

COURSE OUTLINE

1. Data about the study programme

1.1 Higher education institution	Transilvania University of Brasov
1.2 Faculty	Technological Engineering and Industrial Management
1.3 Department	Engineering and Industrial Management
1.4 Field of study ¹⁾	Engineering and Management
1.5 Study level ²⁾	MA
1.6 Study programme/ Qualification	Engineering and Management in Aviation / Master

2. Data about the course

2.1 Name of course	Maintenance of Aviation Systems							
2.2 Course convenor	Sebastian POP							
2.3 Seminar/ laboratory/ project convenor	Sebastian POP							
2.4 Study year	II	2.5 Semester	4	2.6 Evaluation type	V	2.7 Course status	Content ³⁾	AC
							Attendance type ⁴⁾	EC

3. Total estimated time (hours of teaching activities per semester)

3.1 Number of hours per week	2	out of which: 3.2 lecture	1	3.3 seminar/ laboratory/ project	0/1/0
3.4 Total number of hours in the curriculum	28	out of which: 3.5 lecture	14	3.6 seminar/ laboratory/ project	0/14/0
Time allocation					hours
Study of textbooks, course support, bibliography and notes					10
Additional documentation in libraries, specialized electronic platforms, and field research					10
Preparation of seminars/ laboratories/ projects, homework, papers, portfolios, and essays					10
Tutorial					14
Examinations					3
Other activities.....					
3.7 Total number of hours of student activity		47			
3.8 Total number per semester		75			
3.9 Number of credits ⁵⁾		3			

4. Prerequisites (if applicable)

4.1 curriculum-related	• Not specified
4.2 competences-related	• Not specified

5. Conditions (if applicable)

5.1 for course development	<ul style="list-style-type: none"> The course should have a minimum of 10 participants to ensure interaction and productive discussions. The course will take place in a classroom equipped with audio-visual equipment (projector, screen, sound system) for presentations. Access to digital educational resources is also required. Participants will have access to course materials (textbooks, guides, presentations) and additional study resources. These can be provided in physical or digital format.
5.2 for seminar/ laboratory/	<ul style="list-style-type: none"> The laboratories will be conducted in specialized laboratories, equipped with the

project development	<p>equipment and tools necessary for practical activities, such as propulsion systems, electrical equipment and test materials.</p> <ul style="list-style-type: none"> • All participants must be trained on safety rules and good practices in the use of laboratory equipment, including the wearing of protective equipment, where applicable.
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6. Specific competences and learning outcomes

Professional competences	<p>Cp.5. Production control</p> <p>L.O.5.1. The graduate will be able to monitor the condition of equipment, machines, as well as ensure conditions for their proper functioning.</p> <p>L.O.5.3. The graduate will be able to provide an effective framework for carrying out inspections and testing for the purpose of continuous evaluation of the products/services and processes within the company.</p>
Transversal competences	<ul style="list-style-type: none"> - Ability to analyze complex situations, identify problems, and develop effective solutions. This involves using a logical and rational approach to evaluate information and make informed decisions. - Ability to communicate clearly and concisely, both verbally and in writing, with colleagues, supervisors, and clients. This includes presenting work results, collaborating in a team, and conveying technical information in an accessible manner. - Ability to work effectively in a team environment, contributing to the achievement of common goals. This involves respecting diversity of opinions, sharing knowledge, and supporting colleagues. - Flexibility in the face of change and a desire to continuously learn. This includes integrating new technologies and practices into maintenance work, as well as constantly updating knowledge and skills to remain competitive in the field.

7. Course objectives (resulting from the specific competences to be acquired)

7.1 General course objective	<ul style="list-style-type: none"> • "Aviation Systems Maintenance" aims to provide participants with a detailed understanding of the maintenance processes necessary to ensure the efficient and safe operation of aviation systems. It will consist of 7 theoretical modules and 7 practical laboratories, each lasting 2 hours.
7.2 Specific objectives	<ul style="list-style-type: none"> ■ Improve the theoretical and practical knowledge of participants in the field of aviation systems maintenance. ■ Develop skills in diagnosing and maintaining aviation equipment. ■ Create a solid foundation for meeting aviation safety and regulatory requirements.

