Recomended pass through the study plan

Name of the pass: Master Full-Time PL from 2025/26

Faculty/Institute/Others:
Department:
Pass through the study plan: Master Full-Time PL from 2024/25
Branch of study guranteed by the department: Welcome page
Guarantor of the study branch:
Program of study: Air Traffic Control and Management
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
11APAS	**Applied Statistics** *Evženie Uglickich, Pavla Pecherková **Pavla Pecherková***	Z,ZK	4	2P+2C+12B	Z	Z
21BILD	**Safety Engineering in Aviation** *Natalia Guskova, Kateřina Grötschelová, Andrej Lališ **Andrej Lališ***	Z,ZK	4	2P+2C+12B	Z	Z
21CNSS	**CNS Systems** *Stanislav Pleninger, Jakub Steiner **Stanislav Pleninger***	Z,ZK	5	3P+2C+16B	Z	Z
15J2A1	**Language - English 1** *Jitka Heřmanová, Dana Boušová, Lenka Monková, Peter Morpuss, Markéta Vojanová, Marie Michlová, Markéta Musilová, Jan Feit, Eva Rezlerová*	Z	2	0P+2C+10B	Z	Z
21LETS	**Airport** *Jakub Kraus, Petr Líkař, Sébastien Lán, Petr Had, Jiří Volt, Slobodan Stojić **Slobodan Stojić***	Z,ZK	4	1P+2C+12B	Z	Z
11MMJ	**Mathematical Models and their Applications** *Evženie Uglickich, Pavla Pecherková, Ivan Nagy, Michal Matowicki, Natálie Blahitka **Pavla Pecherková** Evženie Uglickich (Gar.)*	Z,ZK	4	2P+2C+12B	Z	Z
21PEKL	**Principles and Models in Air Transport Economics** *Peter Vittek **Peter Vittek***	Z,ZK	5	4P+2C+16B	Z	Z
15JCZ1	**Czech Language for Foreign Students 1** *Irena Veselková*	Z	0	0P+2C	Z	ZP
X2-NX-PL-22/23	**Projekty Mgr. PL od 2022/23** *11XN1,12XN1,..... (see the list of groups below)*	Min. cours. 4 Max. cours. 4	Min/Max 8/8			ZP

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
21AFM	**Air Traffic Management** *Jakub Kraus, Terézia Pilmannová, Martina Hlavatá **Jakub Kraus** Jakub Kraus (Gar.)*	Z,ZK	5	3P+2C+16B	L	Z
15JBA2	**Language - English 2** *Jitka Heřmanová, Dana Boušová, Lenka Monková, Peter Morpuss, Markéta Vojanová, Marie Michlová, Markéta Musilová, Jan Feit, Eva Rezlerová, ...*	Z	2	0P+2C+10B	L	Z
21MULD	**Managerial Challenges in Air Transport** *Peter Vittek **Peter Vittek** Peter Vittek (Gar.)*	Z,ZK	5	3P+2C+14B	L	Z
21PAM1	**Programming and Modelling 1** *Lenka Hanáková, Vladimír Socha **Vladimír Socha** Vladimír Socha (Gar.)*	KZ	5	2P+4C+16B	L	Z
21PLET	**Airport Operations** *Sébastien Lán, Petr Had, Jiří Volt **Slobodan Stojić** Slobodan Stojić (Gar.)*	Z,ZK	5	2P+2C+12B	L	ZP

21SPOL	**Aircraft Technology Reliability** *Natalia Guskova, Kateřina Grötschelová, Oldřich Štumbauer, Kiyofolo Benjamin Ouattara Andrej Lališ (Gar.)*	Z,ZK	4	2P+1C+12B	L	Z
15JCZ2	**Czech Language for Foreign Students 2** *Irena Veselková*	Z	0	0P+2C	L	Z
X2-NX-PL-22/23	**Projekty Mgr. PL od 2022/23** *11XN1,12XN1,..... (see the list of groups below)*	Min. cours. 4 Max. cours. 4	Min/Max 8/8			ZP

