Course: Fundamentals of Aerodynamics and Flight Mechanics			**Course designation:** OZR115
Semester:	**Lectures + exercises + seminar:**	**Total:**	**ECTS credits:**
3	3 + 2 + 0	75	6

Course objective:
Acquiring fundamental knowledge of aircraft aerodynamics and flight mechanics essential for training to work in the field of aircraft exploitation and maintenance.

Course contents:
Fundamentals of aerodynamics: equations of state, conserving mass and motion quantity, the first law of thermodynamics, equation of isentropic flow, energy equation, speed of sound, isentropic flow, supersonic flow, nozzles. Friction drag: laminar, turbulent and mixed boundary layers. Thin airfoil at a small angle of attack: geometry, aerodynamic coefficients, incompressible flow, asymmetric airfoil, airfoil database, impact of compressibility, superposition principle, critical Mach number, supercritical airfoil. Supersonic flow: Mach cone, aerodynamic coefficient of a panel. Finite wing: geometry, influence of tips, lift, induced drag, flaps and slats, control surfaces. Fuselage. Static stability, lift, pitching moment, steady flight, static stability, neutral point, mass centre limits, yawing moment, free elevator influence on the neutral point, joystick force.
Level flight: flight attitude, required force (power), available force (power), envelopes, range (propeller and jet power plants), flight duration (propeller and jet power plants). Climbing: BRC and BAC, climbing and fuel consumption time. Descending: range and angle. Level turn: turn radius and rate, load factor. Vertical turn: turn radius and rate, load factor. Take-off and landing: take-off procedure, rolling and take-off lengths, description of landing, descending, braking. Total energy: energy height, aircraft specific power, the scope of aircraft use. Aircraft performance testing: measurement accuracy, preparation and reporting, ground measurements (theodolitic and radar), on-board measurements (speed, angle of attack and temperature). Experimental setting of the polar star, BRC, lift stall. Take-off and landing tests.

Course: Air Navigation Regulations			**Course designation:** OZR120
Semester:	**Lectures + exercises + seminar:**	**Total:**	**ECTS credits:**
3	3 + 0 + 0	45	3

Course objective:
Acquisition of necessary knowledge of aircraft maintenance from the aspect of aviation safety.

Course contents:
Role of ICAO, ICAO Annexes. Role of EASA, EASA member states. Rules Part-145, Part-66, Part-147 and Part-M, their mutual relationship. Relationship with civil aviation authorities of EASA non-member states.
PART-66 – Licensed staff in aircraft maintenance – detailed comprehension of PART-66.
PART-145 – Authorised organisation for aircraft maintenance – detailed comprehension of PART-145.
EU-OPS – Commercial aircraft operations.
Air Operators Certificates (AOC), operator's responsibility, aircraft document. Aircraft certification, technical requirements CS 23/25/27/29, type certification, additional type certification.
Part-21 – authorised organisation for the design and manufacture of aircraft and parts.
Certificate of airworthiness, aircraft registration, noise certificate, aircraft weighing, license for the work of a radio station.
Part-M – detailed comprehension.
28.11.2003 L 315/106 Official Journal of the European Union EN Level A B1 B2 B3 C.
Maintenance schedule, inspections, MMEL, AD, SB, manufacturer's service information, modifications and repairs.
Maintenance documentation, MM, SRM, IPC.
Continuous airworthiness, test flight, ETOPS, AWO, CAT II/III.

Course: Non-Destructive Testing in Aviation			**Course designation:** OZR129
Semester:	**Lectures + exercises + seminar:**	**Total:**	**ECTS credits:**
3	2 + 1 + 0	45	3

Course objective:
Familiarisation with the methods of non-destructive testing and its application in aircraft maintenance.

