To: UGCC members  
From: Victoria Dunbar, College of Aeronautics  
Re: Adding new courses and a new minor  
Date: March 21, 2014

The College of Aeronautics is requesting Undergraduate Curriculum Committee approval to introduce several new courses in aviation safety and human factors, as well as a new minor in applied human factors.

1. **AVS 4302: Fundamentals of Aviation Safety Management Systems.** This course will provide instruction on safety management systems (SMS), safety reporting systems, quality management principles and safety culture. The prerequisite for this course is AVT 4301, Aviation Safety.

2. **AHF 3102: Advanced Human Factors.** This course introduces human factors and human performance. It presents and analyzes human factors and human performance issues in general application. It emphasizes the aviation industry and aircraft systems. AHF 3101 Human Factors is a prerequisite.

3. **AHF 4001: Human Factors Methods.** This course introduces research methods in human factors. It covers topics such as the scientific method, philosophy of science, ethical guidelines in research, theories, hypotheses, and quantitative and qualitative research. It focuses on methods that are commonly used in human factors. AHF 3101 Human Factors is a prerequisite.

4. **AHF 4302: Human-Automation Interaction.** This course introduces theories and research principles developed from the study of human-automation interaction. It covers topics in human-computer interaction, interfaces and displays, decision aiding, trust, modeling and cognitive engineering. AHF 3101 Human Factors is a prerequisite.

5. **Add a new minor to the curriculum:** One of our strategic objectives is to establish a minor in Applied Human Factors. Human factors issues have long been important topics, particularly in the aviation industry. As the aviation industry moves toward more automated systems, it is critical to have a strong human factors understanding of how operators will react and interact with these new systems. The curriculum developed for this program will prepare graduates to be accepted into human factors firms in aviation. The design of this minor also allows non-aviation students to enroll. This will allow computer science, civil, environmental, mechanical, and aerospace engineers the opportunity to get in-depth experiences with human factors issues and solutions. Since human factors is often about the psychology of human-machine systems, it will also allow the psychology students access to a minor that compliments their studies.

6. **Change restriction in a course:** Add AVM 3201 Aviation Planning as a prerequisite for AVM 3202 Airport Design. We had this prerequisite taken off last year and had some unintended consequences so we are adding it back.
Florida Institute of Technology

CHANGING RESTRICTIONS OR CREDITS IN A COURSE

The addition or removal of any restriction or change in credit hours in a course requires that this form, accompanied by any supporting documentation, be completed and approved as indicated below.

COLLEGE: College of Aeronautics
DEPARTMENT

REQUEST IS FOR CHANGE IN COURSE A V M 3 2 0 2 Airport Design
Prefix Number Course Title

TO BE INCLUDED IN 20 1 4 / 20 1 5 CATALOG AND EFFECTIVE IN THE BANNER SYSTEM FOR Fall 2014 TERM
Effective term must be a future term for which registration has not begun. Catalog year will be the next printed edition. Earlier terms/years will not be processed.

IS REQUEST FOR A CHANGE IN CREDITS FOR COURSE LISTED ABOVE? ☐ Yes ☑ No If yes, current credits __________ requested credits __________

IS REQUEST TO CHANGE RESTRICTIONS FOR COURSE LISTED ABOVE? ☑ Yes ☐ No If yes, please check all that apply:
☐ Add ☐ Remove ☐ Prerequisite ☐ Corequisite A V M 3 2 0 1 Prefix Number ☐ and ☐ or
☐ Add ☐ Remove ☐ Prerequisite ☐ Corequisite Prefix Number ☐ and ☐ or
☐ Add ☐ Remove ☐ Prerequisite ☐ Corequisite Prefix Number ☐ and ☐ or
☐ Add ☐ Remove ☐ Prerequisite ☐ Corequisite Prefix Number ☐ and ☐ or

☐ Add ☐ Remove ☐ Other Restrictions* ☐ Yes ☐ No If yes, please list below:
*Other restrictions may include changing the grades applied in the course (i.e., S/U, A-F, CERU), majors or class levels restricted from registration, or other restrictions.

