

## AT136 : Human Factors in Aviation

### General Information

Author:	<ul style="list-style-type: none"><li>Curtis G Potter</li></ul>
Course Code (CB01) :	AT136
Course Title (CB02) :	Human Factors in Aviation
Department:	AT
Proposal Start:	Fall 2024
TOP Code (CB03) :	(3020.00) Aviation and Airport Management and Services
CIP Code:	(49.0104) Aviation/Airway Management and Operations.
SAM Code (CB09) :	Clearly Occupational
Distance Education Approved:	No
Will this course be taught asynchronously?:	No
Course Control Number (CB00) :	CCC000578731
Curriculum Committee Approval Date:	05/22/2024
Board of Trustees Approval Date:	07/16/2024
Last Cyclical Review Date:	05/22/2024
Course Description and Course Note:	AT 136 is designed to acquaint current and prospective pilots and flight crew with an overview of human factors and aviation psychology. The influence of psychological and physiological factors on aviation safety, and on the aviation professional's personal and occupational life, is examined. Topics include human error; attention, cognition and perception; communications; risk management; aeronautical decision making (ADM); multicultural and diversity factors; CRM (Crew Resource Management group dynamics); attitudes and persuasion; motivation and leadership; aircraft accident analysis; training (learning & regression); conformity and boredom; flight physiology; stress and fatigue; displays and flight deck design; automation; and applications in space technology.
Justification:	Mandatory Revision
Academic Career:	<ul style="list-style-type: none"><li>Credit</li></ul>
Mode of Delivery:	
Author:	Curtis G Potter
Course Family:	

### Academic Senate Discipline

Primary Discipline:	<ul style="list-style-type: none"><li>Aviation (Flight, navigation, ground school, air traffic control)</li></ul>
Alternate Discipline:	<ul style="list-style-type: none"><li>Flight Attendant Training</li></ul>
Alternate Discipline:	No value

## Course Development

### Basic Skill Status (CB08)

Course is not a basic skills course.

Allow Students to Gain Credit by Exam/Challenge

### Course Special Class Status (CB13)

Course is not a special class.

### Pre-Collegiate Level (CB21)

Not applicable.

### Grading Basis

- Grade with Pass / No-Pass Option

### Course Support Course Status (CB26)

Course is not a support course

## General Education and C-ID

### General Education Status (CB25)

Not Applicable

### Transferability

Transferable to CSU only

### Transferability Status

Approved

## Units and Hours

### Summary

**Minimum Credit Units (CB07)** 3

**Maximum Credit Units (CB06)** 3

**Total Course In-Class (Contact) Hours** 54

**Total Course Out-of-Class Hours** 108

**Total Student Learning Hours** 162

### Credit / Non-Credit Options

#### Course Type (CB04)

Credit - Degree Applicable

#### Noncredit Course Category (CB22)

Credit Course.

#### Noncredit Special Characteristics

No Value

#### Course Classification Code (CB11)

Credit Course.

Variable Credit Course

#### Funding Agency Category (CB23)

Not Applicable.

Cooperative Work Experience

Education Status (CB10)

### Weekly Student Hours

	In Class	Out of Class
Lecture Hours	3	6
Laboratory Hours	0	0
Studio Hours	0	0

### Course Student Hours

<b>Course Duration (Weeks)</b>	18
<b>Hours per unit divisor</b>	0
<b>Course In-Class (Contact) Hours</b>	
Lecture	54
Laboratory	0
Studio	0

**Total** 54

**Course Out-of-Class Hours**

Lecture 108

Laboratory 0

Studio 0

**Total** 108

**Time Commitment Notes for Students**

No value

**Units and Hours - Weekly Specialty Hours**

Activity Name	Type	In Class	Out of Class
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No Value	No Value	No Value	No Value
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**Pre-requisites, Co-requisites, Anti-requisites and Advisories**

No Value

**Entry Standards**

Entry Standards

**Course Limitations**

Cross Listed or Equivalent Course

**Specifications**

Methods of Instruction

Methods of Instruction	Lecture
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Methods of Instruction	Discussion
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**Methods of Instruction**

Multimedia

**Methods of Instruction**

Demonstrations

**Methods of Instruction**

Guest Speakers

**Out of Class Assignments**

- Homework and reading assignments
- Research project (e.g. a written analysis of aviation human factors and including interactive scenarios and exercises culminating in a group presentation)

**Methods of Evaluation****Rationale**

Activity (answering journal prompt, group activity)

Practical examinations (e.g. a practical examination of aviation human factors asking students to apply course concepts to real-life scenarios)

Exam/Quiz/Test

Multiple-choice and short-answer midterm examination

Exam/Quiz/Test

Final examination

**Textbook Rationale**

These are the latest editions of the text

**Textbooks****Author****Title****Publisher****Date****ISBN**

Moriarty, David

Practical Human Factors for Pilots

Academic Press

2015

978-0-12-420244-3

Hawkins, Frank H.

Human Factors in Flight

Routledge

2016

978-1857421354

**Other Instructional Materials (i.e. OER, handouts)**

No Value

**Materials Fee**

No value

**Learning Outcomes and Objectives****Course Objectives**

Explain human factors and human error as pertains to the flight environment.

