

Study plan

Name of study plan: KOMBI bak. studium od 19-20 (obor LOG), skok do 3.r.

Faculty/Institute/Others:

Department:

Branch of study guaranteed by the department: Logistics and Transport Processes Control

Garantor of the study branch: doc. Ing. Denisa Mocková, Ph.D.

Program of study: Technology in Transportation and Telecommunications

Type of study: Bachelor combined

Required credits: 180

Elective courses credits: 0

Sum of credits in the plan: 180

Note on the plan:

Name of the block: Compulsory courses

Minimal number of credits of the block: 162

The role of the block: Z

Code of the group: 1S K LOG LED 19-20 P

Name of the group: 1. sem. bak. KOMBI obory LOG, LED 19-20 povinné p edm ty

Requirement credits in the group: In this group you have to gain 30 credits

Requirement courses in the group: In this group you have to complete 10 courses

Credits in the group: 30

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 |
|---------|---|------------|---------|-----------|----------|------|
| 611CAL1 | Calculus 1 Romana Zibnerová | Z,ZK | 7 | 2P+4C+2B | Z | z |
| 611LA | Linear Algebra Romana Zibnerová | Z,ZK | 3 | 2P+1C+10B | Z | z |
| 612ZYDK | Introduction to Transportation Engineering Dagmar Ko árková | Z,ZK | 3 | 6B | Z | z |
| 618MTY | Materials Science and Engineering Vít Malinovský | Z,ZK | 3 | 2P+1C+10B | Z | z |
| 611GIE | Geometry Vít Malinovský | KZ | 3 | 2P+2C+12B | Z | z |
| 614ASD | Algorithm and Data Structures Jan Mejst ík | KZ | 3 | 0P+2C+8B | Z | z |
| 614KSP | Constructing with Computer Aid Libor Židek | KZ | 2 | 0P+2C+8B | Z | z |
| 618TED | Technical Documentation Vít Malinovský | KZ | 2 | 1P+1C+8B | Z | z |
| 615DPLG | Transportation Psychology Jana Stikarová, Tomáš Burian | Z | 2 | 2P+0C+6B | Z | z |
| 616UDOP | Introduction into Vehicles Josef Mík, Zuzana Radová | Z | 2 | 2P+0C+8B | Z | z |

Characteristics of the courses of this group of Study Plan: Code=1S K LOG LED 19-20 P Name=1. sem. bak. KOMBI obory LOG, LED 19-20 povinné p edm ty

| | | | | |
|---------|--|------|---|---|
| 611CAL1 | Calculus 1 | Z,ZK | 7 | Sequence of real numbers and its limit. Basic properties of mappings. Function of one real variable, its limit and derivative. Geometric properties of n-dimensional Eukclidean space and Cartesian coordinate system. Geometric meaning of the differential of functions several real variables, differential calculus of functions of several real variables. |
| 611LA | Linear Algebra | Z,ZK | 3 | Vector spaces (linear combinations, linear independence, dimension, basis, coordinates). Matrices and operations. Systems of linear equations and their solvability. Determinants and their applications. Scalar product. Similarity of matrices (eigenvalues and eigenvectors). Quadratic forms and their classification. |
| 612ZYDK | Introduction to Transportation Engineering | Z,ZK | 3 | Role of transportation in land-use planning. Basic terms in transportation engineering. Traffic survey and traffic prognosis. Introduction to topic of roads, public mass transport. Negative impacts of transportation to environment and safety. |
| 618MTY | Materials Science and Engineering | Z,ZK | 3 | Basic course of materials science and engineering explains mechanical properties of structural materials based on their bonding forces and microstructure. However the main attention is paid to metals as the most important engineering materials, also other major classes of materials are presented, namely ceramics, polymers and composites. Attention is also paid to degradation processes in materials, to defectoscopy and to main mechanical tests. |

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|---|--------------------------------|----|---|
| 611GIE | Geometry | KZ | 3 |
| Orthographic and oblique projections, linear perspective. Topographic surfaces and their orthogonal projection. Differential geometry of curves - parameterization, arc of the curve, torsion and curvature, Frenet's trihedron. Kinematics - a curve as a trajectory of the motion, the velocity and acceleration of a particle moving on a curved path. | | | |
| 614ASD | Algorithm and Data Structures | KZ | 3 |
| Students will be familiarized with selected basic and derived data structures, algorithms, their properties and their design procedure. Students will analyze problems, propose theoretical solutions to the set task and the resulting algorithm write by means of flowcharts, practice in reading algorithms recorded by means of the flowchart and use the basics of Boolean algebra with forming the conditions for the algorithms. | | | |
| 614KSP | Constructing with Computer Aid | KZ | 2 |
| "CAD systems" term determination. CAD role in projecting system model. Existing CAD systems on Czech market. Project creation, basic common work rules in graphic applications and CA systems. Co-ordinated systems, CAD environment skill (basics of constructing, dimensioning, modifications, user interfaces, projecting possibilities, AutoCAD environment profiles, drawings with raster foundations). | | | |
| 618TED | Technical Documentation | KZ | 2 |
| Technical standards, international standardization, technical drawings, representation of technical objects, technical diagrams and charts, dimensional and geometrical accuracy, arrangement of drawing sheets. | | | |
| 615DPLG | Transportation Psychology | Z | 2 |
| Subject of psychology and its basic concepts. Information intake, decision-making and behaviour. Performance. Engineering psychology and vehicle construction. Psychological aspects of travel route and traffic conditions, accidents and traffic incidents. Selection and training of the staff. Work and leisure. Age as a factor in transport operation. | | | |
| 616UDOP | Introduction into Vehicles | Z | 2 |
| Vehicles and transportation systems. Functionality and setup. Movement and drive principles. Engines and their characteristics. Rail, road, air and water transport. Alternative means of transport. Lifting equipment and conveyors. Legislation. | | | |

Code of the group: 2S K LOG LED 19-20 P

Name of the group: 2. sem. bak. KOMBI obory LOG, LED 19-20 povinné p edm ty

Requirement credits in the group: In this group you have to gain 30 credits

Requirement courses in the group: In this group you have to complete 8 courses

Credits in the group: 30

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 |
|---------|---|------------|---------|-----------|----------|------|
| 611CAL2 | Calculus 2 Romana Zibnerová | Z,ZK | 5 | 2P+3C+2B | L | Z |
| 611STAT | Statistics Pavel Provinský | Z,ZK | 4 | 2P+2C+12B | L | Z |
| 612ZTS | Railway Lines and Stations Ondřej Třešl, Tomáš Javořík | Z,ZK | 4 | 2P+2C+10B | L | Z |
| 618SAT | Structural Analysis Petr Koudelka, Jan Šleicher, Michaela Neuhäuserová | Z,ZK | 4 | 2P+2C+14B | L | Z |
| 620SYSA | Systems Analysis Martin Langr, Jiří Růžka, Petr Bureš, Patrik Horažovský | Z,ZK | 5 | 2P+2C+14B | L | Z |
| 614PRG | Programming Libor Židek | KZ | 2 | 0P+2C+8B | L | Z |
| 617TEDK | Transport Technology and Logistics Michal Drábek | KZ | 4 | 12B | L | Z |
| 621ZALD | Basics of Air Transport Jakub Hospodka | KZ | 2 | 0P+2C+8B | L | Z |