8. Content

8.1 Course	Teaching methods	Number of hours	Remarks
1. Introduction to Aviation Systems Maintenance - Importance of Maintenance in Aviation - International and National Regulations	Lecture – debate, problematization	2	
2. Propulsion Systems and Their Maintenance - Types of Aviation Engines - Inspection and Maintenance Procedures	Lecture – debate, problematization	2	
3. Aviation Electrical and Electronic Systems - Electrical System Components - Fault Diagnosis and Repair	Lecture – debate, problematization		
4. Aircraft Structures and Materials - Types of Materials Used	Lecture – debate, problematization	2	

- Structural Inspection Techniques			
5. Navigation and Communication Systems - Operation of Navigation Systems - Maintenance of Communication Equipment	Lecture – debate, problematization	2	
6. Maintenance of auxiliary systems in aviation - Air conditioning and pressurization systems - Maintenance procedures	Lecture – debate, problematization	2	
7. Aircraft Maintenance Management - Maintenance Planning and Organization - Use of Management Software	Lecture – debate, problematization	2	
Bibliography 1. Kinnison, H. A., & Tabor, P. (2022). <i>*Aviation Maintenance Management*</i> . New York: McGraw-Hill Education. 2. Heiser, J. D., & Mark, F. (2023). <i>*Aircraft Maintenance and Repair*</i> . 8th Edition. London: Cengage Learning. 3. Wells, R. (2021). <i>*The Fundamentals of Aircraft Maintenance*</i> . Cambridge: Cambridge University Press. 4. DeCota, P. (2023). <i>*Understanding Aviation Maintenance: The Operating Environment and Regulatory Standards*</i> . Oxford: Elsevier. 5. Swortzel, K. (2022). <i>*Aviation Safety and Security: The Role of Maintenance and Inspection*</i> . Charlotte: Aviation Management Press.			
8.2 Seminar/ laboratory/ project	Teaching-learning methods	Number of hours	Remarks
1. Engine Inspection Lab - Engine Condition Check Exercises	Demonstration, modeling	2	
2. Laborator de diagnosticare electronică - Utilizarea echipamentelor pentru diagnosticarea sistemelor electrice	Demonstration, modeling	2	
3. Materials Testing Laboratory - Structural Integrity Assessment	Demonstration, modeling	2	
4. Navigation Systems Simulation Laboratory - Practical exercises in the use of navigation equipment	Demonstration, modeling	2	
5. Air Conditioning Maintenance Laboratory - Auxiliary Systems Maintenance Procedures	Demonstration, modeling	2	
6. Maintenance Planning Lab - Exercises in using management software	Demonstration, modeling	2	
7. Maintenance Safety Assessment Laboratory - Risk Analysis and Good Practices in Maintenance Safety	Demonstration, modeling	2	
Bibliography 1. Candrea, P. (2023). <i>*Hands-On Guide to Aviation Maintenance*</i> . New York: Avionics Publishing. 2. Smith, D. A. (2022). <i>*Practical Methods for Aircraft Inspection and Maintenance*</i> . London: Taylor & Francis Group. 3. Masco, M., & Jernigan, G. (2021). <i>*Aviation Electrical Systems: Hands-On Practices and Procedures*</i> . New York: Wiley. 4. Richards, L. M. (2023). <i>*Testing and Troubleshooting in Aviation Maintenance Labs*</i> . San Francisco: Pearson Education.			

9. Correlation of course content with the demands of the labour market (epistemic communities, professional associations, potential employers in the field of study)

The contents were developed in relation to the requirements of employers, so that the learning outcomes can be applied in the industrial environment and in research.

10. Evaluation

Activity type	10.1 Evaluation criteria	10.2 Evaluation methods	10.3 Percentage of the final grade
10.4 Course	Completeness and correctness of knowledge; Degree of assimilation of knowledge.	Written examination	70%
10.5 Seminar/ laboratory/ project	Logical coherence, fluency, expressiveness, argumentative force.	Elaboration of reports	30%
10.6 Minimal performance standard			
<ul style="list-style-type: none"> Students must attend a minimum of 80% of the lecture and laboratory hours to benefit from the knowledge and skills transmitted. Students must actively engage in discussions, group activities and practical exercises in the laboratories, demonstrating a constant interest in the learning process. Students must pass all intermediate assessments and the final exam, obtaining a minimum score of 60% to demonstrate that they have understood the material taught. 			

This course outline was certified in the Department Board meeting on 17/09/2024 and approved in the Faculty Board meeting on 26/09/2024.

Prof. Eng Tudor Ion DEACONESCU, PhD	Assoc.Prof. Eng Flavius SÂRBU, PhD
Dean	Head of Department
Phd. Pop Sebastian	Phd. Pop Sebastian
Course holder	Holder of seminar/ laboratory/ project

Note:

- 1) Field of study – select one of the following options: Bachelor / Master / Doctorat (to be filled in according to the forceful classification list for study programmes);
- 2) Study level – choose from among: Bachelor / Master / Doctorat;
- 3) Course status (content) – for the Bachelor level, select one of the following options: **FC** (fundamental course) / **DC** (course in the study domain)/ **SC** (speciality course)/ **CC** (complementary course); for the Master level, select one of the following options: **PC** (proficiency course)/ **SC** (synthesis course)/ **AC** (advanced course);
- 4) Course status (attendance type) – select one of the following options: **CPC** (compulsory course)/ **EC** (elective course)/ **NCPC** (non-compulsory course);
- 5) One credit is the equivalent of 25 study hours (teaching activities and individual study).