Course contents:
Definition, aim and classification of methods of non-destructive testing, susceptibility and probability of fault detection. Physical bases, principles and procedures. Testing system, tools and safety measures. Interpretation of results and their reliability. Visual control. Penetration and permeability controls. Electromagnetic control methods. Ultrasonic control. Radiography. Replica method, transmitting microscopy. Acoustic methods. Thermal methods. Other methods. Comparison and selection of control methods. Types, properties and causes of the occurrence of anomalies and faults in forgings, castings, welded, soldered and glued joints. Underwater non-destructive tests. Non-destructive tests of non-metal and composite joints, measuring the thickness of metals and coatings, detecting corrosion. Elaboration of testing procedures.

Course: Aircraft Systems and Equipment II			**Course designation:** OZR123
Semester:	**Lectures + exercises + seminar:**	**Total:**	**ECTS credits:**
4	3 + 2 + 0	75	6

Course objective:

Acquisition of basic knowledge on aircraft systems architecture, their interconnection and the system of practical aircraft maintenance.
Course contents: Aircraft general classification. Aircraft basic parts. Aircraft systems division. Cabin and emergency equipment. ATA-31 Engine-indicating and crew-alerting systems. Aircraft fault reporting systems. Aircraft warning and alerting systems. ATA-24 Description of operation and parts of the aircraft electrical system. Types of aircraft electrical systems. Batteries and DC power system. External electrical connectors. Protection of DC and AC generators. Schematic representation of various types of aircraft electrical systems. ATA-33 Division of aircraft lights. Exterior lights. Interior lights and emergency lights. Lights for passenger entertainment. ATA-05 Aircraft mandatory markings. ATA-28 Parts of the fuel system and fuel. An example of modern aircraft fuel system. ATA-29 Hydraulic pumps and starters. Hydraulic system on a twin-engine aircraft. Hybrid hydraulic starters. ATA-32 Description of the main parts of the aircraft landing gear. Basic examples of electrical and hydraulic system for landing gear extension and retraction. System to control the position of the aircraft landing gear. Braking system, automatic and alternativebraking. ATA-36 Introduction to the parts and sources of aircraft pneumatic systems. ATA-21 Aircraft heating, ventilation and air conditioning. Description of the air cycling machine and the operation of the air conditioning system. Cabin pressurisation and description of the cabin pressure system. ATA-35 Oxygen for the crew and passengers. Passenger warning system in the event of cabin pressure loss at altitudes. ATA-27 Classification of flight controls according to the axis they act on. Flight controls hydraulic activation system. Flight control position indicating system. ATA-31 Division of ice and rain protection systems. Basic parts of the system and the overview of the wing deicing system with deicer boots and warm air. ATA-26 Description of the fire detection system. Overview of the fire extinguishing system for the aircraft engine, passenger cabin and cargo compartment. ATA-72 Division of engines according to the type of thrust generated and engine parts. Engine lubrication and air intake systems. Engine starting system. ATA-72 Fuel control system FADEC (full authority digital engine control). Overview of engine parameters in the cockpit and systems enabling engine operation within the technical engine maintenance system. Engine- indicating and crew-alerting systems. ATA-23 Types and description of aircraft communication systems. Systems for informing and entertaining passengers. Aircraft interphone, cabin and air-ground communication systems. Flight operations monitoring system. ATA-34 General division of navigation systems. Passive and active navigation systems. Aircraft monitoring and tracking systems. Systems for the protection of aircraft from accidents and manoeuvres beyond aircraft performance. Fly-by-wire principle and classic aircraft steering. Description of a flight management guidance system for automatic steering and a classic autopilot system.

Course: Aircraft Maintenance I			**Course designation:** OZR125
Semester:	**Lectures + exercises + seminar:**	**Total:**	**ECTS credits:**
5	3 + 2 + 0	75	6
Course objective: Gaining knowledge of maintenance scheduling, keeping records on maintenance and the implementation of particular maintenance procedures.			
Course contents: Introduction. Aircraft maintenance tasks and classification: maintenance of aircraft systems, maintenance of aircraft hang glider, workshop maintenance. Occupational safety measures. Maintenance resources. Internal structure of airline companies and maintenance organisations. Quality system, technical documents, facilities and working area, tools and equipment, maintenance staff. Maintenance technology. Aircraft maintenance programme. Process of ordinary aircraft maintenance. Process of extraordinary aircraft maintenance. Process of maintaining aircraft components. Maintenance of aircraft engines. Aircraft modifications. Aircraft structure repairs. Planning and preparation of works, conducting works on the aircraft, and their certification.			