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
15JCZ3	**Czech Language for Foreign Students 3** *Irena Veselková*	Z		0P+2C	Z	ZP
15JBA3	**Language - English 3** *Jitka Heřmanová, Dana Boušová, Lenka Monková, Peter Morpuss, Markéta Vojanová, Marie Michlová, Markéta Musilová, Jan Feit, Eva Rezlerová, ...*	Z	2	0P+2C+10B	Z	PV
21LIA1	**Aviation Engineering English 1** *Jitka Heřmanová, Dana Boušová **Jitka Heřmanová***	Z	3	0P+2C+8B	Z	V
11MMOA	**Mathematical methods for data analysis** *Evženie Uglickich, Pavla Pecherková **Pavla Pecherková** Evženie Uglickich (Gar.)*	Z,ZK	4	2P+2C+12B	Z	
21NSR	**Navigation and Flight Control Systems** *Milan Kameník, Jakub Trýb, Jakub Hospodka, Ladislav Capoušek **Jakub Hospodka***	Z,ZK	5	3P+2C+14B	Z	
21PAM2	**Programming and Modelling 2** *Lenka Hanáková, Vladimír Socha **Vladimír Socha***	KZ	5	2P+4C+16B	Z	
21PLDC	**Air Carrier Operations** *Miloš Strouhal **Miloš Strouhal***	Z,ZK	5	3P+2C+16B	Z	
21XNL1	**Thesis seminar 1** *Lenka Hanáková, Vladimír Socha **Vladimír Socha***	Z	2	0P+1C+4B	Z	
X2-NX-PL-22/23	**Projekty Mgr. PL od 2022/23** *11XN1,12XN1,..... (see the list of groups below)*	Min. cours. 4 Max. cours. 4	Min/Max 8/8			ZP

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
15JCZ4	**Czech Language for Foreign Students 4** *Irena Veselková*	Z		0P+2C	L	ZP
21ELEG	**European Aviation Legislation** *Radoslav Zozuľák Peter Vittek (Gar.)*	ZK	3	2P+0C+8B	L	PV
15JBA4	**Language - English 4** *Jitka Heřmanová, Dana Boušová, Lenka Monková, Peter Morpuss, Markéta Vojanová, Marie Michlová, Markéta Musilová, Jan Feit, Eva Rezlerová, ...*	ZK	2	0P+2C+10B	L	V
21KST	**Space Technology** *Jakub Trýb, Jakub Hospodka **Jakub Hospodka** Jakub Hospodka (Gar.)*	ZK	3	2P+0C+10B	L	
21LIA2	**Aviation Engineering English 2** *Jitka Heřmanová, Dana Boušová*	KZ	3	0P+2C+8B	L	
21LPZP	**Air Traffic and the Environment** *Peter Vittek Luděk Beňo (Gar.)*	ZK	3	3P+0C+8B	L	
21NTLE	**New Trends in Aviation Technologies** *Peter Vittek **Peter Vittek** Peter Vittek (Gar.)*	KZ	3	3P+0C+8B	L	
14PROM	**Process Modeling** *Marek Kalika **Marek Kalika** Marek Kalika (Gar.)*	KZ	2	2P+0C+8B	L	
21XNL2	**Thesis Seminar 2** *Lenka Hanáková, Vladimír Socha, Marta Urbanová **Vladimír Socha** Vladimír Socha (Gar.)*	Z	2	0P+2C+6B	L	
21SYMS	**System Thinking** *Jakub Kraus **Jakub Kraus** Jakub Kraus (Gar.)*	ZK	3	2P+0C+8B	L	
X2-NX-PL-22/23	**Projekty Mgr. PL od 2022/23** *11XN1,12XN1,..... (see the list of groups below)*	Min. cours. 4 Max. cours.	Min/Max 8/8			ZP

		4				

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
X2-NX-PL-22/23	Projekty Mgr. PL od 2022/23	Min. cours. 4 Max. cours. 4	Min/Max 8/8			ZP

