

Transilvania University of Braşov, Romania

Study program: Engineering and Management in Aviation

Faculty:	Technological Engineering and Industrial Management
Study period:	2 years (master)
Academic year structure:	2 semesters (14 weeks per semester)
Examination sessions (two):	winter session (January/February) summer session (June/July)
Study language	English

1st Year, 1st semester

Compulsory subjects

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Digital Marketing in Aviation	O1_DMA	4	1	-	1	1

Course description (Syllabus): Digital marketing environment and the necessity of shifting from traditional to digital marketing; Content of digital marketing strategies explaining the components of a digital marketing strategy in aviation; Process of developing a digital marketing strategy in aviation; Digital marketing channels: Website, Search engine optimization (SEO), Search engine marketing (SEM) and Pay-per-click (PPC), Social media marketing (SMM), Relationship based marketing (Affiliate marketing, Influencer marketing, Content marketing, E-mail marketing, Mobile marketing).

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Academic Integrity and Ethics	O2_AIE	2	1	1	-	-

Course description (Syllabus): The necessity of studying academic integrity and ethics. Academic deontology; Academic responsibility; The Charter of Transilvania University of Braşov (TUBv); The Regulations concerning Student Professional Activity at TUBv; Intellectual property. Copyright and related (neighboring) rights; Industrial Property; Patents; Registered Trademarks; Lack of academic integrity and ethics; Academic dishonesty; Academic fraud, academic corruption, paraphrasing and citing, plagiarism; Citation rules; Ethics in research and writing reports and dissertations.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Composite Materials Technology for Aeronautics	O3_CMTA	5	2	-	1	1

Course description (Syllabus): Types of composite materials; Fiber manufacturing technologies; Sandwich structures materials; Manufacturing technologies for parts made of polymer matrix composite; Manufacturing technologies for parts made of polymer matrix composite materials. Automated processes; Manufacturing technologies for parts made of metal matrix composite materials; Manufacturing technologies for parts made of ceramic matrix composite materials; Design of devices or molds for the manufacture of composite parts; Composite materials processing technologies; Manufacturing technologies for plastic and composite parts by additive manufacturing - working principles and software products; Intelligent composite materials and structures.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Risk Management	O4_RM	5	2	-	1	1

Course description (Syllabus): Introduction to risk management; The risk management process; Risk management tools and methods; Risk management in aviation safety; Operational risks in aviation (technical risks, human risks, environmental risks, security risks, organizational risks); Automation and associated risks; International regulations and standards; Case studies: risk management in practice.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Sustainable Design in Aviation	05_SDA	4	1	-	2	-

Course description (Syllabus): Introduction to sustainable design; Extending product lifecycles in aeronautics: strategies for durability, repair, upgrade, disassembly, and recycling; Green materials in aeronautics; Modular design in aerospace engineering; Light weighting and design strategies in aeronautics; Innovative production through additive manufacturing and biomimicry.

Non-compulsory subject

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Aircraft Manufacture and Maintenance	16_AMM	4	2	-	2	-

Course description (Syllabus): Introduction: Introduction to aviation and regulations; Materials used in the aeronautical industry; Manufacturing technologies; Aircraft structural design; 5. Propulsion Systems; Preventive maintenance; Corrective maintenance and repairs; Diagnostic techniques; Aeronautical electrical and electronic systems; Risk assessment and safety procedure implementation; Equipment calibration and certification; Testing and evaluation of structures; Transition to digital Maintenance (use of AI and Digital Twin).

1st Year, 2nd semester

Compulsory subjects

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Unmanned Aerial Systems	07_UAS	5	2	-	1	1

Course description (Syllabus): Introduction to unmanned aerial systems (UAS); Flight principles for UAS; Propulsion and power supply systems; Control and navigation systems; Communication systems and data transmission; Sensors and data collection systems; Mission planning and UAS operation; Applications in industry and research; Safety and reliability; Regulations and ethics; Technological challenges and limitations; Innovations and future trends.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Economics and Management in Aviation	08_EMA	4	1	2	-	-

Course description (Syllabus): Designing operational systems; Capacity planning; Process design and manufacturing layout; Production planning and control; Just-in-Time (JIT) and Lean Production Systems; Advantages and challenges in implementing Lean Systems; Performance evaluation and continuous improvement.

Optional package 1

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Quality Assurance in Aviation	10_QAA	4	1	-	2	-

Course description (Syllabus): IAQG – International Aerospace Quality Group presentation and the EN 9100 standards; ISO 9000 standards; EN 9100 standard: Quality Management Systems – requirements for Aviation, Space and Defense Organizations; EN 9110 standard: requirements for Aviation Maintenance Organizations; EN 9120 standard: Quality Management Systems - aerospace requirements for Stockist Distributors; EN 9145 standard: Advanced Product Quality

Planning (APQP) and Production Part Approval Process (PPAP); General principles for auditing the quality management system – ISO 19011.

Optional package 2

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Innovative Technologies in Aerospace Engineering	12_ITAE	5	2	-	2	-

Course description (Syllabus): General aspects of the production process and manufacturing processes; Briefly description of conventional machining processes; Numerical control of CNC turning machines; Unconventional manufacturing technologies; Brief description of conventional cold metal forming; Cold metal forming technologies used in the manufacture of aeronautical components; Flexible cold metal forming technologies;

Optional package 3

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Organizational Communication	15_OC	2	1	-	1	-

Course description (Syllabus): Communication: structure, process, and models; Presentation types and techniques in organizations. Rhetoric, argumentation, teaching; Organizational communication techniques by NLP; Perceptions in organizational communication ; Organizational hierarchy. Vertical and horizontal communication; Small group and team communication; Organizational leadership.

Non-compulsory subject

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Aircraft and Rotorcraft Flight Control	17_ARFC	4	2	-	2	-

Course description (Syllabus): Introduction in aerodynamics and airplane and rotorcraft performance; Stability and controllability; Static stability; Introduction in dynamics of flight; Longitudinal flight dynamics and feedback control; Lateral- directional flight dynamics and feedback control; Coupled lateral- longitudinal flight dynamics; Automatic flight control.