APPROVALS: Once appropriate department approvals are completed, submit form to Chair, Graduate Council, or Chair, Undergraduate Curriculum Committee for signatures below and forward to Catalog Director.

1) Victoria Andar 3/21/14
Originator Date
2) Victoria Andar 3/21/14
Department Head/Program Chair Date
3) Dean or Associate Dean 3/21/14

Chair, Graduate Council Date
OR
Chair, Undergraduate Curriculum Committee Date

CATALOG DIRECTOR'S USE ONLY

SCACRES ____________ SCADETL ____________ SCAPREQ ____________ Operator Initials ____________ Date ____________

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Florida Institute of Technology

ADDING A NEW COURSE TO THE CURRICULUM

This course is available for student registration only after the approval process has been completed.

SUBJECT A F

(Harvard, e.g. CS)

COURSE NO.* 3102

(See e.g., 1301)

CREDIT HOURS 3

TERM TO BE ADDED TO THE FILE Fall 2014

(Justify level if 1000 level and no co- or prerequisites.)

CLASS HOURS 3/week

LECTURE HOURS 3/week

LAB HOURS

CONTACT HOURS (CEU ONLY)

DEPARTMENT Aeronautics/Academics

(Schedule type Lecture (A)

(e.g., Computer Sciences)

(e.g., Lecture, Lab or Special Topics/Project)

□ COLLEGE OF AERONAUTICS - 23

□ COLLEGE OF PSYCHOLOGY AND LIBERAL ARTS - 25

□ NATHAN M. BISK COLLEGE OF BUSINESS - 24

□ COLLEGE OF SCIENCE - 26

□ COLLEGE OF ENGINEERING - 1

□ EXTENDED STUDIES / NATHAN M. BISK COLLEGE OF BUSINESS - 90

COMPUTER TITLE Restricted to 25 characters, including spaces Advanced Human Factors

Dual-Prefix □ Bi-Level □ Full-Load □

CATALOG TITLE Advanced Human Factors

CATALOG DESCRIPTION OF COURSE Restricted to 350 characters, including spaces


This description has been approved by the catalog office 2/25/14

Catalog Director

In addition, please attach a course syllabus and/or more detailed description.

REQUIREMENTS

□ Prerequisite A H F 8101

□ Co-requisite Course Number

□ and □ or

□ Prerequisite Course Number

□ Co-requisite Course Number

□ and □ or

□ Prerequisite Course Number

□ Co-requisite Course Number

□ and □ or

□ Other

ADDITIONAL RESTRICTIONS

□ Major, Class Level, Department Head Approval

If this course replaces a course currently offered in BANNER, please indicate old course information and the date/term the course may be removed from the system.

SUBJECT Alpha Prefix (e.g., CS) □

COURSE NO. (e.g., 1301)

TERM TO INACTIVATE

Yes □ No □ Will this course be used to measure program-level student learning outcomes? If yes, review and signature required.

□ Yes □ No □ Will this course be used to satisfy the scholarly inquiry requirement? If yes, attach "Q" materials for review.

APPROVALS On completion of description and course number verification, offer appropriate signatures as indicated, and submit Completed form to Chair, Graduate Council, or Chair, Undergraduate Curriculum Committee for approval.

Originator □ Date 2/25/14

Department Head/Program Chair

Date 2/25/14

Dean or Associate Dean

Date

Chair, Graduate Council

Date

Chair, Undergraduate Curriculum Committee

Date

**Vice President for Institutional Effectiveness

Date

CATALOG DIRECTOR

These changes/additions have been made for the University Catalog and entered into the BANNER term named above.

Catalog Director Date

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SCAIRSE Operator Initial Date

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RUN 109-214
FLORIDA INSTITUTE OF TECHNOLOGY
COLLEGE OF AERONAUTICS
AHF 3102—Advanced Human Factors (3 credit hours)

Course Outline

Instructor: Dr. xxxxxxxxx
           Phone: xxxxxxxx

Time/Room: xxxxxxxxxx
           xxxxxxxxxx

Office Hours: xxxxxxxxxx


Course Description: This course introduces the field of advanced human factors and human performance. This course presents and analyzes human factors and human performance issues in general applications; however the emphasis will be on the aviation industry and aircraft systems. Some topics to be covered include, but are not limited to, attention and perception, displays, real vs. virtual environments, language and communications, memory, training, decision making, workload, stress, and human error.