Characteristics of the courses of this group of Study Plan: Code=2S K LOG LED 19-20 P Name=2. sem. bak. KOMBI obory LOG, LED 19-20 povinné p edm ty

| | | | |
|---|----------------------------|------|---|
| 611CAL2 | Calculus 2 | Z,ZK | 5 |
| Antiderivative, Newtonian integral, Riemannian integral of the function of one variable, improper Riemannian integral, Riemannian integral in R^n . Parametric description of regular k -dimensional surfaces in R^n , Riemannian integral over regular surfaces. Line and surface integrals of the second type, Stokes theorems, ordinary differential equations of the first order, linear differential equations with constant coefficients and its systems. | | | |
| 611STAT | Statistics | Z,ZK | 4 |
| Definition of probability, random variable and its description, known distributions, random vector, function of random variable. Methods of point estimation. Testing of statistical hypothesis. Regression and correlation, linear regression, correlation coefficient, coefficient of determination, the general linear model, statistical inference in linear regression, analysis of variance, multiple regression, the use of matrices in regression. | | | |
| 612ZTS | Railway Lines and Stations | Z,ZK | 4 |
| Rail transport. Railway track geometry parameters. Route layout of railway lines. Railway line construction - railway substructure and superstructure. Spatial layout of railway lines. Railway control systems in relation to infrastructure. Operating and carriage points. Railway lines net and category. Traction in rail transport. | | | |
| 618SAT | Structural Analysis | Z,ZK | 4 |
| General system of forces in plane and space. Calculation of reactions of bodies and structures. Assessment of internal forces on statically determinate beams and simple girders. Principle of virtual work. Kinematic method for calculation of reactions of statically determinate systems. Determination of axial forces in truss constructions. Cross-sectional characteristics of planar shapes. Fiber polygons and chains. | | | |
| 620SYSA | Systems Analysis | Z,ZK | 5 |
| Introduction to system sciences, system viewpoint, terminology, typical system analysis tasks, system identification, system interface and interface tasks, processes, system behaviour and its analysis, strong functions and processes, genetic code, system identity, system architecture. Tools for system analysis - Petri nets, decision tables, algorithms for structural tasks. Soft and hard systems, methods for soft system analysis. | | | |

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|---|------------------------------------|----|---|
| 614PRG | Programming | KZ | 2 |
| Algorithm development, methods of structured programming, high-level programming languages, basics of C programming languages (types, variables, conditions, cycles, arrays, functions), programming techniques, complexity. | | | |
| 617TEDK | Transport Technology and Logistics | KZ | 4 |
| Basic terms in transport technology and logistics, particular steps of transport planning, line planning, timetabling, planning in passenger and freight transport, organisation of traffic in each transport modus, technologic factors of the side of operator and client, organisation of city transport, logistic technologies and their application using various transport modus. | | | |
| 621ZALD | Basics of Air Transport | KZ | 2 |
| History, definitions, terminology, basic rules. VFR/IFR. Basics of aerodynamics. Propulsion of aircraft. Aircraft design. Basics of navigation, radio navigation. Weight, balance, performance. Flight planning, optimization of speed and heights, minimum fuel. Limitations of operation, maintenance, service life of aircraft. Traffic management, ground handling, security. Air crew. Airlines and economics. Space technologies. | | | |

Code of the group: 3S K LOG LED 19-20 P

Name of the group: 3. sem. bak. KOMBI obory LOG,LED 19-20 povinné p edm ty

Requirement credits in the group: In this group you have to gain 30 credits

Requirement courses in the group: In this group you have to complete 8 courses

Credits in the group: 30

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 |
|---------|---|------------|---------|-----------|----------|------|
| 611FYZ | Physics Kurt Fišer | Z,ZK | 5 | 2P+2C+18B | Z | z |
| 612MDE | Transport Models and Transport Excesses Josef Kocourek, Tomáš Pad lek | Z,ZK | 3 | 2P+1C+8B | Z | z |
| 617TGA | Graph Theory and its Applications in Transport Josef Volek | Z,ZK | 4 | 2P+2C+12B | Z | z |
| 618PZP | Elasticity and Strength Jan Šleichrt, Tomáš Doktor | Z,ZK | 3 | 2P+1C+10B | Z | z |
| 620UITS | Introduction to Intelligent Transport Systems Vladimír Faltus | Z,ZK | 7 | 3P+2C+20B | Z | z |
| 612PPOK | Designing Roads, Highways and Motorways Tomáš Pad lek, Jiří arský, Petr Kumpošt | KZ | 3 | 1P+2C+10B | Z | z |
| 614DATS | Database Systems Ondřej Smlíšek | KZ | 2 | 1P+1C+10B | Z | z |
| 615JZ1A | Foreign Language - English 1 Vra Pastorková | Z | 3 | 0P+4C+10B | Z | z |

Characteristics of the courses of this group of Study Plan: Code=3S K LOG LED 19-20 P Name=3. sem. bak. KOMBI obory LOG,LED 19-20 povinné p edm ty

| | | | |
|---|--|------|---|
| 611FYZ | Physics | Z,ZK | 5 |
| Kinematics, particle dynamics, dynamics of particle systems and rigid body. Continuum mechanics, thermodynamics. | | | |
| 612MDE | Transport Models and Transport Excesses | Z,ZK | 3 |
| Parameters of the traffic flow and methods for their measurement. Models of the traffic flow, communications load, line and urban systems. Theory of queues, shock waves. Quality of transport and its assessment. Statistical characteristics of transport. Transport excesses, their analysis, the causes, identify and minimize the consequences. Improving of transport safety and fluency. | | | |
| 617TGA | Graph Theory and its Applications in Transport | Z,ZK | 4 |
| Basic terms of graph theory, paths in graphs, flows in networks, location problems, design problems on graphs, optimum routing, use of graphs in other scientific disciplines. | | | |
| 618PZP | Elasticity and Strength | Z,ZK | 3 |
| Tension and compression. Bending of beam. Shear stress during bending of beam. Design and analysis of cross section of beam. Design of riveted, bolted and welded joint of structure. Analysis of deflection curve of beam. Torsion of circle cross section. Combined loading. Stability of compressed bar and buckling. Beam on elastic foundation. Strength analysis. | | | |
| 620UITS | Introduction to Intelligent Transport Systems | Z,ZK | 7 |
| Terminology and legislative framework telematics systems and their architecture. Telematics systems in practice and their operation. Fundamentals of information and telecommunication systems for ITS. Principles and technical support measurement of traffic data, localization and navigation. Practical work with traffic data. Real examples of possible applications of the principles of ITS. | | | |
| 612PPOK | Designing Roads, Highways and Motorways | KZ | 3 |
| Definition, types, ownership, maintenance, management and categorization of roads and highways. Curve and transition curve. Sinuosity and standard speed. Route in rural areas. Range of vision for stopping and overtaking. Road body - shapes and proportions, bottom and superstructure. Drainage and components of roads. Safety device. Crossings, junctions, intersections. | | | |
| 614DATS | Database Systems | KZ | 2 |
| Basic concepts of database systems, conceptual model, relational data model, the principles of normal forms, relational database design, security and integrity of data, database queries, relational algebra, SQL language, client / server, multilayer architectures, distributed database systems. Access to data via the WWW. | | | |
| 615JZ1A | Foreign Language - English 1 | Z | 3 |
| Grammatical structures and style. Selection of conversation topics relating to transportation sciences. Extending vocabulary, developing perceptive and communicative skills. Elementary stylistics forms. Oral and written presentation of original research. Academic text principles and reading comprehension. Principles of rhetoric. | | | |

Code of the group: 4S K LOG 19-20 P

Name of the group: 4. sem. bak. KOMBI obor LOG 19-20 povinné p edm ty

Requirement credits in the group: In this group you have to gain 26 credits

Requirement courses in the group: In this group you have to complete 8 courses

Credits in the group: 26

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) <i>Tutors, authors and guarantors (gar.)</i> | Completion | Credits | Scope | Semester | Role |
|---------|--|------------|---------|-----------|----------|------|
| 611MSP | Modeling of Systems and Processes <i>Marek Honc</i> | Z,ZK | 4 | 2P+2C+12B | L | Z |
| 617LGT | Logistics <i>Edvard B ezina, Daniel Pilát</i> | Z,ZK | 6 | 3P+2C+18B | L | Z |
| 617SFID | Public Administration and Financing in Transport <i>Alexandra Dvo áková</i> | Z,ZK | 4 | 2P+1C+12B | L | Z |
| 611LP | Linear Programming <i>Pavla Pecherková</i> | KZ | 3 | 2P+1C+12B | L | Z |
| 616DPO | Vehicle Technology <i>Josef Mík</i> | KZ | 2 | 2P+0C+10B | L | Z |
| 617EMY | Management Science <i>Otto Pastor</i> | Z | 2 | 2P+0C+8B | L | Z |
| 617PAZ | Carriage and Forwarding <i>Alexandra Dvo áková</i> | Z | 2 | 2P+0C+8B | L | Z |
| 615JZ2A | Foreign Language - English 2 <i>V ra Pastorková</i> | Z,ZK | 3 | 0P+4C+10B | L | Z |

