Recomended pass through the study plan

Name of the pass: Specialization Artificial Intelligence - Passage through study

Faculty/Institute/Others: Faculty of Electrical Engineering
Department:
Pass through the study plan: Open Informatics - Artificial Intelligence
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
BEZM	**Safety in Electrical Engineering for a master´s degree** *Vladimír Kůla, Radek Havlíček, Ivana Nová, Josef Černohous, Pavel Mlejnek **Radek Havlíček** Vladimír Kůla (Gar.)*	Z	0	2BP+2BC	Z	P
B4M33PAL	**Advanced algorithms** *Marko Genyk-Berezovskyj, Daniel Průša, Ondřej Drbohlav **Daniel Průša** Daniel Průša (Gar.)*	Z,ZK	6	2P+2C	Z	P
BE4M33SSU	**Statistical Machine Learning** *Jan Drchal, Vojtěch Franc **Vojtěch Franc** Vojtěch Franc (Gar.)*	Z,ZK	6	2P+2C	Z	PO
B4M36MAS	**Computational Game Theory** *Tomáš Kroupa, Michal Jakob, Ondřej Kubíček, Tomáš Votroubek **Tomáš Kroupa** Michal Pěchouček (Gar.)*	Z,ZK	6	2P+2C	Z	PO
2018_MOIVOL	**Volitelné odborné předměty**	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
B4M35KO	**Combinatorial Optimization** *Zdeněk Hanzálek **Zdeněk Hanzálek** Zdeněk Hanzálek (Gar.)*	Z,ZK	6	3P+2C	L	P
B4M01TAL	**Theory of Algorithms** *Marie Demlová, Natalie Žukovec **Marie Demlová** Marie Demlová (Gar.)*	Z,ZK	6	3P+2S	L	P
B4M36PUI	**Artificial Intelligence Planning** *Rostislav Horčík **Rostislav Horčík** Michal Pěchouček (Gar.)*	Z,ZK	6	2P+2C	L	PO
B4M36SMU	**Symbolic Machine Learning** *Filip Železný, Ondřej Kuželka, Gustav Šír **Ondřej Kuželka** Ondřej Kuželka (Gar.)*	Z,ZK	6	2P+2C	L	PO
2018_MOIVOL	**Volitelné odborné předměty**	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
B4MSVP	**Software or Research Project** *Ivan Jelínek, Jaroslav Sloup, Jiří Šebek, Martin Šipoš, Drahomíra Hejtmanová, Jana Zichová, Petr Pošík, Martin Hlinovský, Katarína Žmolíková, ... **Ivan Jelínek** Ivan Jelínek (Gar.)*	KZ	6		Z,L	P

B4M36LUP	**Logical Reasoning and Programming** *Ondřej Kuželka, Karel Chvalovský **Filip Železný** Filip Železný (Gar.)*	Z,ZK	6	2P+2C	Z	PO
B4M36UIR	**Artificial Intelligence in Robotics** *Miloš Prágr, Jan Faigl **Jan Faigl** Jan Faigl (Gar.)*	Z,ZK	6	2P+2C	Z	PO
2018_MOIVOL	**Volitelné odborné předměty**	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_MOIVOL	**Volitelné odborné předměty**	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_MOIVOL	**Volitelné odborné předměty**	**Min. cours.** **0**	**Min/Max** 0/999			**V**

List of courses of this pass:

Code	Name of the course	Completion	Credits
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 ZZP 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.			
B4M36LUP	Logical Reasoning and Programming	Z,ZK	6
The course's aim is to explain selected significant methods of computational logic. These include algorithms for propositional satisfiability checking, logical programming in Prolog, and first-order theorem proving and model-finding. Time permitting, we will also discuss some complexity and decidability issues pertaining to the said methods.			
B4M36MAS	Computational Game Theory	Z,ZK	6
This course is designed to introduce students to the fundamental concepts and applications of game theory, a powerful tool used to model strategic interactions among individuals, organizations, or countries. Throughout the course, we will delve into various aspects of game theory and explore its wide-ranging applications in diverse fields, including machine learning and AI.			
B4M36PUI	Artificial Intelligence Planning	Z,ZK	6
The course covers the problematic of automated planning in artificial intelligence and focuses especially on domain independent models of planning problems: planning as a search in the space of states (state-space planning), in the space of plans (plan-space planning), heuristic planning, planning in graph representation of planning problems (graph-plan) or hierarchical planning. The students will also learn about the problematic of planning under uncertainty and the planning model as a decision-making in MDP and POMDP.			
B4M36SMU	Symbolic Machine Learning	Z,ZK	6
This course consists of four parts. The first part of the course will explain methods through which an intelligent agent can learn by interacting with its environment, also known as reinforcement learning. This will include deep reinforcement learning. The second part focuses on Bayesian networks, specifically methods for inference. The third part will cover fundamental topics from natural language learning, starting from the basics and ending with state-of-the-art architectures such as transformer. Finally, the last part will provide an introduction to several topics from the computational learning theory, including the online and batch learning settings.			
B4M36UIR	Artificial Intelligence in Robotics	Z,ZK	6
The course aims to acquaint students with the use of planning approaches and decision-making techniques of artificial intelligence for solving problems arising in autonomous robotic systems. Students in the course are employing knowledge of planning algorithms, game theory, and solving optimization problems in selected application scenarios of mobile robotics. Students first learn architectures of autonomous systems based on reactive and behavioral models of autonomous systems. The considered application scenarios and robotic problems include path planning, persistent environmental monitoring, robotic exploration of unknown environments, online real-time decision-making, deconfliction in autonomous systems, and solutions of antagonistic conflicts. In laboratory exercises, students practice their problem formulations of robotic challenges and practical solutions in a realistic robotic simulator or			

	consumer mobile robots. This course is also part of the inter-university programme prg.ai Minor. It pools the best of AI education in Prague to provide students with a deeper and broader insight into the field of artificial intelligence. More information is available at https://prg.ai/minor.		
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 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.		
BE4M33SSU	Statistical Machine Learning	Z,ZK	6
	The aim of statistical machine learning is to develop systems (models and algorithms) for learning to solve tasks given a set of examples and some prior knowledge about the task. This includes typical tasks in speech and image recognition. The course has the following two main objectives 1. to present fundamental learning concepts such as risk minimisation, maximum likelihood estimation and Bayesian learning including their theoretical aspects, 2. to consider important state-of-the-art models for classification and regression and to show how they can be learned by those concepts.		
BEZM	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 2025-06-06, time 13:29.