《航空安全与人为因素》课程教学大纲

<table>
<tr><td colspan="6">课程基本信息（Course Information）</td></tr>
<tr><td>课程代码
（Course Code）</td><td>AV408</td><td>学时
（Credit Hours）</td><td>34</td><td>学分
（Credits）</td><td>2</td></tr>
<tr><td rowspan="2">课程名称
（Course Name）</td><td colspan="5">（中文）航空安全与人为因素</td></tr>
<tr><td colspan="5">（英文）Aviation Safety and Human Factors</td></tr>
<tr><td>课程属性
(Course Type)</td><td colspan="5">本科专业课</td></tr>
<tr><td>开课院系
（School）</td><td colspan="2">（英文）Aeronautics and Astronautics</td><td>开课学期
（Term）</td><td colspan="2">（英文）Autumn</td></tr>
<tr><td>先修课程
（Prerequisite course）</td><td colspan="5">（英文）Introduction to Aircraft design, College Mathematics</td></tr>
<tr><td>授课教师
（Instructors）</td><td colspan="5">（英文）Professor Shan Fu</td></tr>
<tr><td>课程简介（Description）
300-500 字</td><td colspan="5">
<h2>Scope of the course</h2>
The course explains what the role of Human Factors is and how it will improve the safety in aviation.

Human error has been documented as a primary contributor to more than 70% of commercial airplane hull-loss accidents. While typically associated with flight operations, human error has also recently become a major concern in maintenance practices and air traffic management.

Human factors involves:
★ gathering information about human abilities, limitations, and other characteristics
★ applying it to tools, machines, systems, tasks, jobs, and environments
to produce safe, comfortable, and effective human use.

<h2>Learning Objectives:</h2>
★ Understand how human factors concepts relate to engineering design.
★ Apply human factors methods, including designing, running and analyzing results from a human factors experiment.
★ Understand and apply the basic concepts and principles of cognitive systems and information presentation.
★ Identify the nature and sources of human error.
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Learning and Teaching Philosophy:

This course provides an overview of human factors issues as they affect aviation as a whole. After an introduction to human factors and a basic grounding in human performance concepts, the course takes a lifecycle approach, examining human factors issues in design, operation, maintenance, and management. Many of the concepts discussed throughout the course are actually applicable to industry generally, but the examples drawn will come primarily aviation and space transport. The main focus of the course is on commercial, rather than private, transportation.

This course aims to provide an academic environment in which students are actively engaged in the learning process. The course aims to be interesting, challenging and enjoyable. Activities are linked to both research and scholarship, and the real world, and allow students to reflect on how system safety issues affect them and others in the aviation industry. Student diversity in terms of experiences and learning styles is valued. A supportive environment is provided but there is an expectation that students will take responsibility for their own learning and also learn co-operatively with their peers. Student assessment is designed to reflect the learning outcomes, and meaningful and timely feedback will be provided on coursework.

课程教学大纲（course syllabus）

*学习目标(Learning Outcomes)

After completing the course, students should:

1. Understand how human factors concepts relate to engineering design.
2. Apply human factors methods, including designing, running and analyzing results from a human factors experiment.
3. Understand and apply the basic concepts and principles of cognitive systems and information presentation.
4. Identify the nature and sources of human error.

*教学内容、进度安排及要求

(Class Schedule & Requirements)

教学内容 topics	学时 Credit hours	教学方式 Teaching methodology	作业及要求 tasks	基本要求 Intended learning outcomes	考查方式 Assessment methods
Introduction	4	Taught module		a)Complex system b)System engineering c)System safety	

	Pilot Performance	8	Taught module		a) The human senses in flight b)Information Processing c)Human workload in Aviation d) Group interaction and flight crew performance e) Flight training and simulation f) Human error in aviation operation g) Aircrew fatigue and circadian rhythmicity	
	Human Factors in Aircraft Design	8	Taught module		a) Pilot control b) Aviation displays c) Cockpit automation d) Software interface for aviation system e)Cockpit-Crew system design and integration	
	Airplane and System	6	Taught module		a) Airline Pilot's perspectives b) General Aviation c)Helicopter human factors	

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<tr><td></td><td></td><td></td><td></td><td>d) Air traffic control</td><td></td></tr>
<tr><td>Experiment</td><td>10</td><td>Lab</td><td></td><td>Basic Experiments</td><td></td></tr>
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<tr><td>考核方式
(Assessment methods and Grading)</td><td>The approach to the assessment of the course closely follows the university regulations.

At all times assessment is intended to form a component of the learning process and assignments are designed to encourage students to apply what you learn to engineering practices. Assignments will be assessed on the basis of how you apply subject material to gaining new insight reasoning of applications. Written comments will accompany your return assignments and exercises and should provide useful feedback. The formal final assessment will be taken place in a course research report.

Criteria for Assessment
Unless otherwise specified, the following criteria will be applied in assessing your written work:
1. Evidence of understanding of the legal concepts, theories and ideas developed in the subject;
2. Ability to apply these concepts to situations from your own experience;
3. Capacity to structure an exercise or assignment logically and limit it to the length required;
4. Degree to which the material submitted for assessment addresses the specified or negotiated assignment requirements.
Human</td></tr>
<tr><td>教材或参考资料
(Textbooks & Other Reading Materials)</td><td>1. Aviation Psychology and Human Factors, M. Martinussen and D. R. Hunter, CRC press
2. Human Factors for Civil Flight Deck Design, Don Harris, Ashgate</td></tr>
<tr><td>备注
（Notes）</td><td>（英文）</td></tr>
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