Characteristics of the courses of this group of Study Plan: Code=4S K LOG 19-20 P Name=4. sem. bak. KOMBI obor LOG 19-20 povinné p edm ty

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|---------|--|------|---|---|
| 611MSP | Modeling of Systems and Processes | Z,ZK | 4 | Mathematical methods and algorithms as a basis for system analysis. Methods for modelling and evaluating the systems in continuous and discrete time domain. Laplace transform, z-transform, and the recursive algorithms in solution of differential and difference equations, as an instrument for system description. Practical use of technical computing environment (MATLAB). |
| 617LGT | Logistics | Z,ZK | 6 | Logistics definition, basic concepts, store, warehouse, transport and handling equipment, logistics technology, logistics centers, information and intelligent logistics systems, logistics city. |
| 617SFID | Public Administration and Financing in Transport | Z,ZK | 4 | Basic issues of transport and transport policy in the social context, environmental issues in transport, economical aspects of transport, public administration and financing of transport. |
| 611LP | Linear Programming | KZ | 3 | Formulation of the problem of linear programming, transcription of some practical problems to the linear programming problems. Simplex and convex polyedra. Simplex method, basic solutions, duality principle in linear programming, stability of solution of linear programming problem. Traffic problem. |
| 616DPO | Vehicle Technology | KZ | 2 | Vehicle. Functions, principles. Drive, vehicle construction. Road transport, safety, heavy duty vehicle desing, dynamics. Rail transport, safety, carriage design. Drive. Electric traction. Transshipment. Technological components of various modes of transport. Management and control of various means of transport. Safety. |
| 617EMY | Management Science | Z | 2 | The introduction to economical-mathematical models before its application in concrete technical and economical cases. The basic mathematical methods to modelise economical situations. Several classes of problems are formulated and different methods used in qualitatively distinct real situations are introduced. The tasks of interpretation and application. |
| 617PAZ | Carriage and Forwarding | Z | 2 | Contracts of carriage and forwarding, waybills and documents; transport modes, multimodal transport, tariffs and prices in transport, rights and obligations of carriers, hauliers and forwarders, duty and tariff agreements, INCOTERMS, insurance in transport. |
| 615JZ2A | Foreign Language - English 2 | Z,ZK | 3 | Grammatical structures and style. Selection of conversation topics relating to transportation sciences. Extending vocabulary, developing perceptive and communicative skills. Elementary stylistics forms. Oral and written presentation of original research. Academic text principles and reading comprehension. Principles of rhetoric. |

Code of the group: 5S K LOG 19-20 P

Name of the group: 5. sem. bak. KOMBI obor LOG 19-20 povinné p edm ty

Requirement credits in the group: In this group you have to gain 23 credits

Requirement courses in the group: In this group you have to complete 7 courses

Credits in the group: 23

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) <i>Tutors, authors and guarantors (gar.)</i> | Completion | Credits | Scope | Semester | Role |
|---------|--|------------|---------|-----------|----------|------|
| 617EDPO | Economics of Transport Company <i>Alexandra Dvo áková</i> | Z,ZK | 5 | 2P+2C+14B | Z | Z |
| 617FEU | Public Administration and Financing in Transport <i>Alexandra Dvo áková</i> | Z,ZK | 4 | 2P+1C+14B | Z | Z |
| 617MAS | Small and Medium Enterprise <i>Alexandra Dvo áková</i> | Z,ZK | 3 | 2P+1C+12B | Z | Z |
| 617TVD | Technology of Public Transport <i>Michal Drábek, Zden k Michl, Stanislav Metelka</i> | Z,ZK | 5 | 2P+2C+14B | Z | Z |

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|---------|--|----|---|-----------|---|---|
| 614DMG | Datamining <i>Ondřej Smíšek</i> | KZ | 2 | 0P+2C+8B | Z | z |
| 617MEKA | Methods of Economics Analysis <i>Otto Pastor</i> | KZ | 2 | 2P+0C+8B | Z | z |
| 623ZAP | Basics of Law <i>Milena Macková</i> | Z | 2 | 2P+0C+10B | Z | z |

Characteristics of the courses of this group of Study Plan: Code=5S K LOG 19-20 P Name=5. sem. bak. KOMBI obor LOG 19-20 povinné p edm ty

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|---------|--|------|---|
| 617EDPO | Economics of Transport Company Economy, marginal utility, marginal costs, function of supply and demand, market equilibrium, perfect competition and types of market arrangement. Transportation market, transport company, it's environment, balance sheet, costs, revenue, profit and maximalization of profit. Financial management in transport, business plan, taxation in transport. | Z,ZK | 5 |
| 617FEU | Public Administration and Financing in Transport To get a basic overview of the EU regional policy and its practical execution on the level of the member state, specific ability to find and analyze information about the EU support programmes. | Z,ZK | 4 |
| 617MAS | Small and Medium Enterprise Small and medium enterprise - plans, market, analysis, finance, management, decision making, survival, growth. | Z,ZK | 3 |
| 617TVD | Technology of Public Transport The course contents a detailed description of new knowledge and basic principles of hierarchical planning of public transport system accenting the general transport planning and quantified transport demand. The course would be oriented on multiple and multi-level optimisation of passenger public transport system. | Z,ZK | 5 |
| 614DMG | Datamining Types of data sources and knowledge, data warehouses and OLAP technology for data mining, data preprocessing in the process of knowledge acquisition systems for data mining, mining characteristics of concepts (classes), mining association rules from relational db. and data warehousing, classification (decisions tree, Bayesian cob., using neural networks). Prediction. Cluster analysis. Mining in complex structured data, multimedia dbf., www. | KZ | 2 |
| 617MEKA | Methods of Economics Analysis The techniques of economical analysis in the domain of analysis of dependencies, analysis and construction of time series and comparison of statistical values using differences and indices. | KZ | 2 |
| 623ZAP | Basics of Law Basic orientation in the Czech legal system. The course is primarily intended to provide students with orientation in fundamentals of the Czech Republic, legal system and in various forms of law, including adoption of the basic principles of European Community law. The course consists of selected chapters from the public and private law and European Community law. | Z | 2 |

Code of the group: 6S K LOG 19-20 P

Name of the group: 6. sem. bak. KOMBI obor LOG 19-20 povinné p edm ty

Requirement credits in the group: In this group you have to gain 23 credits

Requirement courses in the group: In this group you have to complete 7 courses

Credits in the group: 23

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 |
|---------|---|------------|---------|-----------|----------|------|
| 617IVD | Integration of Public Transport <i>Roman Št rba</i> | ZK | 4 | 3P+0C+12B | L | z |
| 617RAC | Rationalization and Quality of Transport <i>Edvard B ezina, Daniel Pilát</i> | Z,ZK | 7 | 4P+2C+22B | L | z |
| 617RPT | Project Management <i>Alexandra Dvo á ková</i> | Z,ZK | 5 | 2P+2C+14B | L | z |
| 614MPG | Modern Programming Approaches <i>Ondřej Smíšek</i> | KZ | 2 | 0P+2C+8B | L | z |
| 617GEDS | Geography of Transport Systems <i>Milan K íž</i> | KZ | 2 | 2P+0C+8B | L | z |
| 617MRZ | Managerial Decision Making <i>Veronika Fajfrová</i> | Z | 2 | 2P+0C+8B | L | z |
| 623DPSP | Traffic Law and Related Regulations <i>Milena Macková</i> | Z | 1 | 2P+0C+8B | L | z |

Characteristics of the courses of this group of Study Plan: Code=6S K LOG 19-20 P Name=6. sem. bak. KOMBI obor LOG 19-20 povinné p edm ty