Course Learning Objectives: At the completion of this course, students will be able to:

- Define Human Factors and explain its role in the design of systems
- Understand key concepts used in Human Factors and Human Performance
- Apply Human Factors and Human Performance concepts to everyday challenges
- Apply Human Factors and Human Performance principles to improving aircraft design, safety, and pilot performance
- Work effectively in teams

Course Requirements:
(1) One term paper (using APA format) on any topic of your choice that has been approved in advance by your instructor in the area of Human Performance.
(2) One oral presentation associated with your term paper.
(3) Mid-term Exam (take home)
(4) Final Exam (take home)
Grading Policy:
(1) Term Paper 35%
(2) Oral Presentation 15%
(3) Mid-Term Exam 25%
(4) Final Exam 25%

Instructional Procedures: The instructor will conduct a selected number of lectures/discussion. Students will select or be assigned chapters to review and present to the class for discussion. All students will be held responsible for information contained in the assigned chapters, as well as for information contained in classroom activities—lecture, discussion, demonstrations, etc.

Students will be required to write a term paper on a topic related to a current human performance issue of their choice applied to a specific system (e.g. aviation, transportation, medicine, process control, etc.). Students will be required to make a formal oral presentation of approximately 10 minutes duration related to the human performance issues discussed in their term paper.

IT IS IMPORTANT THAT YOU READ AND STUDY THE ASSIGNED MATERIAL BEFORE COMING TO CLASS!!

A mid-term and final exam will be conducted based on the assigned readings from the text and lectures presented by the instructor, students and guest speakers (if any).

- All exams are open book (i.e., take home).
- I will use Angel to post all presentations and many of the handouts. You need to check this regularly for special announcements.
- Missed exams cannot be made up without an official excused absence.
- I’m here to help you understand this material. Call me, email me, or set up an appointment to see me if you have any questions or concerns.

Cheating/Plagiarism and Academic Dishonesty

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Disability Issues

I take disability issues very seriously. Please read the FIT official handbook for more details on disability issues. If you choose to disclose to me, I will keep it confidential and do whatever I can to accommodate your needs according to the official policies of FIT.
## Class Schedule

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<thead>
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<th>Week</th>
<th>Topics</th>
<th>Assignment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Classes Begin - Introduction to Engineering</td>
<td>Chapter 1</td>
</tr>
<tr>
<td></td>
<td>Psychology and Human Performance</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Signal Detection Theory (read pg. 8-32 only)</td>
<td>Chapter 2</td>
</tr>
<tr>
<td>3</td>
<td>Attention in Perception and Display Space</td>
<td>Chapter 3</td>
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<tr>
<td>4</td>
<td>Spatial Displays</td>
<td>Chapter 4</td>
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<td></td>
<td>Control</td>
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<tr>
<td>6</td>
<td>Language and Communication</td>
<td>Chapter 6</td>
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<tr>
<td>7</td>
<td>Memory and Training</td>
<td>Chapter 7</td>
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<td></td>
<td><strong>Distribute Mid-term Exam</strong> [Chapters 1-7]</td>
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<tr>
<td>8</td>
<td>Decision Making</td>
<td>Chapter 8</td>
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<td></td>
<td><strong>Mid-term Exam Due</strong></td>
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<td>9</td>
<td>Multi-tasking Corrected</td>
<td>Chapter 10</td>
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<tr>
<td>10</td>
<td>Mental Workload, Stress....</td>
<td>Chapter 11</td>
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<tr>
<td>11</td>
<td>Automation</td>
<td>Chapter 12</td>
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<tr>
<td>12</td>
<td>Automation (cont.)</td>
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<tr>
<td>13</td>
<td>Oral Presentations</td>
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<tr>
<td>15</td>
<td>Oral Presentations</td>
<td></td>
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<td></td>
<td><strong>Term Paper Due</strong></td>
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<td></td>
<td><strong>Distribute Final Exam [Chapters 8, 10-12]</strong></td>
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<tr>
<td></td>
<td>**Final Exam Due xxxxxxxxxxxxx **</td>
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</tr>
</tbody>
</table>
This course is available for student registration only after the approval process has been completed.