11XN1	Master Project 1	12XN1	Master Project 1	14XN1	Master Project 1
15XN1	Master Project 1	16XN1	Master Project 1	17XN1	Master Project 1
18XN1	Master Project 1	20XN1	Master Project 1	21XN1	Master Project 1
22XN1	Master Project 1	11XN2	Master Project 2	12XN2	Master Project 2
14XN2	Master Project 2	15XN2	Master Project 2	16XN2	Master Project 2
17XN2	Master Project 2	18XN2	Master Project 2	20XN2	Master Project 2
21XN2	Master Project 2	22XN2	Master Project 2	11XN3L	Master Project 3
12XN3L	Master Project 3	14XN3L	Master Project 3	15XN3L	Master Project 3
16XN3L	Master Project 3	17XN3L	Master Project 3	18XN3L	Master Project 3
20XN3L	Master Project 3	21XN3L	Master Project 3	22XN3L	Master Project 3
11XN4L	Master Project 4	12XN4L	Master Project 4	14XN4L	Master Project 4
15XN4L	Master Project 4	16XN4L	Master Project 4	17XN4L	Master Project 4
18XN4L	Master Project 4	20XN4L	Master Project 4	21XN4L	Master Project 4
22XN4L	Master Project 4				

List of courses of this pass:

Code	Name of the course	Completion	Credits
11APAS	Applied Statistics	Z,ZK	4
Descriptive statistics, data preprocessing, discretize continuous data. Hypothesis testing - continuous and discrete variables. Regression and correlation analysis. Multivariable methods - multiple regression analysis, logistic regression analysis, ROC curve, MANOVA, PCA, Factor analysis. Power analysis, preparation, processing and evaluation of hte experiment.			
11MMJ	Mathematical Models and their Applications	Z,ZK	4
System. Regression, discrete and logistic models. Bayesian estimation of model parameters. Parameter estimation of normal regression, discrete and logistic models. Classification with logistic model. One-step and multi-step prediction with regression and discrete models. State model. State estimation. Kalman filter. Control with regression and discrete models.			
11MMOA	Mathematical methods for data analysis	Z,ZK	4
Stocastic modelling, estimation, prediction, filtration, control, methods of data analysis - k-means, DBSCAN, naive Bayes, decision trees, support vector machine.			
11XN1	Master Project 1	Z	2
11XN2	Master Project 2	Z	2
11XN3L	Master Project 3	Z	2
11XN4L	Master Project 4	Z	2
12XN1	Master Project 1	Z	2
12XN2	Master Project 2	Z	2
12XN3L	Master Project 3	Z	2
12XN4L	Master Project 4	Z	2
14PROM	Process Modeling	KZ	2
Definition of the process, role, KPI's, areas of interest. Process Map, definition, purpose, clear examples and demonstrations, recommendations and standards, SIPOC. Process model, definition, purpose, procedures and tools, static and dynamic models. BPMN language, syntax and semantics, process flows. Implementation of practical examples, As-Is, To-Be, optimization and evaluation.			
14XN1	Master Project 1	Z	2
14XN2	Master Project 2	Z	2
14XN3L	Master Project 3	Z	2
14XN4L	Master Project 4	Z	2
15J2A1	Language - English 1	Z	2
Presentation Skills - expert technical discourse and style; Analysis of expert texts and their production; Preparation for overseas work engagement.			
15JBA2	Language - English 2	Z	2
Presentation Skills - expert technical discourse and style; Analysis of expert texts and their production; Preparation for overseas work engagement.			
15JBA3	Language - English 3	Z	2
Presentation Skills - expert technical discourse and style; Analysis of expert texts and their production; Preparation for overseas work engagement.Optional courses for certificates FCE, CAE.			