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|--------|--|------|---|
| 617IVD | Integration of Public Transport Transport policy, planning, contracts, funding, clearing of traffic receipts, tariff systems, traffic and carriage controls, legal conditions within public transport. | ZK | 4 |
| 617RAC | Rationalization and Quality of Transport Transport system, transportation funding, cost calculation, efficiency, transport rationalization, quality management, standards and quality standardization, quality management systems, quality management in transport and logistics, marketing and transport quality, quality costs, quality measurement and monitoring, statistics in quality management, improving, focus on the customer. | Z,ZK | 7 |
| 617RPT | Project Management Basic terms of the project management, project management standards, organizational structures in the project management, projects in transport and transport infrastructure and their specifics, feasibility study and CBA, project evaluation, PPP projects. | Z,ZK | 5 |
| 614MPG | Modern Programming Approaches Principles of object oriented programming, polymorphism, references, memory allocation, inheritance, generic programming, operator overloading, STL library, object implementation of abstract data types, graph and graph algorithm implementation focused on logistic problems. | KZ | 2 |

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| 617GEDS | Geography of Transport Systems | KZ | 2 |
| Regional differentiation of the transport system. Sociogeographic regionalization and its relation to transport. Transport and local and regional development. Spatial interaction - theoretical and methodological framework. Mobility research - travel behavior, mode choice and the influence onto "modal-split." Modal competition. Practical use of transport-geographical analysis in transportation planning. | | | |
| 617MRZ | Managerial Decision Making | Z | 2 |
| The course is divided into two main sections. The first section deals with individual-level processes that influence managers' decisions. The second section considers collective (that is, group or organizational) forces that affect managers' decisions. | | | |
| 623DPSP | Traffic Law and Related Regulations | Z | 1 |
| Analysis of selected laws in transportation domain (e. g. Road Act, Road Transport Act, Civil Aviation Act, Railways Act, Inland Navigation Act), selected EU transport legislation. | | | |

Name of the block: Compulsory elective courses

Minimal number of credits of the block: 12

The role of the block: PV

Code of the group: PVP KOMBI 19-20

Name of the group: PVP pro bak .KOMBI 19-20 (4.LS+5.ZS+6.LS) pro LOG a LED obory

Requirement credits in the group: In this group you have to gain 12 credits

Requirement courses in the group: In this group you have to complete 3 courses

Credits in the group: 12

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) <i>Tutors, authors and guarantors (gar.)</i> | Completion | Credits | Scope | Semester | Role |
|---------|--|------------|---------|-------|----------|------|
| 621W1BC | Aviation safety and security <i>Slobodan Stoji</i> | KZ | 4 | 8B | L | PV |
| 615W1BO | Work Safety and Health Protection in Transportation <i>Petr Musil</i> | KZ | 4 | 8B | L | PV |
| 621W1BS | Unmanned aircraft systems 1 <i>Šárka Hulínská</i> | KZ | 4 | 8B | L | PV |
| 617W1EV | Public Sector Economy | KZ | 4 | 8B | Z | PV |
| 615W1EH | European Integration within Historical Context | KZ | 4 | 8B | Z | PV |
| 614W1HW | Computer Hardware | KZ | 4 | 8B | L | PV |
| 615W1HE | Work Hygiene and Ergonomics in Traffic <i>Petr Musil</i> | KZ | 4 | 8B | Z | PV |
| 617W1LL | Logistics of Passenger and Freight Air Transportation | KZ | 4 | 8B | L | PV |
| 617W1MD | Marketing in Transportation <i>Alexandra Dvořáková</i> | KZ | 4 | 8B | Z | PV |
| 621W1MP | Matlab for project-oriented study | KZ | 4 | 8B | Z | PV |
| 617W1OF | Personal Finance <i>Alexandra Dvořáková</i> | KZ | 4 | 8B | Z | PV |
| 617W1PM | Personnel Management <i>Stanislava Holíková</i> | KZ | 4 | 8B | L | PV |
| 614W1PZ | Advanced Data Processing in Spreadsheets <i>Jan Mejstřík</i> | KZ | 4 | 8B | Z | PV |
| 614W1PJ | C Programming Language | KZ | 4 | 8B | Z | PV |
| 616W1PV | Operation, Construction and Maintenance of Vehicles | KZ | 4 | 8B | L | PV |
| 621W1RZ | Human Resources Management | KZ | 4 | 8B | L | PV |
| 617W1ST | Titan Simulation <i>Alexandra Dvořáková</i> | KZ | 4 | 8B | L | PV |
| 617W1SL | Sociology of Human Resources <i>Stanislava Holíková</i> | KZ | 4 | 8B | Z | PV |
| 617W1SK | Urban and Regional Rail Transport Systems | KZ | 4 | 8B | L | PV |
| 621W1TH | Aircraft Technical Handling <i>Slobodan Stoji</i> | KZ | 4 | 8B | Z | PV |
| 614W1UP | Editing of Theses in MS Word | KZ | 4 | 8B | L | PV |

Characteristics of the courses of this group of Study Plan: Code=PVP KOMBI 19-20 Name=PVP pro bak .KOMBI 19-20 (4.LS+5.ZS+6.LS) pro LOG a LED obory

| | | | |
|---|---|----|---|
| 621W1BC | Aviation safety and security | KZ | 4 |
| History of safety and security development in aviation. Modern tools for safety and security management. Research and development of safe and secure systems. | | | |
| 615W1BO | Work Safety and Health Protection in Transportation | KZ | 4 |
| Fundamental legislative, definition of terms, risks and possible health damage, working conditions and health protection with focus on transportation. Health protection programmes, health insurance of home and foreign business trips, statistics, working practice. | | | |
| 621W1BS | Unmanned aircraft systems 1 | KZ | 4 |
| Unmanned Aviation Development. Aircraft design. Legislation in force in the Czech Republic. Planning and execution of the flight. Airspace division. Operational risks and operational procedures. Practical flights. | | | |

