Transilvania University of Braşov, Romania

Study program: Aerospace Engineering

Faculty Technological Engineering and Industrial Management
Study period 4 years (bachelor)

1st Year 1 st semester

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Mathematics	AM	4	2	2	-	-

Course description (Syllabus): numeric series, derivates and differentials, extreme points, integrals, surface and volume integrals.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Descriptive geometry	GD	5	2	2	-	-

Course description (Syllabus): line and plan drawing, relative position of two planes, intersecting and parallel planes, methods applied in descriptive geometry; polyhedrons and rotation surfaces; bodies intersections.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Chemistry	CHI	3	2	-	1	-

Course description (Syllabus): principles of chemistry science, atom characteristics, physical and chemistry binding, chemical transformation and aggregation states of substances; water, electrolytes, metals, metals and alloys, corrosion; inorganic polymeric materials (glass and ceramics) and organic (polymers of polyaddition and polycondensation), composites.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Computer programming and programming languages 1	PCL1	3	1	-	2	-

Course description (Syllabus): Microsoft Word: working with page layout, page setup, inserting page numbers, headers and footers, date and time, pictures, objects, shapes, equations, symbols, etc.; adding text, editing text, finding and replacing text, formatting text and paragraph; working with tables and columns; Microsoft Excel: working with page layout; entering data, formatting data etc.; working with formulae and functions; sorting and filtering data (auto and advanced filter); working with charts (2D and 3D); Microsoft PowerPoint: creating and formatting slides in a presentation; supplying various effects (custom animation and transition effects) in a presentation.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Technical drawing and info- graphics 1	DTI1	5	2	-	3	-

Course description (Syllabus): multiview drawing (view, projection, etc.), views, sections and breaks representation; dimensioning in technical drawing; tolerances and precision; drawing and dimensioning: threads, grooved wedge and grooves, gears; assembly drawing.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Physics	FIZ	5	2	-	2	-

Course description (Syllabus): basic of classical mechanics, oscillatory movement; relativity theory; elastic wave; thermodynamics; electromagnetism; optics; quantic mechanics; atomic physics; solid physics; nuclear physics.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Integration and personal development	IDP	1	1	1	-	-

Course description (Syllabus): University Organization: university, faculty, department. Leading positions in university; Leading structures in university; students' regulations; students' rights; students' liabilities, Erasmus+ frame; Erasmus+ mobilities, academic writing.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Modern languages 1a Modern languages 1b Modern languages 1c Modern languages 1d	LM1a LM1b LM1c LM1d	3	1	1	-	-

Course description (Syllabus): verb: mood, tense and aspect; indicative mood – present; indicative mood – past; indicative mood – future; modals; noun: classification, gender, number, case; adjective: classification, comparison, special constructions, position.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Physical training 1	EDF1	1	-	1	-	-

Course description (Syllabus): practical skills training-methodical composition of complex aerobics; analytical exercises for upper limbs and scapular-humeral belt; exercises for trunk and abdominal muscles; individual actions specific basketball game in attack and defence; elementary collective tactical combinations in attack and defence in basketball: bilateral game.

2nd semester

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Material science and engineering	SIM	5	3	-	2	-

Course description (Syllabus): structure and properties of metallic materials; alloys theory, man type of equilibrium diagrams; Fe-C alloys; thermophysical and thermochemical treatments for steels; alloyed steels; non-ferrous alloys; extractive metallurgy; moulding, plastic processing; metals welding.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Linear algebra, analytical and differential geometry	ALGA	4	2	2	-	-

Course description (Syllabus): linear algebra: vector spaces and subspaces; Euclidian spaces; free vector; vector product; linear transformation in vector spaces; eigenvalues and eigenvectors; diagonalization; linear, bilinear and quadratic forms; analytic geometry: plan and lines in space; angles; cons; canonical form; quadrics. Differential geometry: plane curves; oscillate circle; tangent; normal; Frenet marker elements; surfaces (generalities; conics; cylindrical, etc.).

