

## SYLLABUS

<b>I. GENERAL DATA ON SUBJECT COURSE</b>	
CODE AND NAME OF SUBJECT (in Estonian and English)	SD.061 Inimtegur õhusõiduki hoolduses Human Factor in Aircraft Maintenance
ACADEMIC YEAR, TERM, FORM OF STUDIES	2019/2020 spring term, daytime study
CURRICULUM, SPECIALITY AND MODULE WHERE THE SUBJECT BELONGS TO	Aircraft Engineering and Maintenance curriculum (118817) Module of Basic Studies
SCOPE OF SUBJECT (ECTS)	2 ECTS
FORM OF CONTROL	Examination (graded)
WORKLOAD AND FORMAT OF STUDIES	Contact hours: 20h; independent work: 32h, practice: 0h
LANGUAGE OF INSTRUCTION	Estonian/English
ADDITIONAL INFORMATION (prerequisite subject courses, restrictions on participating in the course, etc)	-
lecturer	Jaanika Mõlter

<b>II. THE GOAL, LEARNING OUTCOMES AND DESCRIPTION OF SUBJECT COURSE</b>	
GOAL OF SUBJECT COURSE	Provide the students with the knowledge about human capabilities and their limitations, and raise the students' awareness of an individual's role in ensuring aviation safety.
LEARNING OUTCOMES	<ol style="list-style-type: none"> <li>1) Knows the key topics of the human factor;</li> <li>2) Is able to describe the whole human factor subtopics using simple words and examples;</li> <li>3) Uses technical terms;</li> <li>4) Knows the general theoretical aspects of the human factors;</li> <li>5) Is able to describe the whole human factors subject with drawing examples;</li> <li>6) knows and understands the figures and models used in human factors subject;</li> <li>7) follows the detailed procedures and can apply their knowledge into practice;</li> <li>8) knows the human performance and understands the need to take into account the human performance limitations;</li> <li>9) values the safety culture and takes the responsibility in team work to assure the aviation safety;</li> <li>10) knows the factors that affect the performance and knows how to keep the own good performance;</li> <li>11) is aware about work environment characteristics and is able to keep the performance with using the self-protecting aids;</li> <li>12) understands the characteristics of different tasks and is able to notice the hazards to avoid making mistakes;</li> <li>13) values the importance of communication and is able to pay attention to the correct information communication;</li> <li>14) understands the reasons of the human errors and is aware how to avoid the errors;</li> <li>15) is able to recognize the hazards in workplace and is aware how to deal with the emergencies.</li> </ol>

SHORT DESCRIPTION OF THE COURSE	Introduction. Human performance and their limitations. Social psychology. Factors affecting performance. Physical working environment. Tasks. Communication. Human errors. Hazards in workplaces.
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<b>III. GRADING SYSTEM AND CRITERIA</b>	
PREREQUISITES TO BE ALLOWED TO TAKE EXAMINATION/PRELIMINARY EXAMINATION	<ol style="list-style-type: none"> <li>1) analyse of an accident or incident report about the human factor causes, its electronic presentation to the forum and subsequent defending in front of the audience;</li> <li>2) preparing an essay on one of the topics, its electronic presentation to the forum;</li> <li>3) assessment of other student essay;</li> <li>4) an essay has to be electronically presented to the forum if there is more than two lectures missed, the topic has to be coordinated with the lecturer;</li> <li>5) participation in group-work.</li> </ol>
FORMATION OF EXAMINATION MARK/OF PRELIMINARY EXAM	<p>Written test – 100% of the grade. The examination contains:</p> <ol style="list-style-type: none"> <li>1) 20 multiple-choice questions and 25 minutes to complete the test;</li> <li>2) Essay - one open ended question and 20 minutes to answer the open ended question.</li> </ol>
OPPORTUNITIES FOR SETTLING ARREARS	<p>The student has an opportunity to retake the exam twice. If there is either the multi-choice part only or the essay only failed, then it is necessary to retake the multi-choice or essay part, as appropriate. The failed part of exam may be retaken if the consultation is conducted about failed topics.</p>
<b>GRADING SYSTEM</b>	<b>RESPECTIVE MARKING CRITERIA</b>
Written test	<p>The exam is considered a pass in the case when at least 51% of multiple-choice questions have been answered correctly, and when at least 51% of the open ended question has been dealt with correctly.</p> <p>In marking the answer to the open ended question the following is considered:</p> <ol style="list-style-type: none"> <li>1) the content is in accordance with the topic – 70% of the final grade;</li> <li>2) composition (introduction, analysis, summary, formatting) – 10% of the final grade;</li> <li>3) style: spelling/legibility – 10% of the final grade;</li> <li>4) use of speciality terminology/fixed phrases – 10% of the final grade.</li> </ol>