Identify the relevance of attention, cognition, and perception.

Discuss CRM (Crew Resource Management), communications, multicultural, and diversity applications.

List attitudes and dynamics of motivation and leadership.

Explain the purpose and function of the National Transportation Safety Board.

Describe the physical factors associated with aviation.

## SLOs

**Identify the major components of human factors as they relate to aviation.**

Expected Outcome Performance: 70.0

<i>ILOs</i> Core ILOs	Demonstrate depth of knowledge in a course, discipline, or vocation by applying practical knowledge, skills, abilities, theories, or methodologies to solve unique problems.
<i>AT</i> Flight Attendant - Certificate	Demonstrate skills required to seek and obtain employment as a flight identify and assess behavior patterns associated with panic
<i>AT</i> Pilot Training - A.S. Degree Major	demonstrate the skills required to successfully pass the FAA knowledge exam appropriate to the rating sought.
<i>AT</i> Pilot Training - Certificate	demonstrate the skills required to successfully pass the FAA knowledge exam appropriate to the rating sought.

**Correlate communications and CRM (Crew Resource Management) and how they translate in a diverse, multicultural pilot population.**

Expected Outcome Performance: 70.0

<i>ILOs</i> Core ILOs	Demonstrate depth of knowledge in a course, discipline, or vocation by applying practical knowledge, skills, abilities, theories, or methodologies to solve unique problems. Reflect and act upon personal responsibility as local and global citizens; respect and appreciate social and cultural diversity and recognize the complexity of the world; value and articulate the significance of environmental sustainability and social justice.
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**Explain the function of the National Transportation and Safety Board as it relates to aviation accidents and incidents, including determination of cause.**

Expected Outcome Performance: 70.0

<i>ILOs</i> Core ILOs	Demonstrate depth of knowledge in a course, discipline, or vocation by applying practical knowledge, skills, abilities, theories, or methodologies to solve unique problems. Reflect and act upon personal responsibility as local and global citizens; respect and appreciate social and cultural diversity and recognize the complexity of the world; value and articulate the significance of environmental sustainability and social justice.
<i>AT</i> Pilot Training - Certificate	demonstrate an understanding of Federal Aviation Regulations. demonstrate the skills required to successfully pass the FAA knowledge exam appropriate to the rating sought.
<i>AT</i> Pilot Training - A.S. Degree Major	demonstrate an understanding of Federal Aviation Regulations. demonstrate the skills required to successfully pass the FAA knowledge exam appropriate to the rating sought.

## Additional SLO Information

**Does this proposal include revisions that might improve student attainment of course learning outcomes?**

No

**Is this proposal submitted in response to learning outcomes assessment data?**

No

**If yes was selected in either of the above questions for learning outcomes, explain and attach evidence of discussions about learning outcomes.**

No Value

**SLO Evidence**

No Value

## Course Content

### Lecture Content

#### **Human Factors (15 hours)**

- Definitions and history
- General
- Aviation-specific
- Human Error
- Fatigue and Stress
- Fatigue
- Body rhythms
- Sleep
- Human fitness and performance
- Vision and Visual Illusions
- Light
- The eye
- The brain
- CRM – Crew Resource Management
- Motivation and safety
- Leadership
- Attitudes and Persuasion

#### **The Flight Deck (22 hours)**

- Flight bag and eFB
- Checklists
- Manuals and handbooks •
- Charts and plates
- Displays and controls
- Space and layout
- Human dimensions and principles
- Flight deck design
- The Aircraft Cabin, Controllers and Maintenance
- Human factors in the cabin
- HF in Air Traffic Control
- HF in Maintenance

#### **Training and Training Devices (5 hours)**

- Training, education, and instruction
- Training principles
- Regression, learning, and memory
- Training systems
- Training devices
- Research, Education and Application

#### **Communication: Language and Speech (12 hours)**

- Communication definitions
- Language
- The vocal and auditory systems

- Speech
- Aviation English
- The phonetic alphabet
- The pilot/controller glossary
- Proper pilot phraseology
- Basic communication formats
- Essentials of good communications
- CPDLC (Controller-Pilot Data Link Communications)
  - Attention, perception, and cognition
- Aeronautical Decision Making (ADM)
  - Risk Management
  - Dangerous attitudes

**Total hours: 54**

## Additional Information

Is this course proposed for GCC Major or General Education Graduation requirement? If yes, indicate which requirement in the two areas provided below.

No

### GCC Major Requirements

No Value

### GCC General Education Graduation Requirements

No Value

### Repeatability

Not Repeatable

### Justification (if repeatable was chosen above)

No Value

## Resources

Did you contact your departmental library liaison?

Yes

If yes, who is your departmental library liaison?

Adina Lerner (Technology & Aviation, Visual & Performing Arts)

Did you contact the DEIA liaison?

Yes

Were there any DEIA changes made to this outline?

No

**If yes, in what areas were these changes made:**

No Value

**Will any additional resources be needed for this course? (Click all that apply)**

- No

**If additional resources are needed, add a brief description and cost in the box provided.**

No Value