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Mechanics	MEC	5	2	3	-	-

Course description (Syllabus): Statics: material point; rigid; rigid systems; application in engineering. Kinematics: point; rigid; relative movement; application in engineering. Dynamics: theorems; rigid solids.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Technical drawing and info- graphics 2	DTI2	5	1	-	4	-

Course description (Syllabus): AutoCAD introduction; basic drawing elements: coordinates, functional keys, OSNAP mode; drawing commands: line, circle, arc, rectangle, point, ellipse, polygon, ray, Xline, Mline; entities selection, editing and properties; generating and editing text; hatching and dimensioning; polylines and spline curves; assembly.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Computer programming and programming languages 2	PCL2	5	2	-	2	-

Course description (Syllabus): introduction in VisualBasic; structure of VB program; objects and properties; code lines; control routines; modular programming; menus, file managing, data base managing, object oriented programming.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
General economics	ECG	3	1	1	-	-

Course description (Syllabus): demand, offer, market, concurrency; labour market, employment, unemployment, wages; monetary market, inflation, loan and interest; capital market; macroeconomics; international economic relations.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Modern languages 2a Modern languages 2b Modern languages 2c Modern languages 2d	LM2a LM2b LM2c LM2d	3	1	1	-	-

Course description (Syllabus) word order (in declarative/ interrogative/ imperative/ exclamatory sentences); sequence of tenses; reported speech; inversion; negation; complex sentences.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Physical training II	EDF2	1	-	1	-	-

Course description (Syllabus): Football: playing without ball; foot hitting; head hitting; strategies. Basketball: techniques; tactical offensive and defensive; contra-offensive; bilateral game.

2nd Year 1st semester

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Special mathematics	MS	4	2	2	-	-

Course description (Syllabus): first order differential equations; differential equations with constant coefficients; systems of differential equations; symmetrical systems; first order partial differential equations; complex functions; holomorphic functions; integral in complex; Cauchy theorem; power series; Taylor series; Fourier series; Laurent series; Laplace transform; operational methods.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Strength of materials 1	RM1	5	2	2	-	-

Course description (Syllabus): Fundamentals: mechanical properties of materials; external tensions and constrains; equilibrium equations; sectional stress: general aspects; differential dependents between forces and sectional

stresses; sectional stress diagrams; static and inertial momentum; axial stress; shear stress; bending; elasticity theory.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Mechanisms	MEC	6	3	-	2	-

Course description (Syllabus): general structure of mechanisms: joints; structural modelling of complex mechanisms; structural optimizing of mechanisms; kinematics and dynamics of: involute gears; planetary gear; linkage mechanisms; cam gear: kinematics.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Numerical methods in aircraft engineering	MNA	4	2	-	2	-

Course description (Syllabus): mathematical software: Matlab, Mathematica, Maple, Mathcad; introduction in Mathcad; Mathcad programming; vectors and matrixes; numeric solution of equations and equations system; optimizations: nonlinear, mono-objective and multi-objective; multi-attribute decision; interpolation; regression; Monte Carlo simulation method.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Fluid mechanics and hydraulic equipment	MFH	3	2	-	1	-

Course description (Syllabus): fluids physical properties; fundamental law of hydrostatics; fluid forces; fluid kinematics; fluid dynamics; hydraulic engines: pumps, actuators.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Electrotechnics and applied Electronics	EEA	5	2	-	2	-

Course description (Syllabus): electromagnetism; eletrokinetic; DC linear circuits; electrodynamics; AC linear circuits; electronic devices: diode; transistors; electric plants.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Modern languages 3a Modern languages 3b Modern languages 3c Modern languages 3d	LM3a LM3b LM3c LM3d	3	1	1	-	-

Course description (Syllabus): quadratic equations; simultaneous equations; indices and logarithms; geometry; trigonometry; functional notations. limits; differentiation; integration; simple harmonic motion; rotation of a rigid body; beyond Newton's law; fields: strength and forces, potential energy.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Physical training III	EDF3	1	-	1	-	-

Course description (Syllabus): Basic technical elements of the elective discipline. Regulations of practicing the selected sport

2nd semester

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Machine elements I	OM1	4	2	-	1	1

Course description (Syllabus): screw assemblies; shape assemblies (keys, studs, grooves, bolts, etc.); friction assemblies; elastic assemblies – springs; couplings.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Strength of materials II	RM2	4	2	1	1	-

Course description (Syllabus): bar bending deformations; curved bars; complex stress; energetic methods to determine the displacements of a linear-elastic system; statically undetermined systems; buckling of straight bars; dynamic stress; stress fatigue.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
3D Modelling	M3D	4	2	-	2	-

Course description (Syllabus): general aspects of working in AutoCAD 3D space; modelling in AutoCAD; 3D primitives; special commands for 3D modelling: Revolve, Extrude, Sweep, Loft; editing/modifying solids; 3D Surfaces; working with layouts, shop floor drawing; applications.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Fundamentals of aerospace engineering	IIA	4	3	1	2	-