SUBJECT: A H F  COURSE NO.: 4 0 0 1  CREDIT HOURS: 3  TERM TO BE ADDED TO THE FILE: Fall 2014

CLASS HOURS: 3/week  LECTURE HOURS: 3/week  LAB HOURS:  CONTACT HOURS (CEU ONLY):

DEPARTMENT: Aeronautics/Academics  SCHEDULE TYPE: Lecture (A)

[ ] COLLEGE OF AERONAUTICS – 23  [ ] COLLEGE OF PSYCHOLOGY AND LIBERAL ARTS – 25
[ ] NATHAN M. BISK COLLEGE OF BUSINESS – 24  [ ] COLLEGE OF SCIENCE – 26
[ ] COLLEGE OF ENGINEERING – 1  [ ] EXTENDED STUDIES / NATHAN M. BISK COLLEGE OF BUSINESS – 90

CATALOG TITLE: Human Factors Methods

CATALOG DESCRIPTION OF COURSE: Introduces research methods in human factors. Covers topics such as the scientific method, philosophy of science, ethical guidelines in research, theories, hypotheses, and quantitative and qualitative research. Focuses on methods commonly used in human factors.

This description has been approved by the catalog office.

In addition, please attach a course syllabus and/or more detailed description.

REQUIREMENTS: Prequisite: A4101

ADDITIONAL RESTRICTION: 

GRADES TO BE ISSUED: A, B, C, D, F

If this course replaces a course currently offered in BANNER, please indicate old course information and the date term the course may be removed from the system.

SUBJECT:  COURSE NO.: 301  TERM TO INACTIVATE:

Will this course be used to measure program level student learning outcomes? Yes or No

APPROVALS: On completion of description and course number verification, attach appropriate signatures as indicated, and submit completed form to Chair, Graduate Council, or Chair, Undergraduate Curriculum Committee for approval.

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RS0102-214
FLORIDA INSTITUTE OF TECHNOLOGY
COLLEGE OF AERONAUTICS
AHF 4001—Research Methods in Human Factors (3 credit hours)

Course Outline

Instructor: Dr. xxxxxxxxx
Phone: xxxxxxxx

Time/Room: xxxxxxxxxx

Office Hours: xxxxxxxxxx


Course Description: This course introduces research methods in human factors. The course will cover topics such as the scientific method, philosophy of science, ethical guidelines in research, theories, hypotheses, quantitative research, and qualitative research, with a focus on methods commonly used in human factors.

Course Learning Objectives: At the completion of this course, students will be able to:

- Define terminology related to human factors research methods and design
- Understand key concepts used in human factors research methods and design
- Apply human factors research methods and design to everyday challenges
- Apply human factors research methods and design to improving aircraft design, safety, and pilot performance
- Work effectively in teams

Course Requirements:
(1) One term paper (using APA format) that presents a proposal for a human factors research study.
(2) One brief oral presentation associated with your term paper.
(3) Mid-term Exam
(4) Final Exam
Grading Policy:
(1) Term Paper                    35%
(2) Oral Presentation            15%
(3) Mid-Term Exam                25%
(4) Final Exam                   25%

Instructional Procedures: The instructor will conduct a selected number of lectures/discussion. Students will select or be assigned chapters to review and present to the class for discussion. All students will be held responsible for information contained in the assigned chapters, as well as for information contained in classroom activities—lecture, discussion, demonstrations, etc.

Students will be required to write a term paper on a topic that presents a proposal for a human factors research study. Students will be required to make a formal oral presentation of approximately 10 minutes duration related to the research design issues discussed in their term paper.

IT IS IMPORTANT THAT YOU READ AND STUDY THE ASSIGNED MATERIAL BEFORE COMING TO CLASS!!!