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|---|---|----|---|
| 617W1EV | Public Sector Economy | KZ | 4 |
| Economic and financial theory of public sector, public choice theory, externalities, decisions about public finance allocation, economic assessment of public projects (CBA, MCA, CEA), tax system of the CR, state budget, management of public projects and their economic efficiency assessment, way of elaboration of PPP projects, funding from EU funds, program HDM-4. | | | |
| 615W1EH | European Integration within Historical Context | KZ | 4 |
| Versailles system, formation of new states. Europe and the powers, League of Nations. European policy in the 1920s. Fascism, nazism, communism. Little Entente, its principles and goals. Europe after Hitler's getting to power, system of bilateral agreements. Decline of the LN. Rearrangement of powers during WWII. Cold war and its consequences for Europe. New quality of French-German relationship - a driving power of starting European integration. | | | |
| 614W1HW | Computer Hardware | KZ | 4 |
| Design combinational and sequential logical circuits and their implementation on FPGA, VHDL language. Computer architecture, structures of computer components - controller, ALU, memories, I/O subsystem, typical interfaces and buses (PCI Express, I2C, SPI, USB). | | | |
| 615W1HE | Work Hygiene and Ergonomics in Traffic | KZ | 4 |
| Basic knowledge of occupational hygiene and ergonomics, and their application in transport. Working environment factors, and the influence of these factors on health of workers. Creation and protection of working conditions that do not damage public health. Mutual links man-machine-environment. Adaptation of technology to possibilities and skills of man. Practical examples from the field of transportation; relevant legislative. | | | |
| 617W1LL | Logistics of Passenger and Freight Air Transportation | KZ | 4 |
| Logistics airline passenger and cargo. Aircraft and airport terminals for passenger and cargo transport. Airlines in terms of logistics systems. Aerial transport process passengers and air cargo. Information systems in air transport. Global distribution systems. | | | |
| 617W1MD | Marketing in Transportation | KZ | 4 |
| General principles of marketing applied to transport issues, marketing tools suitable for transport as a service, specifics of public passenger transport and the resulting differences in the application of marketing. | | | |
| 621W1MP | Matlab for project-oriented study | KZ | 4 |
| The subject's syllabus is focused on the problem-solving during bachelor's thesis preparation and it is based on students' requests. Individual exercises will be prepared according to particular examples, based on actual students' needs and suggestions. The subject will have a flexible form, which is expected to bring an improvement of students' Matlab skills. | | | |
| 617W1OF | Personal Finance | KZ | 4 |
| Personal finance (budget, financing of basic living needs), debt (loans and credits, payment instruments, interest and fees, debt trap), financing of housing (rent, mortgage, savings, consumer loans, refinancing), savings and investments (investment horizon, return, risk, investment strategy), insurance (insurance types, suitability and adequacy), securing the future (retirement savings and insurance). | | | |
| 617W1PM | Personnel Management | KZ | 4 |
| Human resources, work group, man as personality, planning, choice, evaluation and education of human resources, work adaptation, teamwork, intercultural communication. | | | |
| 614W1PZ | Advanced Data Processing in Spreadsheets | KZ | 4 |
| Students will be familiar with principles of working in a spreadsheet. Graphic layout of the table appearance, formatting of numbers, insertion of formulas and functions, including addressing, error detection. Working with large spreadsheets, filters, advanced filters, database functions. Pivot tables and charts, conditional formatting, solution finding, solver, macros, data analysis. Examples and questions from various companies and training. | | | |
| 614W1PJ | C Programming Language | KZ | 4 |
| C programming language. Preprocessor, basics of the C language (data types, syntax, commands), functions, pointers, dynamical memory allocation, string, files, structures and unions. Implementations of abstract data types (FIFO, LIFO, list), programming techniques (sorting, searching, recursion), using bitwise operators. | | | |
| 616W1PV | Operation, Construction and Maintenance of Vehicles | KZ | 4 |
| Methods of vehicle production. Vehicle maintenance. Vehicle diagnostics. Maintenance and repair plans. Engine maintenance and emission measurement. Transmission mechanism. General principles of engine diagnostics. | | | |
| 621W1RZ | Human Resources Management | KZ | 4 |
| The position of human resources in the organization and related disciplines field. Substance, importance and challenges of human resources management. Internal and external environment of human resource management. Human resource planning. Search, recruitment and selection of employees. Motivation, evaluation and remuneration of staff. Positioning, dismissal and redundancies of employees. Education of employees. Planning career management. | | | |
| 617W1ST | Titan Simulation | KZ | 4 |
| Titan is a management game simulating the business decisions. Lets 2-8 student groups to produce and compete in the market with the same product. Students set a price and determine the quantity and capacity of production, plan budgets for marketing, research and development. They become familiar with the consequences of their decisions by the form of financial corporate reports and they use this information for other business decisions. | | | |
| 617W1SL | Sociology of Human Resources | KZ | 4 |
| Human resources and their importance, work group as a special kind of social group, communication, personal management, modern management, human resources planning, culture of the organization. | | | |
| 617W1SK | Urban and Regional Rail Transport Systems | KZ | 4 |
| Factors affecting transport demand, modal-split, distribution of passenger flows on public regional transport lines. Optimization of line management, line networking. Creating and evaluation of the timetable. Vehicle circulation creation. Optimizing driver shifts and arranging them in turnus. Effects of barrier-free and public transport preferences. The role of marketing. | | | |
| 621W1TH | Aircraft Technical Handling | KZ | 4 |
| Aircraft towing and pushing tractors. GPU. Air conditioning and heating units. Aircraft fuel equipment. De-icing and anti-icing units. Loading and unloading units. Equipment for passengers onboarding and offboarding. Operational processes of aircraft technical handling and regulations. Modernization and technical progress. | | | |
| 614W1UP | Editing of Theses in MS Word | KZ | 4 |
| Students will be introduced to the principles of creating and editing large documents and basic typographic rules. They will properly apply styles, create tables of contents, lists of figures, tables, graphs, etc. Footnotes, captions, index. They practice corrections of finished documents. The goal is to prepare students for seamless editing dissertations and theses, so that they are able to concentrate mainly on writing a thesis. | | | |

Name of the block: Jazyky

Minimal number of credits of the block: 6

The role of the block: J

Code of the group: JZ 2 K (5.-6.SEM)

Name of the group: Jazyky KOMBI bak. pro 5. a 6. sem. (2.cizí jazyk) - pro B3710

Requirement credits in the group: In this group you have to gain 6 credits

Requirement courses in the group: In this group you have to complete 2 courses

Credits in the group: 6

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) <i>Tutors, authors and guarantors (gar.)</i> | Completion | Credits | Scope | Semester | Role |
|---------|--|------------|---------|----------|----------|------|
| 615JZ3F | Foreign Language - French 3 | Z | 3 | OP4C+10B | Z | J |
| 615JZ3I | Foreign Language - Italian 3 | Z | 3 | OP4C+10B | Z | J |
| 615JZ3N | Foreign Language - German 3 <i>René Skalický</i> | Z | 3 | OP4C+10B | Z | J |
| 615JZ3S | Foreign Language - Spanish 3 | Z | 3 | OP4C+10B | Z | J |
| 615JZ3R | Foreign Language - Russian 3 <i>Vilma Gottwaldová</i> | Z | 3 | OP4C+10B | Z | J |
| 615JZ4F | Foreign Language - French 4 | Z,ZK | 3 | OP4C+10B | L | J |
| 615JZ4I | Foreign Language - Italian 4 | Z,ZK | 3 | OP4C+10B | L | J |
| 615JZ4N | Foreign Language - German 4 <i>René Skalický</i> | Z,ZK | 3 | OP4C+10B | L | J |
| 615JZ4R | Foreign Language - Russian 4 <i>Vilma Gottwaldová</i> | Z,ZK | 3 | OP4C+10B | L | J |
| 615JZ4S | Foreign Language - Spanish 4 | Z,ZK | 3 | OP4C+10B | L | J |

Characteristics of the courses of this group of Study Plan: Code=JZ 2 K (5.-6.SEM) Name=Jazyky KOMBI bak. pro 5. a 6. sem. (2.cizí jazyk) - pro B3710

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|--|------------------------------|------|---|--|--|
| 615JZ3F | Foreign Language - French 3 | Z | 3 | | |
| Grammar and stylistics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language structure knowledge and perceptive and communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work with (professional) text and its features. Practice of oral and written presentation. | | | | | |
| 615JZ3I | Foreign Language - Italian 3 | Z | 3 | | |
| Grammar and stylistics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language structure knowledge and perceptive and communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work with (professional) text and its features. Practice of oral and written presentation. | | | | | |
| 615JZ3N | Foreign Language - German 3 | Z | 3 | | |
| Grammar and stylistics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language structure knowledge and perceptive and communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work with (professional) text and its features. Practice of oral and written presentation. | | | | | |
| 615JZ3S | Foreign Language - Spanish 3 | Z | 3 | | |
| Grammar and stylistics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language structure knowledge and perceptive and communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work with (professional) text and its features. Practice of oral and written presentation. | | | | | |
| 615JZ3R | Foreign Language - Russian 3 | Z | 3 | | |
| Grammar and stylistics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language structure knowledge and perceptive and communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work with (professional) text and its features. Practice of oral and written presentation. | | | | | |
| 615JZ4F | Foreign Language - French 4 | Z,ZK | 3 | | |
| Grammar and stylistics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language structure knowledge and perceptive and communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work with (professional) text and its features. Practice of oral and written presentation. | | | | | |
| 615JZ4I | Foreign Language - Italian 4 | Z,ZK | 3 | | |
| Grammar and stylistics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language structure knowledge and perceptive and communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work with (professional) text and its features. Practice of oral and written presentation. | | | | | |
| 615JZ4N | Foreign Language - German 4 | Z,ZK | 3 | | |
| Grammar and stylistics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language structure knowledge and perceptive and communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work with (professional) text and its features. Practice of oral and written presentation. | | | | | |
| 615JZ4R | Foreign Language - Russian 4 | Z,ZK | 3 | | |
| Grammar and stylistics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language structure knowledge and perceptive and communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work with (professional) text and its features. Practice of oral and written presentation. | | | | | |
| 615JZ4S | Foreign Language - Spanish 4 | Z,ZK | 3 | | |
| Grammar and stylistics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language structure knowledge and perceptive and communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work with (professional) text and its features. Practice of oral and written presentation. | | | | | |

