

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	Human Factor In Aviation							
2.2 Course convenor	Ioana Mădălina PETRE							
2.3 Seminar/ laboratory/ project convenor	Ioana Mădălina PETRE							
2.4 Study year	II	2.5 Semester	3	2.6 Evaluation type	E	2.7 Course status	Content ³⁾	PC
							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	1/0/0
3.4 Total number of hours in the curriculum	28	out of which: 3.5 lecture	14	3.6 seminar/ laboratory/ project	14/0/0
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	•

5. Conditions (if applicable)

5.1 for course development	• Projector, eLearning platform
5.2 for seminar/ laboratory/ project development	• Projector, eLearning platform

6. Specific competences and learning outcomes

Professional competences	
Transversal competences	<p>Ct.1 Finds solutions to problems L.O.1.3 The graduate will be able to identify creative solutions for mitigating conflicts that arise in the organizational and external environment in conditions of professional autonomy and independence, based on effective documentation, logical reasoning, evaluation and decision-making analysis.</p> <p>Ct.2 Practices results-oriented leadership towards colleagues. L.O.2.2. The graduate will be able to organize and coordinate the team, outlining clear tasks to all team members.</p> <p>Ct.3. Negotiates with stakeholders L.O.3.3. The graduate will be able to ensure a positive work climate at the workplace, favorable to stimulating the creativity of employees, so that they actively participate in achieving the organization's objectives.</p>

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

7.1 General course objective	<ul style="list-style-type: none"> Identifying how the human factor influences the safety and efficiency of aviation operations.
7.2 Specific objectives	<ul style="list-style-type: none"> Familiarize students with the critical role of human factors in aviation and the impact of human error on flight safety. Developing the ability to analyze human behavior under stress and reactions in emergency situations.

8. Content

Content			
8.1 Course	Teaching methods	Number of hours	Remarks
1. Introduction to the subject of the course The concept of human factors in aviation and its importance. History of Human Factors and the impact of human error on aviation safety.	Lecture, Exposure, Debate, problematization, interactive course, video projector, eLearning platform	2	
2. Human error in aviation: types of human error: perception error, processing error and action error; human error analysis models.		2	
3. Psychological and physiological factors influencing human performance		2	
4. Crew resource management (CRM) and team communication		2	
5. Cultural factors in aviation		2	
6. Environmental factors and the impact on the human factor		2	
7. Aviation Human Factors Safety Legislation and Policies		2	
Bibliography			
1. INTERNATIONAL CIVIL AVIATION ORGANIZATION, Human factors digest, no.1, disponibil la: https://news.mcaa.gov.mn/uploads/bookSubject/2022-10/633a6c23644e8.pdf			

2. Civil Aviation Authority, Fundamental Human Factors Concepts, disponibil la:
<https://www.caa.co.uk/publication/download/12250>

3. National Transportation Safety Board (NTSB). Accident Reports. Disponibile online:
<https://www.nts.gov/Pages/AviationQueryv2.aspx>

4. Federal Aviation Administration, Introduction to Safety Management Systems for Air Operator, 2015

5. Keebler, J., Human Factors in Aviation and Aerospace, 3rd edition, Editura Academic Pr Inc, 2022

6. EASA Regulatory Framework, <https://www.easa.europa.eu/en/domains/safety-management/accident-and-incident-investigation-support/legal-and-regulatory-framework>

7. Reason, J., Human Error, Cambridge University Press, 1990

8. Martinussen, M.; Hunter, D.R., Aviation psychology and human factors, Second edition, Taylor & Francis, CRC Press, 2017

8.2 Seminar/ laboratory/ project	Teaching-learning methods	Number of hours	Remarks
1. The role of the human factor and the importance of safety in aviation	Exposure, Debate, problematization, interactive course, Team work Case study Role play	2	
2. Types of human errors and analysis models		2	
3. Psychological and physiological factors influencing performance. Simulations and discussion of the impact of fatigue and stress on performance.		2	
4. Communication and decision-making in CRM (Crew Resource Management) Effective communication and coordination exercises.		2	
5. Cultural factors in aviation safety		2	
6. Ergonomics and technology in aviation. Reviewing cockpit design and identifying possible points of failure		2	
7. The impact of automation on the human factor. Debate on over-automation and the decline of human vigilance		2	

Bibliography

1. INTERNATIONAL CIVIL AVIATION ORGANIZATION, Human factors digest, no.1, disponibil la:
<https://news.mcaa.gov.mn/uploads/bookSubject/2022-10/633a6c23644e8.pdf>

2. Civil Aviation Authority, Fundamental Human Factors Concepts, disponibil la:
<https://www.caa.co.uk/publication/download/12250>

3. National Transportation Safety Board (NTSB). Accident Reports. Disponibile online:
<https://www.nts.gov/Pages/AviationQueryv2.aspx>

4. Federal Aviation Administration, Introduction to Safety Management Systems for Air Operator, 2015

5. Keebler, J., Human Factors in Aviation and Aerospace, 3rd edition, Editura Academic Pr Inc, 2022

6. EASA Regulatory Framework, <https://www.easa.europa.eu/en/domains/safety-management/accident-and-incident-investigation-support/legal-and-regulatory-framework>

7. Reason, J., Human Error, Cambridge University Press, 1990

8. Martinussen, M.; Hunter, D.R., Aviation psychology and human factors, Second edition, Taylor & Francis, CRC Press, 2017

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 have been developed in accordance to the employers' requirements, 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	Evaluation of theoretical knowledge	Single choice test implemented on the eLearning platform	80%
10.5 Seminar/ laboratory/ project	Solving the proposed tasks Activity and presence	Oral assessment	20%
10.6 Minimal performance standard			
<ul style="list-style-type: none"> • Description of the fundamental concepts of the human factor in aviation • Identifying the main psychological and physiological factors (fatigue, stress, attention) and explaining their impact on safety and performance. • Understanding the basics of ergonomics and automation, with an emphasis on their impact on the pilot and flight safety. • Correct use of language and terminology specific to the field of study. 			

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, Dean	Assoc.Prof. Eng Flavius SÂRBU, PhD Head of Department
Assoc.Prof. Eng Ioana Mădălina PETRE, PhD. Course holder	Assoc.Prof. Eng Ioana Mădălina PETRE, PhD. Holder of seminar

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).