A mid-term and final exam will be conducted based on the assigned readings from the text and lectures presented by the instructor, students and guest speakers (if any).

- All exams are open book because that is how human factors experts conduct research in real life.
- I will use Angel to post all presentations and many of the handouts. You need to check this regularly for special announcements.
- Missed exams cannot be made up without an official excused absence.
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<tbody>
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<td>1</td>
<td>Classes Begin</td>
<td>Chapter 1</td>
</tr>
<tr>
<td></td>
<td>Behavioral Research &amp; the Scientific Method</td>
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<tr>
<td>2</td>
<td>Theories and Hypotheses</td>
<td>Chapter 2</td>
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<tr>
<td>3</td>
<td>Ethical Guidelines</td>
<td>Chapter 3</td>
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<td>4</td>
<td>Methods of Systematic Observation</td>
<td>Chapter 4</td>
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<tr>
<td>5</td>
<td>Self-Report Measures</td>
<td>Chapter 5</td>
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<td>6</td>
<td>Reliability and Validity</td>
<td>Chapter 6</td>
</tr>
<tr>
<td>7</td>
<td>Experiments</td>
<td>Chapter 7</td>
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<tr>
<td></td>
<td><strong>Mid-term Exam</strong> [Chapters 1-7]</td>
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<td>8</td>
<td>Non-Randomized Research</td>
<td>Chapter 8</td>
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<td>9</td>
<td>Survey Research</td>
<td>Chapter 9</td>
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<td>10</td>
<td>Basic Statistics</td>
<td>Handouts</td>
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<td>11</td>
<td>Usability Studies</td>
<td>Handouts</td>
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<tr>
<td>12</td>
<td>Focus Groups</td>
<td>Handouts</td>
</tr>
<tr>
<td>13</td>
<td>Accident Investigation and Analysis</td>
<td>Handouts</td>
</tr>
<tr>
<td>14</td>
<td>Team-focused Research</td>
<td>Handouts</td>
</tr>
<tr>
<td>15</td>
<td>Oral Presentations</td>
<td></td>
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<tr>
<td></td>
<td><strong>Term Paper Due</strong></td>
<td></td>
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<tr>
<td></td>
<td><strong>Final Exam [Chapters 8-9; handouts]</strong></td>
<td></td>
</tr>
</tbody>
</table>
**Florida Institute of Technology**

**ADDING A NEW COURSE TO THE CURRICULUM**

This course is available for student registration only after the approval process has been completed.

<table>
<thead>
<tr>
<th>SUBJECT</th>
<th>A</th>
<th>H</th>
<th>F</th>
<th>COURSE NO.*</th>
<th>4</th>
<th>3</th>
<th>0</th>
<th>2</th>
<th>CREDIT HOURS</th>
<th>3</th>
<th>TERM TO BE ADDED TO THE FILE</th>
<th>Fall 2014</th>
</tr>
</thead>
</table>

*Justify level if 1000-level+ and no co- or prerequisites.

CLASS HOURS: 3Week LAB HOURS: CONTACT HOURS (CEU ONLY): 

<table>
<thead>
<tr>
<th>DEPARTMENT</th>
<th>Aeronautics/Academics</th>
<th>SCHEDULE TYPE</th>
<th>Lecture (A)</th>
</tr>
</thead>
</table>

| COLLEGE OF AERONAUTICS -- 23 | COLLEGE OF PSYCHOLOGY AND LIBERAL ARTS -- 25 |
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| COLLEGE OF ENGINEERING -- 1 | EXTENDED STUDIES / NATHAN M. BISK COLLEGE OF BUSINESS -- 90 |

COMPUTER TITLE: Restricted to 25 characters, including spaces

Human - Automation

**CATALOG TITLE:** Human - Automation Interaction

**CATALOG DESCRIPTION OF COURSE:** Restricted to 300 characters, including spaces

Introduces theories and research principles developed from the study of human-automation interaction. Covers topics in human-computer interaction, interfaces and displays, decision aiding, trust, modeling and cognitive engineering.