15JBA4	Language - English 4	ZK	2
Presentation Skills - expert technical discourse and style; Analysis of expert texts and their production; Preparation for overseas work engagement.Optional courses for certificates FCE, CAE.			
15JCZ1	Czech Language for Foreign Students 1	Z	0
Basic structures of Czech language, common communication situations, study, work, leisure time activities, introduction of myself, phonetics of Czech language, writing skills.			
15JCZ2	Czech Language for Foreign Students 2	Z	0
Basic structures of Czech language, common communication situations, study, work, leisure time activities, introduction of myself, phonetics of Czech language, writing skills.			
15JCZ3	Czech Language for Foreign Students 3	Z	
Language structures with regard to the group level. Listening and oral fluency drill. Basic terminology.			
15JCZ4	Czech Language for Foreign Students 4	Z	
Language structures with regard to the group level. Listening and oral fluency drill. Basic terminology.			
15XN1	Master Project 1	Z	2
15XN2	Master Project 2	Z	2
15XN3L	Master Project 3	Z	2
15XN4L	Master Project 4	Z	2
16XN1	Master Project 1	Z	2
16XN2	Master Project 2	Z	2
16XN3L	Master Project 3	Z	2
16XN4L	Master Project 4	Z	2
17XN1	Master Project 1	Z	2
17XN2	Master Project 2	Z	2
17XN3L	Master Project 3	Z	2
17XN4L	Master Project 4	Z	2
18XN1	Master Project 1	Z	2
18XN2	Master Project 2	Z	2
18XN3L	Master Project 3	Z	2
18XN4L	Master Project 4	Z	2
20XN1	Master Project 1	Z	2
20XN2	Master Project 2	Z	2
20XN3L	Master Project 3	Z	2
20XN4L	Master Project 4	Z	2
21AFM	Air Traffic Management	Z,ZK	5
Current ATM system and its functional blocks. View of ATM data (technical architecture and configuration, transmission systems and networks). Data exchange with neighboring ATM systems. Monitoring systems and technical supervision. ATM simulation. ATM conceptions and strategies for next years. EUROCONTROL - CFMU. FAB. ATS's - AOC's data applications.			
21BILD	Safety Engineering in Aviation	Z,ZK	4
The course is focused on understanding the issue of safety, learning how to assess new systems in terms of safety and acquiring principles of safety management. Students will learn explaining accidents and incident causes and bridge their theoretical knowledge with practical problems of air transport.			
21CNSS	CNS Systems	Z,ZK	5
Course provides full technical informations about CNS (communication, navigation, surveilance) systems used in aviation. Systems are presented in perspective of future development.			
21ELEG	European Aviation Legislation	ZK	3
The content of the subject "European Aviation Legislation" is the legal regulation of air operation, the system and structure of the national and European legal system, the legal effects of EU legal acts in the Czech national environment and their impact on national regulation with a focus on requirements and criteria of individual regulations on aviation transport and transportation.			
21KST	Space Technology	ZK	3
Universe and its basic characteristics. Fundamentals of astrophysics. Kepler´s laws. Solar system. Earth's and its atmosphere and outer space. Space transport vehicles. Rockets and rocket engines and their structure and operational characteristics. Space crafts and satellites, space flight. Orbital mechanics. Application of space technologies for global navigation and communication. Space exploration and piloted space flights and missions.			
21LETS	Airport	Z,ZK	4
Methods of designing new airports and developing existing ones. Connection of the airport to the surrounding infrastructure. Airport economics. Detailed look at the development of movement areas. Certification of airside movement areas and procedures according to EASA CS-ADR-DSN. Development planning - design, preparation and regulatory basis. Environmental aspects of airport operations.			
21LIA1	Aviation Engineering English 1	Z	3
Lectures include various types of the language exercises and are focused on the following topics - EUR-Lex and European Legislation, ICAO Annexes and SARPs, AMCs and GMs, Civil Aviation Authorities, Accident investigation, Aircraft Airworthiness, Aircraft documentations and manuals, Medical certification, Emergency response plan.			
21LIA2	Aviation Engineering English 2	KZ	3
Lectures include various types of the language exercises and are focused on the following topics - Aviation associations, ISAGO and IGOM, EUROCONTROL, Airport Council International, International Air Transport Association, Airport Engineering, Airline business, Future development in civil aviation.			
21LPZP	Air Traffic and the Environment	ZK	3
The course is about ecology, sustainable development, ecological stability, environmental protection and environmental legislation. It also focuses on air traffic with respect to the environment, current issues, threats and solutions.			
21MULD	Managerial Challenges in Air Transport	Z,ZK	5
The course contains a list of basic managerial tasks in aviation. The basic managerial tasks are quality assurance and operational safety, marketing operations, marketing context implementation, airline network management, fleet management and revenue management. The core disciplines also include project management, cost management and project resource planning and management.			
21NSR	Navigation and Flight Control Systems	Z,ZK	5
Navigation. Radionavigation. Satellite navigation. Flight management system. Autopilot. FMC. Practical execution of flight.			