Course: Aircraft Maintenance II			**Course designation:** OZR127
Semester:	**Lectures + exercises + seminar:**	**Total:**	**ECTS credits:**
6	3 + 2 + 0	75	6
Course objective: Gaining knowledge of the aircraft maintenance system and testing the aircraft systems operation.			
Course contents: Aircraft maintenance logistics. Material support, procurement, storage, transport of parts, maintenance contracts, information systems. Maintenance costs. Specific maintenance procedures. Aircraft weighing and balancing. Centre of gravity, calculation of position and balancing, use of appropriate documents. Preparing the aircraft for weighing. Aircraft weighing. Aircraft handling and storage. Aircraft towing and taxiing, relevant occupational safety measures. Aircraft lifting and securing, relevant occupational safety measures. Aircraft storage. Emptying and topping-up of fuel and liquids. Inspecting the aircraft after a lightning strike. Inspecting after hard landing and flying through turbulent conditions. Deicing and anti-icing procedures.			

Course: English I			**Course designation:** OZR105
Semester:	**Lectures + exercises + seminar:**	**Total:**	**ECTS credits:**
1	1 + 1 + 0	30	2
Course objective: Acquiring technical terminology and upgrading communication in English, with basic knowledge of vocabulary and grammar needed.			

Development of language skills, i.e. reading, listening, speaking and writing, in the professional context.
Course contents: Basic tenses and verb forms, passive, describing processes, comparison of adjectives, making plurals. Basic technical terminology: aerodynamic forces, aircraft parts, control surfaces, wing, engine, maintenance (types of maintenance), tools.

Course: English II			**Course designation:** OZR113
Semester:	**Lectures + exercises + seminar:**	**Total:**	**ECTS credits:**
2	1 + 1 + 0	30	2
Course objective: Acquiring technical terminology and upgrading communication in English, with basic knowledge of vocabulary and grammar needed. Development of language skills, i.e. reading, listening, speaking and writing, in the professional context. Smooth and precise exchange of information within contexts related to various aspects of aircraft maintenance, use of technical handbooks and dictionaries.			
Course contents: Language and grammar: tenses, expressing purpose, numbers and calculations, describing physical characteristics. Technical terminology: parts of an aircraft, basic control surfaces, materials and their characteristics, dimensions.			

Course: English III			**Course designation:** OZR121
Semester:	**Lectures + exercises + seminar:**	**Total:**	**ECTS credits:**
3	1 + 2 + 0	45	3
Course objective: Improvement of professional terminology, fast and precise exchange of information in a context related to different aspects of aircraft maintenance, use of professional and technical manuals and dictionaries			
Course contents: Revision of verb tenses and forms. Modals. Technical terminology: aircraft systems (oil, cooling, hydraulic, cabin air system), wing, landing gear, occupational health and safety. Maintenance and inspection plans.			

Course: Management and Entrepreneurship			**Course designation:** ZAJ125
Semester:	**Lectures + exercises + seminar:**	**Total:**	**ECTS credits:**
4	2 + 2 + 0	60	4
Course objective: Acquiring the knowledge and skills that will allow the students to successfully start and implement their own entrepreneurial and other projects, and to manage the business by the principles of economic and social responsibility as a future employee or entrepreneur.			
Course contents: Definition of management and basic management functions with a focus on planning (strategy, vision, mission, SWOT analysis, PESTLE analysis), human resources management, leadership and control (application of individual indices, absolute and relative change rates). Measures of business success. Corporate social responsibility. Entrepreneurship. Start-up companies. Marketing strategies (generic strategies) and competitive advantage. Entrepreneurial project (purpose, structure of the project and presentation).			