This description has been approved by the catalog office: **2/25/14**

**In addition, please attach a course syllabus and/or more detailed description.**

**REstrictions**

<table>
<thead>
<tr>
<th>Prerequisite</th>
<th>AHF 3101</th>
<th>Corequisite</th>
<th></th>
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</thead>
</table>

<table>
<thead>
<tr>
<th>Course Number</th>
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</table>

**ADDITIONAL RESTRICTION**

(e.g., Major, Class Level, Department Head Approval)

If this course replaces a course currently offered in BANNER, please indicate old course information and the date/term the course may be removed from the system.

**SUBJECT Alpha Prefix (e.g., CH) | COURSE NO. (e.g., 1301) | TERM TO INACTIVATE**

| Yes | No |

Will this course be used to measure program level student learning outcomes? If yes, review and signature required.**

| Yes | No |

Will this course be used to satisfy the scholarly inquiry requirement? If yes, attach "CI" materials for review.

**APPROVALS:**

On completion of description and course number verification, attach appropriate signatures as indicated, and submit completed form to Chair, Graduate Council, or Chair, Undergraduate Curriculum Committee for approval.

**Origilator:** Date

2/25/14

**Department Head/Program Chair:** Date

2/25/14

**Dean or Associate Dean:** Date

2/25/14

**Vice President for Institutional Effectiveness:** Date

**CATALOG DIRECTOR:**

These changes/additions have been made for the University Catalog and entered into the BANNER term named above.

**REGISTRAR'S USE ONLY**

SCARSE: SCADER: SCAPREQ: SCBASE: SCAUSS:

Operator Initial: Date

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FLORIDA INSTITUTE OF TECHNOLOGY  
COLLEGE OF AERONAUTICS  
AHF 4302 — Human-Automation Interaction (3 credit hours)

Course Outline

Instructor: Dr. xxxxxxxxx  
Phone: xxxxxxxx

Time/Room: xxxxxxxxxx  
xxxxxxxxxxxx

Office Hours: xxxxxxxxxx


Course Description: This course introduces theories and research principles developed from the study of human-automation interaction. The course will cover topics in human-computer interaction, interfaces and display, decision aiding, trust, modeling, and cognitive engineering. Students will learn about the theories and principles that have derived in the past few decades from research focused on human-automation interaction.

Course Learning Objectives: At the completion of this course, students will be able to:

- Define terminology related to human-automation research
- Understand key concepts used in human-automation research
- Apply human-automation research methods and design to everyday challenges
- Apply human-automation research methods and design to improving aircraft design, safety, and pilot performance
- Work effectively in teams

Course Requirements:
(1) One term paper (using APA format) that presents a proposal for a human factors research study.
(2) One brief oral presentation associated with your term paper.
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<tr>
<td></td>
<td>Cognitive Engineering Overview</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Theory and Methods</td>
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<td>3</td>
<td>Dynamic Judgment Tasks</td>
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<td>4</td>
<td>Displays and Interfaces</td>
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<td>5</td>
<td>Display Enhancements</td>
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<td>6</td>
<td>Alerting Systems</td>
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<td>7</td>
<td>Trust in Automation</td>
<td>Chapter 8</td>
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<td><strong>Mid-term Exam</strong> [Chapters 1-5, 7-8]</td>
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<td>Automated Judgment Systems</td>
<td>Chapter 9</td>
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<td>9</td>
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<td>10</td>
<td>Vicarious Functioning</td>
<td>Chapter 13</td>
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<td>11</td>
<td>Automation in the Modern Airline Cockpit</td>
<td>Chapter 14</td>
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<td>12</td>
<td>Cognitive Modeling</td>
<td>Chapter 15</td>
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<td>13</td>
<td>Ecological Analyses</td>
<td>Chapter 16</td>
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<td>Distal Content</td>
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<tr>
<td>15</td>
<td>Oral Presentations</td>
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<td><strong>Term Paper Due</strong></td>
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<td><strong>Final Exam [Chapters 9-10, 13-17]</strong></td>
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</table>
Florida Institute of Technology

ADDING A NEW COURSE TO THE CURRICULUM

This course is available for student registration only after the approval process has been completed.