Course description (Syllabus): aerospace engineering - definitions and concepts; aerospace engineer's competencies; aerospace Engineering Pioneers; ethics and responsibility in aerospace engineering; introduction to manufacturing processes; - basics regulations in aeronautics; aircraft classification; aircraft parts; airspace materials; technological aspects in airspace industry – manufacturing; technological aspects in airspace industry- assembly.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Thermotechnics and heat engines	TET	3	2	-	1	-

Course description (Syllabus): thermodynamics: first law of thermodynamics; ideal gas; second law of thermodynamics; energy and energy; thermodynamics and transformations of steam; heat engines: internal combustion engines; compressors; gas turbine plants; heat transfer.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Management	MAN	2	2	1	-	-

Course description (Syllabus): management functions; company concept; company environment; company attributes; types of companies; resources raised and use by a company; production management.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Internship (90 hours/ year)	PRAD	4				

Course description (Syllabus): moulding sectors; hot forming sectors; heat treatment; galvanic coating; welding technologies.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Modern languages 4a Modern languages 4b Modern languages 4c Modern languages 4d	LM4a LM4a LM4a LM4a	2	1	1	-	-

Course description (Syllabus): metals; measurement; design and function; energy, heat and work; control devices; pumps; air-conditioning systems; diesel engines; refrigeration systems; data communications; electric power systems; telecommunications; engineering design; engineering and the Earth's resources.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Physical training IV	EDF4	1	-	1	-	-

Course description (Syllabus): Basic technical elements of the elective discipline. Regulations of practicing the selected sport

3rd Year 1st semester

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Machine elements II	OM2	4	2	-	1	-

Course description (Syllabus): gears: calculus, forces; shafts; bearings; seals; belt gearing; motor speed control devices.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
General aviation technologies I	TGA1	6	2		2	1

Course description (Syllabus): - fundamentals of the theory of plasticity. the plasticity hypotheses. the basic laws of plastic deformation; the main materials employed in forming parts by cold-pressing; classification of the operations and equipment of cold-forming; cropping by shears; cropping with punching dies; blanking and piercing; blanking and piercing by cold precision shearing; cutting the material; bending parts of metallic materials..

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Fundamentals of aerodynamics	BA	4	2	1	1	

Course description (Syllabus): - Airfoil theory; Aerodynamic of bodies, Prandtl Glauert transformation; Kutta-Jukovski Theorem; Viscous effects, the boundary layer; Shock waves; Interferences.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Aviation regulations. Legislation.	RAL	3	1	1		

Course description (Syllabus): - Background on aviation regulation; Articles of the Convention (flight, landing at customs airports, air regulations, control aircraft, the aircraft documents); International Civil Aviation Organization (ICAO); Air Traffic Services; National regulations. Romanian Civil Aeronautical Regulations; Federal Aviation Administration; Joint Aviation Authorities; Aviation Safety Agency. Civil aircraft: Certifications required. Section Contents of FAR, JAR, BCAR.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Reliability and security of aviation	FSSA	5	2		2	

Course description (Syllabus): basic knowledge regarding the main issues of reliability, maintainability and industrial product and process availability; knowledge necessary to use the procedures on the statistical processing of experimental data in the reliability field.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Tolerances and dimensional control	TCD	5	2	-	2	-

Course description (Syllabus): mechanical instruments for measurement; optical instrument for measurement; limits and fits for cylindrical smooth parts; surface texture measurement; geometric dimensioning and tolerance; tolerances and fits for part threads; tolerances and fits for gear pairs; tolerances and fits for keys and splines; angle measurements; pneumatic gaging.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Data acquisition and distribution systems	SADD	4	2	-	2	-

Course description (Syllabus): general remarks related to data acquisition and distribution. Brief presentation of LabVIEW; virtual instruments; LabVIEW environment; controls and indicators; LabVIEW functions; using NI-USB 6009 device to acquire data from processes; data processing; applications.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Experimental aerodynamics	AEX	4	2	-	2	-

Course description (Syllabus): Static Pressure Measurements; Flow Direction Measurements; Pressure Transducers; Measured the aerodynamic forces

2nd semester

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Aircrafts mechanics	MA	2	2	-	-	-

Course description (Syllabus): Fundamental of flight performance; Airfoil geometry; Aerodynamic forces and moments on an airfoil; Important airfoil characteristics; Envelope of aircraft; Aircraft Weight and Balance; Aircraft control surfaces; Helicopter Performance ,Stability, and Control

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Aircrafts mechanics– Project	MA	2	-	-	-	2

Project description (Syllabus): Design of aircraft performance. Each student has a customized subject.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
General aviation technologies II	TGA2	4	2		1	1

Project description (Syllabus): general problems of manufacturing technology; manufacturing precision; quality of machined surface; design of manufacturing processes; optimization of technological processes; additions processing determination and intermediate technological dimension; determination of cutting regimes; synchronization of operations; about vibration of cutting processes; numerical control of technological processes..