List of courses of this pass:

| Code | Name of the course | Completion | Credits |
|---------|--|------------|---------|
| 611CAL1 | Calculus 1 Sequence of real numbers and its limit. Basic properties of mappings. Function of one real variable, its limit and derivative. Geometric properties of n-dimensional Eukclidean space and Cartesian coordinate system. Geometric meaning of the differential of functions several real variables, differential calculus of functions of several real variables. | Z,ZK | 7 |
| 611CAL2 | Calculus 2 Antiderivative, Newtonian integral, Riemannian integral of the function of one variable, improper Riemannian integral, Riemannian integral in R _n . Parametric description of regular k-dimensional surfaces in R _n , Riemannian integral over regular surfaces. Line and surface integrals of the second type, Stokes theorems, ordinary differential equations of the first order, linear differential equations with constant coefficients and its systems. | Z,ZK | 5 |
| 611FYZ | Physics Kinematics, particle dynamics, dynamics of particle systems and rigid body. Continuum mechanics, thermodynamics. | Z,ZK | 5 |
| 611GIE | Geometry Orthographic and oblique projections, linear perspective. Topographic surfaces and their orthogonal projection. Differential geometry of curves - parameterization, arc of the curve, torsion and curvature, Frenet's trihedron. Kinematics - a curve as a trajectory of the motion, the velocity and acceleration of a particle moving on a curved path. | KZ | 3 |
| 611LA | Linear Algebra Vector spaces (linear combinations, linear independence, dimension, basis, coordinates). Matrices and operations. Systems of linear equations and their solvability. Determinants and their applications. Scalar product. Similarity of matrices (eigenvalues and eigenvectors). Quadratic forms and their classification. | Z,ZK | 3 |
| 611LP | Linear Programming Formulation of the problem of linear programming, transcription of some practical problems to the linear programming problems. Simplex and convex polyedra. Simplex method, basic solutions, duality principle in linear programming, stability of solution of linear programming problem. Traffic problem. | KZ | 3 |
| 611MSP | Modeling of Systems and Processes Mathematical methods and algorithms as a basis for system analysis. Methods for modelling and evaluating the systems in continuous and discrete time domain. Laplace transform, z-transform, and the recursive algorithms in solution of differential and difference equations, as an instrument for system description. Practical use of technical computing environment (MATLAB). | Z,ZK | 4 |
| 611STAT | Statistics Definition of probability, random variable and its description, known distributions, random vector, function of random variable. Methods of point estimation. Testing of statistical hypothesis. Regression and correlation, linear regression, correlation coefficient, coefficient of determination, the general linear model, statistical inference in linear regression, analysis of variance, multiple regression, the use of matrices in regression. | Z,ZK | 4 |
| 612MDE | Transport Models and Transport Excesses Parameters of the traffic flow and methods for their measurement. Models of the traffic flow, communications load, line and urban systems. Theory of queues, shock waves. Quality of transport and its assessment. Statistical characteristics of transport. Transport excesses, their analysis, the causes, identify and minimize the consequences. Improving of transport safety and fluency. | Z,ZK | 3 |
| 612PPOK | Designing Roads, Highways and Motorways Definition, types, ownership, maintenance, management and categorization of roads and highways. Curve and transition curve. Sinuosity and standard speed. Route in rural areas. Range of vision for stopping and overtaking. Road body - shapes and proportions, bottom and superstructure. Drainage and components of roads. Safety device. Crossings, junctions, intersections. | KZ | 3 |
| 612ZTS | Railway Lines and Stations Rail transport. Railway track geometry parameters. Route layout of railway lines. Railway line construction - railway substructure and superstructure. Spatial layout of railway lines. Railway control systems in relation to infrastructure. Operating and carriage points. Railway lines net and category. Traction in rail transport. | Z,ZK | 4 |
| 612ZYDK | Introduction to Transportation Engineering Role of transportation in land-use planning. Basic terms in transportation engineering. Traffic survey and traffic prognosis. Introduction to topic of roads, public mass transport. Negative impacts of transportation to environment and safety. | Z,ZK | 3 |
| 614ASD | Algorithm and Data Structures Students will be familiarized with selected basic and derived data structures, algorithms, their properties and their design procedure. Students will analyze problems, propose theoretical solutions to the set task and the resulting algorithm write by means of flowcharts, practice in reading algorithms recorded by means of the flowchart and use the basics of Boolean algebra with forming the conditions for the algorithms. | KZ | 3 |
| 614DATS | Database Systems Basic concepts of database systems, conceptual model, relational data model, the principles of normal forms, relational database design, security and integrity of data, database queries, relational algebra, SQL language, client / server, multilayer architectures, distributed database systems. Access to data via the WWW. | KZ | 2 |
| 614DMG | Datamining Types of data sources and knowledge, data warehouses and OLAP technology for data mining, data preprocessing in the process of knowledge acquisition systems for data mining, mining characteristics of concepts (classes), mining association rules from relational db. and data warehousing, classification (decisions tree, Bayesian cob., using neural networks). Prediction. Cluster analysis. Mining in complex structured data, multimedia dbf., www. | KZ | 2 |
| 614KSP | Constructing with Computer Aid "CAD systems" term determination. CAD role in projecting system model. Existing CAD systems on Czech market. Project creation, basic common work rules in graphic applications and CA systems. Co-ordinated systems, CAD environment skill (basics of constructing, dimensioning, modifications, user interfaces, projecting possibilities, AutoCAD environment profiles, drawings with raster foundations). | KZ | 2 |
| 614MPG | Modern Programming Approaches Principles of object oriented programming, polymorphism, references, memory allocation, inheritance, generic programming, operator overloading, STL library, object implementation of abstract data types, graph and graph algorithm implementation focused on logistic problems. | KZ | 2 |
| 614PRG | Programming Algorithm development, methods of structured programming, high-level programming languages, basics of C programming languages (types, variables, conditions, cycles, arrays, functions), programming techniques, complexity. | KZ | 2 |
| 614W1HW | Computer Hardware Design combinational and sequential logical circuits and their implementation on FPGA, VHDL language. Computer architecture, structures of computer components - controller, ALU, memories, I/O subsystem, typical interfaces and buses (PCI Express, I2C, SPI, USB). | KZ | 4 |

