



<p>Title of module: “Human factors in aviation sector” Programme: “Flight safety and airworthiness” Level: “Masters” – EQF Level 7 ECTS value: 4 credits</p>	
<p>Module summary</p>	<p>In modern aviation, human factors play a dominant role in part in order to design and manage safe machines and effective management systems as well as being a major contributing factor in almost all aircraft accidents, identified as a causal factor in three out of every four incidents.</p> <p>As a discipline, the study of human factors is seen as increasingly important, playing a critical role in contributing positively or negatively to the levels of aviation safety. Students therefore need to gain an understanding of what Human Factors are, and how aviation operations can be managed effectively, with due recognition of the impact of Human Factors, so as to create a safe and just operating environment.</p> <p>The aim of this module is to provide students with knowledge and understanding of the factors that influence human performance, allowing them to apply tools and methods for the prevention of errors in aviation through lectures and seminars and teaches them to apply this knowledge using practical case studies and problem solving exercises using real data from the field of flight safety management systems.</p>
<p>Relationship of module to other modules</p>	<p>The module «Human factors in aviation safety» is a compulsory part of the masters programme, studied after the module “Introduction to the aviation business” and “Legislation and regulation in the aviation sector”.</p> <p>Pre-requisites: Entry to the module is accepted providing the general requisites for entry to the full programme are met.</p> <p>Co-requisites: The module requires at least a basic understanding of the aviation business and management systems in the aviation sector and should be studied after these two modules.</p>
<p>Module aims</p>	<p>The aim of this module is to provide students with knowledge and understanding of the factors that influence human performance, allowing them to apply tools and methods for the effective management of teams, the regulation of stress and fatigue and prevention of errors in aviation within the context of increasing automation.</p>
<p>Intended learning outcomes</p>	<p>On successful completion of the module, students will be able to:</p> <ol style="list-style-type: none"> 1: understand the history, theories and main conceptions of human factors in aviation, including the effects of fatigue, stress and individual differences; 2: demonstrate the ability to apply tools and methods for error prediction and measurement in aspects of aviation safety such as crew resource management, human-computer interaction and automation, design, maintenance in order to develop innovative solutions to complex problems; 3: demonstrate the ability to effectively communicate, including during training and simulation and in the context of a “just” culture measures needed for the effective management of flight safety.
<p>Short description of curriculum content</p>	<p>Introduction to human factors in aviation: History of human factors in relation to aviation, their influence on safety and efficiency, models for analyzing human factors including SHEL, James Reason, HFACS;</p>

	<p>Ergonomics in flight safety: User centred design and understanding user tasks, human information processing, situation awareness, mental workload and stress;</p> <p>Team working in a “Just” culture: Team formation and management, leadership, problem solving and overcoming conflict, communications and a “Just” culture.</p> <p>Error prediction Taxonomies of error, tools and methods for error prediction and measurement, practical management of human errors including Hierarchical Task Analysis and SHERPA, workload and fatigue;</p> <p>Managing risk: Risk identification and evaluation using the bow tie analysis, CRM and decision making.</p> <p>Human factors and automation Questions of automation, the human – machine interface, automation and automation surprise, how data is handled, flight path management.</p> <p>Human factors and safety management Human factors and human centred design, human factors and maintenance, human error management and the use of safety tools such as MEDA and HFACS.</p>														
<p>Teaching and learning strategy</p>	<p>The module is delivered using a combination of lectures, seminars and guest presentations to cover the main elements of the curriculum in a week-long block followed by guided reading and study, supplemented by seminar-workgroups. Emphasis is placed on using actual case studies and information/data from the aviation sector using the databases and materials from the Flight safety portal.</p> <p>Teaching notes, webinars, reading materials, data-bases for problem solving and other supplementary materials will be available on the Flight safety portal.</p> <p>Students will be expected to spend a total of 144 hours on the module including independent study. As a guide this may involve:</p> <table border="1"> <tr> <td rowspan="3">Scheduled learning and teaching</td> <td>Lectures</td> <td>14 hours</td> </tr> <tr> <td>Case studies and practical tasks</td> <td>30 hours</td> </tr> <tr> <td>Webinars/tutorials</td> <td>14 hours</td> </tr> <tr> <td rowspan="2">Guided independent study</td> <td>Guided reading and study</td> <td>30 hours</td> </tr> <tr> <td>Problem solving exercises</td> <td>56 hours</td> </tr> </table>			Scheduled learning and teaching	Lectures	14 hours	Case studies and practical tasks	30 hours	Webinars/tutorials	14 hours	Guided independent study	Guided reading and study	30 hours	Problem solving exercises	56 hours
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<p>Assessment strategy</p>	<p>Knowledge acquired during lectures will be assessed using short tests at session end. Two practical tasks implemented by individuals will be assessed based on written submissions. At the end of the course, the student will be assessed based on a formal presentation of their results of a problem solving exercise during which the results achieved and the transversal skills utilized during the project are assessed.</p> <p>Feedback during the module given through group discussion, workshop and tutorial sessions as well as actual assessments to enable the students to develop an awareness of their rate and level of progress, their strengths and weaknesses in the subject area and support students in preparing for their final assessments.</p>														
<p>Map of learning outcomes to assessment strategy</p>	<p>Learning Outcome</p>	<p>Assessment strategy</p>	<p>Percentage weighting</p>												
	<p>1: understand the history, theories and main conceptions of human factors in aviation, including the effects of fatigue, stress and individual differences;</p>	<p>Results of tests after lectures</p>	<p>10%</p>												

		First coursework – 4000 words	20%
	2: demonstrate the ability to apply tools and methods for error prediction and measurement in aspects of aviation safety such as crew resource management, human-computer interaction and automation, design, maintenance in order to develop innovative solutions to complex problems;	Second coursework – 4000 words	30%
	3: demonstrate the ability to effectively communicate, including during training and simulation and in the context of a “just” culture measures needed for the effective management of flight safety.	Formal presentation of their results of a problem solving exercise.	40%
Achieving a pass requires that at least 50% is achieved in each category and overall 60%.			
Bibliography	Core texts: To be defined		
	Recommended reading: Materials on Flight safety portal.		