B4B33OSY	Operating Systems Petr Št pán Michal Sojka (Gar.)	Z,ZK	4	2P+2C	Z	Р
B0B01PST	Probability and Statistics Kate ina Helisová, Jakub Stan k Kate ina Helisová Kate ina Helisová (Gar.)	Z,ZK	7	4P+2S	Z	Р
B4B39HRY	Computer Games Ji í Bittner, David Sedlá ek David Sedlá ek Ji í Bittner (Gar.)	Z,ZK	6	2P+2C	Z	PZ

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
B4B36DBS	Database Systems Martin imná Martin imná (Gar.)	Z,ZK	5	2P+2C	L	Р
B0B33OPT	Optimization Tomáš Werner, Petr Olšák, Mirko Navara, Tomáš Kroupa Tomáš Kroupa Tomáš Werner (Gar.)	Z,ZK	7	4P+2C	Z,L	Р
B4B36PDV	Parallel and Distributed Computing Mat j Kafka, Michal Jakob Michal Jakob (Gar.)	Z,ZK	6	2P+2C	L	Р
B4B39IUR	User interfaces implementation Miroslav Macík Miroslav Macík Miroslav Macík (Gar.)	Z,ZK	6	2P+2S	Z	PZ
B0B39PGR	Computer graphics programming Petr Felkel, Jaroslav Sloup Jaroslav Sloup Petr Felkel (Gar.)	Z,ZK	6	2P+2C+8D	L	PZ

Number of semester: 5

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
B4BPROJ6	Unassisted project Tomáš Svoboda, Petr Pošík, Jaroslav Sloup, Ji í Šebek, Ivan Jelínek, Katarína Žmolíková Jaroslav Sloup	Z	6	0+2	Z,L	Р
BE4B39VGO	Creating graphic content Ladislav molík Ladislav molík (Gar.)	Z,ZK	6	2P+2C+8D	Z	PZ
B4B36ZUI	Introduction to Artificial Intelligence Viliam Lisý, Branislav Bošanský Branislav Bošanský Michal P chou ek (Gar.)	Z,ZK	6	2P+2C	L	PZ
2025_BOIVOL	Volitelné odborné p edm ty	Min. cours.	Min/Max 0/999			V

Number of semester: 6

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
BBAP20	Bachelor thesis Roman mejla Roman mejla (Gar.)	Z	20	12S	L,Z	Р
B4B36PKT	P íprava ke státnicím Jan Faigl, Ji í Kléma Jan Faigl Ji í Kléma (Gar.)	Z	1	8P+8S	L	Р
2025_BOIVOL	Volitelné odborné p edm ty	Min. cours.	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
2025 BOIVOL		Min. cours.	Min/Max			v
2025_BOIVOL	Volitelné odborné p edm ty	0	0/999			V

List of courses of this pass:

	List of courses of this pass:		
Code	Name of the course	Completion	Credits
B0B01LAG	Linear Algebra	Z,ZK	8
The course covers th	e initial parts of linear algebra. Firstly, the basic notions of a linear space and linear mappings are covered (linear dependence and independence)	ependence, basis,	coordinates,
etc). The calculus of	f matrices (determinants, inverse matrices, matrices of a linear map, eigenvalues and eigenvectors, diagonalisation, etc) is covered solving systems of linear equations, the geometry of a 3D space (including the scalar product and the vector product) and S'		ons include
B0B01LGR	Logic and Graphs	Z,ZK	5
This course covers b	asics of mathematical logic and graph theory. Syntax and semantics of propositional and predicate logic are introduced. The importanc and of the relationship between a formula and its model is stressed. Further, basic notions from graph theory are introduce		onsequence
B0B01MA1	Mathematical Analysis 1 The aim of the course is to introduce students to basics of differential and integral calculus of functions of one variable.	Z,ZK	7
B0B01MA2	Mathematical Analysis 2	Z,ZK	7
The subject covers	an introduction to the differential and integral calculus in several variables and basic relations between curve and surface integrals series and power series with application to Taylor and Fourier series.	Other part contain	ns function
B0B01PST	Probability and Statistics	Z,ZK	7
B0B33OPT	Optimization	Z,ZK	7
	an introduction to mathematical optimization, specifically to optimization in real vector spaces of finite dimension. The theory is illustra	· '	of examples.
	You will refresh and extend many topics that you know from linear algebra and calculus courses.		•
B0B36PJV	Programming in Java	Z,ZK	6
The course builds or	n the basics of algorithms and programming from the first semester and introduces students to the Java environment. The course al	so focus on the ob	ject concept
of the Java language	e. The topics of the course includes exceptions, event handling, and building a graphical interface. Basic library methods, working wit	h files and using g	eneric types
will be introduced. Ar	n important topic is models of multithreaded applications and their implementation. Practical exercises of practical skills and knowled	ge of Java is tested	d in the form
of solving partial tas	ks and semester work, which will be submitted continuously through the source code version control system. The semester work so	coring consists of p	oints for the
(correctness and efficiency of the code, as well as points that take into account the quality of the source codes, their readability and	reusability.	
B0B36PRP	Procedural Programming	Z,ZK	6
The course accompa	anies basic programming emphasizing the data representation in computer memory. Furthermore, the concepts of linked data structu	res and processing	user inputs
	udents master the practical implementation of simple individual tasks. The course emphasizes acquiring programming habits for cre	-	
	ne time, the effort is to build students an overview of the program operation, data model, memory access, and management. Therefore		
•	a direct link between the program data structures and their representation in the computer memory. Students will get acquainted not		· ·
-	with debugging and profiling. Labs aim to acquire practical skills of implementing simple individual tasks, emphasizing functionality are		
•	ence is developed by a set of homework with the possibility of optional and bonus assignments. The final task is an integration of a l		ng existing
	lementations. Evaluation of coding style motivated by writing legible, understandable, and maintainable codes is also a part of the s	1	
B0B39PGR	Computer graphics programming	Z,ZK	6
B4B01DMA	Discrete Mathematics	Z,ZK	5
	tts meet some important topics from the field of discrete mathematics. Namely, they will explore divisibility and calculations modulo n		
relations, mapping	gs, cardinality of sets, induction, and recurrence equations. The second aim of this course is to teach students the language of math	iematics, both pass	sively and
D. (D. 0. 4.1. 0.	actively, and introduce them to mathematics as science.	7 714	
B4B33ALG	Algorithms	Z,ZK	6
	gorithms development is constructed with minimum dependency to programming language; nevertheless the lectures and seminars		
types a data struct	tures, basic algorithms, recursive functions, abstract data types, stack, queues, trees, searching, sorting, special application algorith Students are able to design and construct non-trivial algorithms and to evaluate their effectivity.	ims, Dynamic prog	gramming.
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B4B33OSY	Operating Systems	Z,ZK	4
	operation system's basic concepts and principles as processes, threads, communication and synchronization, virtual memory, drive	=	=
aspects. These topic	cs are theoretically described and demonstrated on Linux and Windows OS with multi-core systems. Practical exercises from OS in be solved on labs. Students will work with Linux OS and micro-kernel NOVA.	C programming ia	nguage wiii
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B4B33PSY	Computer systems	KZ	5
B4B33RPH	Solving Problems and other Games	KZ	6
	on is to let students to deal with real-world problems properly. When working on real problems the student shall learn how to decom		
	ow to test and validate individual steps and so on. Many problems will actually be beyond the first-year-student skills. And many pro		
	nsolved parts should motivate the students to study difficult theoretical subjects. They should generate the important questions, Idea	=	=
	e eager to study deeper about informatics. The course also explains the basis of the object oriented design, software testing, ways codes.	-	anu robust
B4B35APO	Computer Architectures	Z,ZK	6
B4B36DBS	Database Systems	Z,ZK	5
B4B36PDV	Parallel and Distributed Computing	Z,ZK	6
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B4B36PKT	P íprava ke státnicím	Z	1
B4B36ZUI	Introduction to Artificial Intelligence	Z,ZK	6
The aim of the coul	se is to cover the basics of symbolic artificial intelligence. We will focus on algorithms of informed and uninformed state space search	n, problem represe	entation and
solving, represent	ation of knowledge using formal logic, methods of automated reasoning, and an introduction to Markov decision making, and to two-	player games. This	s course is
also part of the in	nter-university programme prg.ai Minor. It pools the best of AI education in Prague to provide students with a deeper and broader ins	ight into the field o	of artificial
	intelligence. More information is available at https://prg.ai/minor.		
B4B38PSIB	Computer Networks	Z,ZK	6
B4B39HRY	Computer Games	Z,ZK	6
Students familiarize	themselves with the issues encountered during programming computer games. They learn topics such as 3D model representation,	animations, collisio	n detection,
physical simulation,	and real-time rendering in the context of computer games development. During exercises they will develop a computer game in team	s: from the game	concept and
design	document, through programming game mechanics to the presentation in front of a jury of experts. The exercises are build around the	Unity framework.	
B4B39IUR	User interfaces implementation	Z,ZK	6
Based on the user i	nterface specification (created by design team), the student will be able to implement user interface and communicate efficiently with	other stakeholders	s taking part
	in the whole process of design, testing, and implementation of the user interface.		
B4BPROJ6	Unassisted project	Z	6
BBAP20	Bachelor thesis	Z	20
BE4B39VGO	Creating graphic content	Z,ZK	6
The aim of this co	urse is to provide theory behind geometric modeling and modeling of materials, give students an overview of methods used in the pr	ocess of creating	2D and 3D
graphics and how to	papply those methods in praxis. At the seminars, students will learn how to design and create three-dimensional scene, create and ap	ply textures imitati	ng materials
	(e.g., wall finishes, wood, sky) and geometrical details, and position and set-up lights in the scene.		
BEZB	Safety in Electrical Engineering for a Bachelor's Degree	Z	0
The purpose of the	safety course is to give the students basic knowledge of electrical equipment and installation as to avoid danger arising from operation	of it. This introdu	ctory course
contains funda	mentals of Safety Electrical Engineering. In this way the students receive qualification of instructed person that enables them to work	on electrical equi	ipment.
BEZZ	Basic Health and Occupational Safety Regulations	Z	0
The guidelines were	e worked out based on The Training Scheme for Health and Occupational Safety designed for employees and students of the Czech T	echnical Universit	y in Prague,
which was provide	d by the Rector's Office of the CTU. Safety is considered one of the basic duties of all employees and students. The knowledge of He	alth and Occupati	ional Safety
	regulations forms an integral and permanent part of qualification requirements. This program is obligatory.		

For updated information see http://bilakniha.cvut.cz/en/f3.html Generated: day 2025-11-19, time 00:37.