21NTLE	New Trends in Aviation Technologies	KZ	3
The course includes an introduction to all the technologies that are currently important to aviation, such as new aircraft design concepts, new types of propulsion, and new types of aviation fuels. The course also covers new types of urban mobility, virtual reality systems, biomechanical analysis. ATM technologies are another component, and the course also looks at smart airports, the use of blockchain, and airport simulations.			
21PAM1	Programming and Modelling 1	KZ	5
Harmonic signals, their generation. Real signals, sampling theorem, aliasing. Signal filtering. Fourier transform (FT), discrete Fourier transform (DFT), fast Fourier transform (FFT). Spectrum estimation, spectral power density. Image - basic processing methods, 2D Fourier transform, noise filtering, edge detection, linear and non-linear methods, brightness transforms, geometric transforms, image compression.			
21PAM2	Programming and Modelling 2	KZ	5
Descriptive statistics, classical statistical analysis. Statistical hypothesis testing. Analysis of variance (ANOVA), one-factor, two-factor ANOVA. Non-parametric methods. Linear regression. Correlation, correlation coefficient. Non-linear regression models, procedure for regression analysis of a non-linear model. Basics of machine learning. Classification by nearest neighbour method. SVM classifiers. Decision trees.			
21PEKL	Principles and Models in Air Transport Economics	Z,ZK	5
The course contains the most important and typical models on which the economics of air transport is based. It covers the principles of regulation, airline infrastructure models, market structure, analyses airline costs, and looks in detail at the low-cost and charter airline model. It also focuses on airline alliances, air cargo, airline strategies and the economic principles of safety and security.			
21PLDC	Air Carrier Operations	Z,ZK	5
Mission and importance of air transport. Legislation. Airlines - structure, strategy. Performances in air transport. Cost structure. Fuel management. Cargo. Aircraft maintenance (organization) and economics of aircraft operation. Ground handling and other services. Safety / Security / Quality and Compliance monitoring. Revenue management. Air transport and environment.			
21PLET	Airport Operations	Z,ZK	5
Planning, design and modelling of airport processes in airside, landside and terminal buildings. Impact of infrastructure and equipment on airport capacity. Available tools and practices for increasing capacity. Operational analytics, capacity and traffic load forecasting. Purpose and development of an airport masterplan.			
21SPOL	Aircraft Technology Reliability	Z,ZK	4
Subject deals with tuition of separate attributes of reliability (no failure, vitality, maintainability, and so on) and main criterions of safety of production and working of aerospace engineering. General legalities are in the framework of tuition demonstrated on the example of calculation of reliability of integral characteristics of materials and they are practical illustration of its security in The Czech Police Aviation Department.			
21SYMS	System Thinking	ZK	3
System, its structure, algorithmization, complexity, emergence, mind setting, critical thinking, teamwork, feedback and communication, goal setting, uncertainties and arguments, decision making under uncertainty.			
21XN1	Master Project 1	Z	2
21XN2	Master Project 2	Z	2
21XN3L	Master Project 3	Z	2
21XN4L	Master Project 4	Z	2
21XNL1	Thesis seminar 1	Z	2
Introduction, scientific publications, publications devoted to scientific writing, grey literature, difference between bachelor and master thesis. Time management. Formal and graphic design, mathematical typesetting, typography, paragraphing, transitions between paragraphs. LaTeX. Research, databases, critical work with text, digital notes, working with notes, outline. Rhetorical exercises / presentation skills.			
21XNL2	Thesis Seminar 2	Z	2
Selected chapters from the structure. PRISMA and meta-analysis methods. Citation, citation managers. English. Statistical inference. Presentation of results. Graphic design of the work, own and adopted graphics. Ethical principles in scientific work, publishing process, journals (impacted, open access, predatory journals). Rhetorical exercises / presentation skills. Specifics of state exams.			
22XN1	Master Project 1	Z	2
22XN2	Master Project 2	Z	2
22XN3L	Master Project 3	Z	2
22XN4L	Master Project 4	Z	2

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Generated: day 2025-06-06, time 02:18.