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Fundamentals of aerospace propulsion	BPA	4	2	1	1	

Course description (Syllabus): classification of aircraft propulsion systems; Fundamentals of propulsion systems; Aircraft engine propulsive efficiency and thermal efficiency; aircraft engine types; thrust equation; inlet, compressor, combustor, turbine, nozzle..

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Quality assurance in aerospace	ACDA	3	1		1	1

Course description (Syllabus): Quality management principles; Quality assurance; Quality management system; Quality Management processes; Total quality management; Quality audit; ISO 9000: 2005

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Design of aerospace structures	CSA	4	2	2		

Course description (Syllabus): - aircraft structural loads; flight manoeuvres; wing design; wing calculus; flight controls; fuselage calculus; introduction to Finite Element Methods.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
CAD/ CAM Systems	CADM	4	2	-	1	-

Course description (Syllabus): Introduction in CAD/CAPP/CAM/CAE/PLM/RP; CAD/CAM systems the core of concurrent engineering; Computer aided design; Techniques of 3D modelling of the products; Computer aided manufacturing; CAD/CAPP/CAM integrated systems; Computer aided process planning; Basic of Reverse engineering technologies; Rapid prototyping systems.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Composite materials – technologies and applications	MCTA	4	2	-	2	1

Course description (Syllabus): introduction in composite materials; reinforcement for composite materials; matrix materials; sandwich structure; manufacturing technologies of products from composite materials (polymer matrix composites); applications..

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Internship (90 hours/year)	PRA3	4	-	-	-	-

Course description (Syllabus): static an dynamic testing of aircraft structures; maintenance of helicopters; composite materials; design using Catia; Finite Element Modelling with ANSYS; CNC-processing technology.

4th Year 1st semester

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Aircrafts and rockets aerodynamics	AAR	5	2	1	1	

Course description (Syllabus): Aircraft Characteristics; Forces and moments on an aircraft; Wing Pressure Distribution; Airfoil Pressures and Performance; Flight Envelope; Wing Design Parameters; Airfoil Analysis; Wings at High Angles of Attack; Lift Distributions and Performance; High-Lift Systems. Flap Geometry. Flap Aerodynamics; Leading Edge Devices; Rocket Principles, Rocket Parts, Types of Rockets, Propulsion System, Solid Rocket Engine, Liquid rocket; Rocket Thrust. General Thrust Equation; Forces on a Rocket Rocket Weight; Lift and Drag of rockets, Variation in Pressure, Centre of pressure, Lift Equation. Drag Equation; Drag Coefficient. Lift Coefficient.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Calculus and design of aeronautical structures	CPSA	3	2		1	

Course description (Syllabus): Analysis of laminated beams and plates; Stress Analysis and Design of Statically Determinate Beams; Stress Analysis and Design of Statically Determinate Plates; Stress Concentrations and Multiple Loads; Displacement Analysis and Design of Statically Determinate Trusses.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Calculus and design of aeronautical structures– Project	CPSAP	2				2

Course description (Syllabus): Calculus and design of aeronautical structures. Each student has a customized subject.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Technology of aircrafts structure	TSA	4	2		1	1

Course description (Syllabus); course objectives, general and basic concepts, definitions; classification of manufacturing processes for aircraft structures; assembly by riveting; assembly by screws and bolts; assembly by welding and brazing; assembly by bonding; others specific technologies; computer aided design of aerospace assembly jigs. .