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| 614W1PJ | C Programming Language C programming language. Preprocessor, basics of the C language (data types, syntax, commands), functions, pointers, dynamical memory allocation, string, files, structures and unions. Implementations of abstract data types (FIFO, LIFO, list), programming techniques (sorting, searching, recursion), using bitwise operators. | KZ | 4 |
| 614W1PZ | Advanced Data Processing in Spreadsheets Students will be familiar with principles of working in a spreadsheet. Graphic layout of the table appearance, formatting of numbers, insertion of formulas and functions, including addressing, error detection. Working with large spreadsheets, filters, advanced filters, database functions. Pivot tables and charts, conditional formatting, solution finding, solver, macros, data analysis. Examples and questions from various companies and training. | KZ | 4 |
| 614W1UP | Editing of Theses in MS Word Students will be introduced to the principles of creating and editing large documents and basic typographic rules. They will properly apply styles, create tables of contents, lists of figures, tables, graphs, etc. Footnotes, captions, index. They practice corrections of finished documents. The goal is to prepare students for seamless editing dissertations and theses, so that they are able to concentrate mainly on writing a thesis. | KZ | 4 |
| 615DPLG | Transportation Psychology Subject of psychology and its basic concepts. Information intake, decision-making and behaviour. Performance. Engineering psychology and vehicle construction. Psychological aspects of travel route and traffic conditions, accidents and traffic incidents. Selection and training of the staff. Work and leisure. Age as a factor in transport operation. | Z | 2 |
| 615JZ1A | Foreign Language - English 1 Grammatical structures and style. Selection of conversation topics relating to transportation sciences. Extending vocabulary, developing perceptive and communicative skills. Elementary stylistics forms. Oral and written presentation of original research. Academic text principles and reading comprehension. Principles of rhetoric. | Z | 3 |
| 615JZ2A | Foreign Language - English 2 Grammatical structures and style. Selection of conversation topics relating to transportation sciences. Extending vocabulary, developing perceptive and communicative skills. Elementary stylistics forms. Oral and written presentation of original research. Academic text principles and reading comprehension. Principles of rhetoric. | Z,ZK | 3 |
| 615JZ3F | Foreign Language - French 3 Grammar and stylistics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language structure knowledge and perceptive and communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work with (professional) text and its features. Practice of oral and written presentation. | Z | 3 |
| 615JZ3I | Foreign Language - Italian 3 Grammar and stylistics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language structure knowledge and perceptive and communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work with (professional) text and its features. Practice of oral and written presentation. | Z | 3 |
| 615JZ3N | Foreign Language - German 3 Grammar and stylistics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language structure knowledge and perceptive and communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work with (professional) text and its features. Practice of oral and written presentation. | Z | 3 |
| 615JZ3R | Foreign Language - Russian 3 Grammar and stylistics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language structure knowledge and perceptive and communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work with (professional) text and its features. Practice of oral and written presentation. | Z | 3 |
| 615JZ3S | Foreign Language - Spanish 3 Grammar and stylistics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language structure knowledge and perceptive and communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work with (professional) text and its features. Practice of oral and written presentation. | Z | 3 |
| 615JZ4F | Foreign Language - French 4 Grammar and stylistics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language structure knowledge and perceptive and communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work with (professional) text and its features. Practice of oral and written presentation. | Z,ZK | 3 |
| 615JZ4I | Foreign Language - Italian 4 Grammar and stylistics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language structure knowledge and perceptive and communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work with (professional) text and its features. Practice of oral and written presentation. | Z,ZK | 3 |
| 615JZ4N | Foreign Language - German 4 Grammar and stylistics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language structure knowledge and perceptive and communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work with (professional) text and its features. Practice of oral and written presentation. | Z,ZK | 3 |
| 615JZ4R | Foreign Language - Russian 4 Grammar and stylistics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language structure knowledge and perceptive and communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work with (professional) text and its features. Practice of oral and written presentation. | Z,ZK | 3 |
| 615JZ4S | Foreign Language - Spanish 4 Grammar and stylistics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language structure knowledge and perceptive and communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work with (professional) text and its features. Practice of oral and written presentation. | Z,ZK | 3 |
| 615W1BO | Work Safety and Health Protection in Transportation Fundamental legislative, definition of terms, risks and possible health damage, working conditions and health protection with focus on transportation. Health protection programmes, health insurance of home and foreign business trips, statistics, working practice. | KZ | 4 |
| 615W1EH | European Integration within Historical Context Versailles system, formation of new states. Europe and the powers, League of Nations. European policy in the 1920s. Fascism, nazism, communism. Little Entente, its principles and goals. Europe after Hitler's getting to power, system of bilateral agreements. Decline of the LN. Rearrangement of powers during WWII. Cold war and its consequences for Europe. New quality of French-German relationship - a driving power of starting European integration. | KZ | 4 |
| 615W1HE | Work Hygiene and Ergonomics in Traffic Basic knowledge of occupational hygiene and ergonomics, and their application in transport. Working environment factors, and the influence of these factors on health of workers. Creation and protection of working conditions that do not damage public health. Mutual links man-machine-environment. Adaptation of technology to possibilities and skills of man. Practical examples from the field of transportation; relevant legislative. | KZ | 4 |

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| 616DPO | Vehicle Technology | KZ | 2 |
| Vehicle. Functions, principles. Drive, vehicle construction. Road transport, safety, heavy duty vehicle desing, dynamics. Rail transport, safety, carriage design. Drive. Electric traction. Transshipment. Technological components of various modes of transport. Management and control of various means of transport. Safety. | | | |
| 616UDOP | Introduction into Vehicles | Z | 2 |
| Vehicles and transportation systems. Functionality and setup. Movement and drive principles. Engines and their characteristics. Rail, road, air and water transport. Alternative means of transport. Lifting equipment and conveyors. Legislation. | | | |
| 616W1PV | Operation, Construction and Maintenance of Vehicles | KZ | 4 |
| Methods of vehicle production. Vehicle maintenance. Vehicle diagnostics. Maintenance and repair plans. Engine maintenance and emission measurement. Transmission mechanism. General principles of engine diagnostics. | | | |
| 617EDPO | Economics of Transport Company | Z,ZK | 5 |
| Economy, marginal utility, marginal costs, function of supply and demand, market equilibrium, perfect competition and types of market arrangement. Transportation market, transport company, it's environment, balance sheet, costs, revenue, profit and maximalization of profit. Financial management in transport, business plan, taxation in transport. | | | |
| 617EMY | Management Science | Z | 2 |
| The introduction to economical-mathematical models before its application in concrete technical and economical cases. The basic mathematical methods to modelise economical situations. Several classes of problems are formulated and different methods used in qualitatively distinct real situations are introduced. The tasks of interpretation and application. | | | |
| 617FEU | Public Administration and Financing in Transport | Z,ZK | 4 |
| To get a basic overview of the EU regional policy and its practical execution on the level of the member state, specific ability to find and analyze information about the EU support programmes. | | | |
| 617GEDS | Geography of Transport Systems | KZ | 2 |
| Regional differentiation of the transport system. Sociogeographic regionalization and its relation to transport. Transport and local and regional development. Spatial interaction - theoretical and methodological framework. Mobility research - travel behavior, mode choice and the influence onto "modal-split." Modal competition. Practical use of transport-geographical analysis in transportation planning. | | | |
| 617IVD | Integration of Public Transport | ZK | 4 |
| Transport policy, planning, contracts, funding, clearing of traffic receipts, tariff systems, traffic and carriage controls, legal conditions within public transport. | | | |
| 617LGT | Logistics | Z,ZK | 6 |
| Logistics definition, basic concepts, store, warehouse, transport and handling equipment, logistics technology, logistics centers, information and intelligent logistics systems, logistics city. | | | |
| 617MAS | Small and Medium Enterprise | Z,ZK | 3 |
| Small and medium enterprise - plans, market, analysis, finance, management, decision making, survival, growth. | | | |
| 617MEKA | Methods of Economics Analysis | KZ | 2 |
| The techniques of economical analysis in the domain of analysis of dependencies, analysis and construction of time series and comparison of statistical values using differencies and indices. | | | |
| 617MRZ | Managerial Decision Making | Z | 2 |
| The course is divided into two main sections. The first section deals with individual-level processes that influence managers' decisions. The second section considers collective (that is, group or organizational) forces that affect managers' decisions. | | | |
| 617PAZ | Carriage and Forwarding | Z | 2 |
| Contracts of carriage and forwarding, waybills and documents; transport modes, multimodal transport, tariffs and prices in transport, rights and obligations of carriers, hauliers and forwarders, duty and tariff agreements, INCOTERMS, insurance in transport. | | | |
| 617RAC | Rationalization and Quality of Transport | Z,ZK | 7 |
| Transport system, transportation funding, cost calculation, efficiency, transport rationalization, quality management, standards and quality standardization, quality management systems, quality management in transport and logistics, marketing and transport quality, quality costs, quality measurement and monitoring, statistics in quality management, improving, focus on the customer. | | | |
| 617RPT | Project Management | Z,ZK | 5 |
| Basic terms of the project management, project management standards, organizational structures in the project management, projects in transport and transport infrastructure and their specifics, feasibility study and CBA, project evaluation, PPP projects. | | | |
| 617SFID | Public Administration and Financing in Transport | Z,ZK | 4 |
| Basic issues of transport and transport policy in the social context, environmental issues in transport, economical aspects of transport, public administration and financing of transport. | | | |
| 617TEDK | Transport Technology and Logistics | KZ | 4 |
| Basic terms in transport technology and logistics, particular steps of transport planning, line planning, timetabling, planning in pasanger and freight transport, organisation of traffic in each transport modus, technologic factors of the side of operator and client, organisation of city transport, logistic technologies and their application using various transport modus. | | | |
| 617TGA | Graph Theory and its Applications in Transport | Z,ZK | 4 |
| Basic terms of graph theory, paths in graphs, flows in networks, location problems, design problems on graphs, optimum routing, use of graphs in other scientific disciplines. | | | |
| 617TVD | Technology of Public Transport | Z,ZK | 5 |
| The course contents a detailed description of new knowledge and basic principles of hierarchical planning of public transport system accenting the general transport planning and quantified transport demand. The course would be oriented on multiple and multi-level optimisation of passenger public transport system. | | | |
| 617W1EV | Public Sector Economy | KZ | 4 |
| Economic and financial theory of public sector, public choice theory, externalites, decisions about public finance allocation, economic assesment of public projects (CBA, MCA, CEA), tax system of the CR, state budget, management of public projects a their economic efficiency assessment, way of elaboration of PPP projects, funding from EU funds, program HDM-4. | | | |
| 617W1LL | Logistics of Passenger and Freight Air Transportation | KZ | 4 |
| Logistics airline passenger and cargo. Aircraft and airport terminals for passenger and cargo transport. Airlines in terms of logistics systems. Aerial transport process passengers and air cargo. Information systems in air transport. Global distribution systems. | | | |
| 617W1MD | Marketing in Transportation | KZ | 4 |
| General principles of marketing applied to transport issues, marketing tools suitable for transport as a service, specifics of public passenger transport and the resulting differences in the application of marketing. | | | |
| 617W1OF | Personal Finance | KZ | 4 |
| Personal finance (budget, financing of basic living needs), debt (loans and credits, payment instruments, interest and fees, debt trap), financing of housing (rent, mortgage, savings, consumer loans, refinancing), savings and investments (investment horizon, return, risk, investment strategy), insurance (insurance types, suitability and adequacy), securing the future (retirement savings and insurance). | | | |
| 617W1PM | Personnel Management | KZ | 4 |
| Human sources, work group, man as personality, planning, choice, evaluation and education of human sources, work adaptation, teamwork, intercultural communication. | | | |