<b>List of subtopics of the subject course</b>	<b>Level of the acquired learning outcome</b>	<b>Volume of contact hours</b>
<b>1. Introduction</b>		
Necessity for taking account of human factors; Accidents resulting from human factors/human errors; “Murphy’s Law”.	Level 2	1 hour
<b>2. Human performance and their limits</b>		
Vision; Hearing; Information processing; Attention and perception; Memory. Claustrophobia and physical access	Level 2	3 hours
<b>3. Social psychology</b>		
Responsibility: personal and in group; Motivation and de-motivation; Peer pressure; Cultural characteristics; Team work; Management, supervision and management skills; “The Dirty dozen”.	Level 1	4 hours
<b>4. Factors bearing impact on capacity for work</b>		
Health and fitness; Stress related to a person’s home and work; Lack of time and deadlines for work; Workload: underload and overload; Sleep and fatigue, shift-work; Alcohol, medication and drug abuse	Level 2	3 hours
<b>5. Physical work environment</b>		
Noise and fumes; Illumination; Microclimate and temperature at the work place; Motion and vibration; Work environment.	Level 1	1 hour
<b>6. Tasks</b>		
Physical work; Repetitive work operations; Visual inspection; Complex systems.	Level 1	1 hour
<b>7. Communication</b>		
Intra- and inter-team relationship; Logging and recording the work; Keeping up to date, currency; Dissemination of information.	Level 2	3 hours
<b>8. Human errors</b>		
Models of errors and their theoretical background; Typical errors in maintenance; Consequences of errors (accidents); Avoiding and managing errors.	Level 2	2 hours
<b>9. Hazards at work places</b>		
Recognising and avoiding hazards; Action in emergency situations.	Level 2	1 hour
<b>Exam</b>		1 hour

<b>Independent work</b>		
6. week	2 hours	Sign up yourself in Moodle into the course and familiarize with the study environment and with the study materials. Read the study book chapter General.
7.-8. week	5 hours	1. Choose the essay theme for self-study from the syllabus and register it in Moodle wiki. 2. Choose an accident or incident report to analyze the human factors causes and register this in Moodle. Read the study book chapter Human performance and limitations.
9. week	1 hour	Choose an essay of other student to assess it and register this in Moodle wiki. Read the study book chapter Social psychology and “The Dirty dozen”.
10. week	2 hours	Present the essay in Moodle forum. Read the study book chapter Social psychology.
8. - 11. week	10 hours	Analyze the accident or incident report about the human factor causes according to the SHELL model or “The Dirty Dozen” and present the conclusions to the forum.
11. week	1 hour	Read the study book chapter Factors affecting performance.
12. week	2 hours	Present the accident analysis results and reasons of accident in front of the audience.
13. week	1 hour	Assess the essay of your fellow student and give the feedback in Moodle.
13. week	2 hours	Read the study book chapter Physical environment and Tasks.
14. week	1 hour	Read the study book chapter Communication.
15. week	2 hours	Read the study book chapter Human error.
15. week	1 hour	Read the study book chapter Hazards at workplace.
16. week	2 hours	Prepare for the exam

<b>V. LEARNING MATERIALS</b>
<p><u>Compulsory materials:</u></p> <ul style="list-style-type: none"> <li>• Human Factors in Aircraft Maintenance. (ERASMUS). [<a href="http://moodle.eava.ee/">http://moodle.eava.ee/</a>]</li> <li>• Integrated Training System. Human Factors for EASA Part-66, REV 1</li> </ul>
<p><u>Additional materials recommended:</u></p> <ul style="list-style-type: none"> <li>• Presentation ”M9: Human factors in aircraft maintenance”, Jaanika Mõlter;</li> <li>• Safety Regulation Group. Cap 715. An Introduction to Aircraft Maintenance Engineering Human Factor for JAR 66. 2002 [<a href="http://www.caa.co.uk">www.caa.co.uk</a>]</li> <li>• Safety Regulation Group. Cap 716. Aviation Maintenance Human Factors (EASA Part 145). 2003. [<a href="http://www.caa.co.uk">www.caa.co.uk</a>]</li> <li>• Safety Regulation Group. Cap 718. Human Factors in Aircraft Maintenance and Inspection. 2002. [<a href="http://www.caa.co.uk">www.caa.co.uk</a>] (ICAO, Digest No 12)</li> <li>• Safety Regulation Group. Cap 719. Fundamental Human Factors Concepts. 2002. [<a href="http://www.caa.co.uk">www.caa.co.uk</a>] (ICAO, Digest No 1)</li> <li>• J. Reason, A. Hobbs. Managing Maintenance Error. A Practical Guide. Ashgate. 2003, lk 1-183.</li> </ul>