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Fundamentals of aircraft hydraulics and pneumatics	BCHP	4	2		1	

Course description (Syllabus): Fundamentals of aircraft hydraulics and pneumatics

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Aircraft design	DA	5	2		1	1

Course description (Syllabus): preliminary design; mission specifications; performance sizing; airplane drag polar; weight and balance; design of cockpit; empennage sizing; design an airplane using AAA software.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Operating, repair and airport infrastructure	EIAE	5	2		1	1

Course description (Syllabus): Operating, repair and airport infrastructure.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Helicopters and helicopters systems	ESE	4	3		2	

Course description (Syllabus): introduction to the helicopter; helicopter aerodynamics; helicopter flight controls; helicopter equipments and systems.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Finite elements in aerospace engineering	EFIA	4	3		2	

Course description (Syllabus): Generalization of the finite element concepts; Galerkin weighted residual and variation approaches; Plane stress and plane strain; Mapped elements and numerical integration; Computer procedures for finite element analysis; Three-dimensional stress analysis.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Helicopters repair techniques	TRE	3	1	1		1

Course description (Syllabus): Maintenance Practices in Aviation; Structural Repair Manual; Wear and structural defects (corrosion parts, riveted joints loosening, faulty construction); Fatigue and fracture mechanics of components from structure of helicopters; Repair Manual of Helicopter; Repair procedures for components (gears, blades, engines, landing gear, flight instruments).

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Aerospace structures stability	SSA	3	1	1		1

Course description (Syllabus): Stresses, Strains, Material Properties, Plane Stress; Introduction to Structural Dynamics and Vibrations; Introduction to Structural Stability; Aircraft Structural Stability; Structural Optimization and Design of Wing Aircraft

2nd semester

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Aircraft assembly technology	TAMA	2	2			1

Course description (Syllabus): about the optimization of technological processes; technologies use to assembly of the aircrafts..

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Aircraft flight stability and dynamics	SDZ	3	2			2

Course description (Syllabus): static longitudinal stability and control stick-fixed; static lateral stability; dynamic of flight; equations of motion for o rigid airplane; longitudinal stability derivates; stability of steady flight.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Aeroelasticity and Structural Dynamics	ADS	3	2	1		1

Course description (Syllabus): static load deformation of aeronautical structures; aeroelastic divergence and distribution of the lift; dynamic phenomena; Flutter.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
On-board and air navigation equipments	EBNA	3	2	1	1	

Project description (Syllabus): - Flight Instruments, Pitot/Static Systems, Airspeed Indicator, Magnetic Compass, Gyroscopic Systems, Altimeter, Altimeter Errors, Attitude Indicators; Turn-and-Slip Indicator. Heading Indicators, Vertical Speed Indicator; Operations in the National Airspace System. Takeoffs and Landings Air Traffic; Control System Command Center. Flight Plans. Navigation Systems. Air Route Traffic Control Centers; Very-High Frequency Omnidirectional Range (VOR). Distance Measuring Equipment (DME); Global Positioning System (GPS). Instrument Landing Systems; Radar Navigation.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Non-Destructive Testing in Aerospace	MFCA	2	2		2	

Course description (Syllabus): basic knowledge regarding the main types of faults of aeronautical products that occur during manufacturing and use of aircrafts as well as the detection methods used; knowledge necessary to develop the nondestructive inspection/examination technologies for aeronautical products.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
High speed aerodynamics	AVM	2	2		2	

Course description (Syllabus): Laminar flow; Turbulent flow; Von Karman Pohlhausen method; Hypersonic Flight; Transonic flight; Rankine-Hugoniot Relations.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Maintenance and overhaul of helicopters and aircrafts	EIEA	3	2	1		

Course description (Syllabus): Maintenance Practices in Aviation. Preventive maintenance. Corrective maintenance. Planned maintenance; Maintenance Manual of Helicopter. Periodic Maintenance Inspections; Operational and Maintenance Practices; Continuous Airworthiness Maintenance. Inspection Programs and Maintenance; Engine Maintenance and Operation; Fuel System Maintenance and Operation; Maintenance Steering Group 3 (MSG-3).

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Computational aerolasticity	AC	3	2	1		

Course description (Syllabus): Linear Static Aeroelasticity; Dynamic Aeroelasticity; Fluid-Structure Interactions; Commercial Programs with Aeroelastic Analysis/Design Capabilities; Computational Aeroelasticity with CFD models

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Work on diploma project	API	4	-	-	-	6

Course description (Syllabus): students work individually on their diploma project. The project subject is fully customized (each student has his own subject) Work is carried on under the supervision of the mentor.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Internship for diploma project (60 hrs)	DPRD	4	-	-	-	6

Course description (Syllabus): students work individually on their diploma project. The project subject is fully customized (each student has his own subject) Work is carried on under the supervision of the mentor.