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| 617W1SK | Urban and Regional Rail Transport Systems | KZ | 4 |
| Factors affecting transport demand, modal-split, distribution of passenger flows on public regional transport lines. Optimization of line management, line networking. Creating and evaluation of the timetable. Vehicle circulation creation. Optimizing driver shifts and arranging them in turnus. Effects of barrier-free and public transport preferences. The role of marketing. | | | |
| 617W1SL | Sociology of Human Resources | KZ | 4 |
| Human resources and their importance, work group as a special kind of social group, communication, personal management, modern management, human resources planning, culture of the organization. | | | |
| 617W1ST | Titan Simulation | KZ | 4 |
| Titan is a management game simulating the business decisions. Lets 2-8 student groups to produce and compete in the market with the same product. Students set a price and determine the quantity and capacity of production, plan budgets for marketing, research and development. They become familiar with the consequences of their decisions by the form of financial corporate reports and they use this information for other business decisions. | | | |
| 618MTY | Materials Science and Engineering | Z,ZK | 3 |
| Basic course of materials science and engineering explains mechanical properties of structural materials based on their bonding forces and microstructure. However the main attention is paid to metals as the most important engineering materials, also other major classes of materials are presented, namely ceramics, polymers and composites. Attention is also paid to degradation processes in materials, to defectoscopy and to main mechanical tests. | | | |
| 618PZP | Elasticity and Strength | Z,ZK | 3 |
| Tension and compression. Bending of beam. Shear stress during bending of beam. Design and analysis of cross section of beam. Design of riveted, bolted and welded joint of structure. Analysis of deflection curve of beam. Torsion of circle cross section. Combined loading. Stability of compressed bar and buckling. Beam on elastic foundation. Strength analysis. | | | |
| 618SAT | Structural Analysis | Z,ZK | 4 |
| General system of forces in plane and space. Calculation of reactions of bodies and structures. Assessment of internal forces on statically determinate beams and simple girders. Principle of virtual work. Kinematic method for calculation of reactions of statically determinate systems. Determination of axial forces in truss constructions. Cross-sectional characteristics of planar shapes. Fiber polygons and chains. | | | |
| 618TED | Technical Documentation | KZ | 2 |
| Technical standards, international standardization, technical drawings, representation of technical objects, technical diagrams and charts, dimensional and geometrical accuracy, arrangement of drawing sheets. | | | |
| 620SYSA | Systems Analysis | Z,ZK | 5 |
| Introduction to system sciences, system viewpoint, terminology, typical system analysis tasks, system identification, system interface and interface tasks, processes, system behaviour and its analysis, strong functions and processes, genetic code, system identity, system architecture. Tools for system analysis - Petri nets, decision tables, algorithms for structural tasks. Soft and hard systems, methods for soft system analysis. | | | |
| 620UITS | Introduction to Intelligent Transport Systems | Z,ZK | 7 |
| Terminology and legislative framework telematics systems and their architecture. Telematics systems in practice and their operation. Fundamentals of information and telecommunication systems for ITS. Principles and technical support measurement of traffic data, localization and navigation. Practical work with traffic data. Real examples of possible applications of the principles of ITS. | | | |
| 621W1BC | Aviation safety and security | KZ | 4 |
| History of safety and security development in aviation. Modern tools for safety and security management. Research and development of safe and secure systems. | | | |
| 621W1BS | Unmanned aircraft systems 1 | KZ | 4 |
| Unmanned Aviation Development. Aircraft design. Legislation in force in the Czech Republic. Planning and execution of the flight. Airspace division. Operational risks and operational procedures. Practical flights. | | | |
| 621W1MP | Matlab for project-oriented study | KZ | 4 |
| The subject's syllabus is focused on the problem-solving during bachelor's thesis preparation and it is based on students' requests. Individual exercises will be prepared according to particular examples, based on actual students' needs and suggestions. The subject will have a flexible form, which is expected to bring an improvement of students' Matlab skills. | | | |
| 621W1RZ | Human Resources Management | KZ | 4 |
| The position of human resources in the organization and related disciplines file. Substance, importance and challenges of human resources management. Internal and external environment of human resource management. Human resource planning. Search, recruitment and selection of employees. Motivation, evaluation and remuneration of staff. Positioning, dismissal and redundancies of employees. Education of employees. Planning career management. | | | |
| 621W1TH | Aircraft Technical Handling | KZ | 4 |
| Aircraft towing and pushing tractors. GPU. Air conditioning and heating units. Aircraft fuel equipment. De-icing and anti-icing units. Loading and unloading units. Equipment for passengers onboarding and offboarding. Operational processes of aircraft technical handling and regulations. Modernization and technical progress. | | | |
| 621ZALD | Basics of Air Transport | KZ | 2 |
| History, definitions, terminology, basic rules. VFR/IFR. Basics of aerodynamics. Propulsion of aircraft. Aircraft design. Basics of navigation, radio navigation. Weight, balance, performance. Flight planning, optimization of speed and heights, minimum fuel. Limitations of operation, maintenance, service life of aircraft. Traffic management, ground handling, security. Air crew. Airlines and economics. Space technologies. | | | |
| 623DPSP | Traffic Law and Related Regulations | Z | 1 |
| Analysis of selected laws in transportation domain (e. g. Road Act, Road Transport Act, Civil Aviation Act, Railways Act, Inland Navigation Act), selected EU transport legislation. | | | |
| 623ZAP | Basics of Law | Z | 2 |
| Basic orientation in the Czech legal system. The course is primarily intended to provide students with orientation in fundamentals of the Czech Republic, legal system and in various forms of law, including adoption of the basic principles of European Community law. The course consists of selected chapters from the public and private law and European Community law. | | | |

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