SUBJECT A VS COURSE NO. 4302 CREDIT HOURS 3 TERM TO BE ADDED TO THE FILE Spring 2015

*(e.g., CSI) *(e.g., 1301)

CLASS HOURS 45/semester LECTURE HOURS CONTACT HOURS (CEU ONLY)

LAB HOURS

DEPARTMENT Aeronautics/Academic SCHEDULE TYPE Lecture (A)

*(e.g., Computer Sciences) *(e.g., Lecture, Lab or Special Topics/Project)

☐ COLLEGE OF AERONAUTICS - 23
☐ COLLEGE OF PSYCHOLOGY AND LIBERAL ARTS - 25
☐ NATHAN M. BISK COLLEGE OF BUSINESS - 24
☐ COLLEGE OF SCIENCE - 26
☐ COLLEGE OF ENGINEERING - 1
☐ EXTENDED STUDIES / NATHAN M. BISK COLLEGE OF BUSINESS - 90

COMPUTER TITLE: Restricted to 25 characters, including spaces Fund of Av Safety Sys

Dual-Prefix ☐ Bi-Level ☐ Full-Load ☐

CATALOG TITLE: Fundamentals of Aviation Safety Management Systems

CATALOG DESCRIPTION OF COURSE: Restricted to 250 characters, including spaces

Provides instruction on safety management systems (SMS). Presents topics on safety reporting systems, quality management principles and safety culture.

This description has been approved by the catalog office

Catalog Director

3/21/14

In addition, please attach a course syllabus and/or more detailed description.

REQUIREMENTS

☐ Prerequisite AVT 4301 ☐ Corequisite Course Number

☐ Prerequisite Course Number ☐ Corequisite Course Number

☐ Prerequisite Course Number ☐ Corequisite Course Number

☐ Prerequisite Course Number ☐ Corequisite Course Number

GRADES TO BE ISSUED

☐ A, B, C, D, F ☐ A, B, C, D, F, CEU/Audit

☐ CEU ☐ S, U

☐ P, F ☐ Other

ADDITIONAL RESTRICTIONS

*(e.g., Major, Class Level, Department Head Approval)

If this course replaces a course currently offered in BANNER, please indicate old course information and the date/term the course may be removed from the system.

SUBJECT Alpha Prefix (e.g., CSI) COURSE NO. (e.g., 1301) TERM TO INACTIVATE

☐ Yes ☐ No Will this course be used to be measured program-level student learning outcomes? If yes, review and signature required.**

☐ Yes ☐ No Will this course be used to satisfy the scholarly inquiry requirement? If yes, attach "Q" materials for review.

APPROVAL: On completion of description and course number verification, attach appropriate signatures as indicated, and submit completed form to Chair, Graduate Council, or Chair, Undergraduate Curriculum Committee for approval.

Chair, Graduate Council

Chair, Undergraduate Curriculum Committee

03/21/14

3/21/14

03/21/14

Dean or Associate Dean

**Vice President for Institutional Effectiveness

REGISTRAR'S USE ONLY

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SCARRS ☐ Operator Init. ☐ Date

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ROR 100 144
Proposed Aviation Safety Course

AVS 4302 Fundamentals of Aviation Safety Systems
- Fundamentals of Aviation Safety Systems Syllabus

FLORIDA INSTITUTE OF TECHNOLOGY
COLLEGE OF AERONAUTICS

AVS 4302
Fundamentals of Aviation Safety Systems

Instructor: Scott R. Winter: swinter@fit.edu, Extension: 7639

Course Description:
Provides instruction on safety management systems (SMS). Covers topics on safety reporting systems, quality management principles, and safety culture.

Recommended Text:
Safety Management Systems in Aviation by Stolzer et al. (2010)
Implementing Safety Management Systems in Aviation by Stolzer et al. (2012)

Objectives:
Students who successfully complete this course will be able:
1) Explain the concepts of Safety Management Systems
2) Identify risks associated with aviation operations
3) Determine likelihood of hazards to occur
4) Analyze and interpret aviation safety statistics and data
5) Describe the basic methods of reducing safety threats

Grading:

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<thead>
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<tbody>
<tr>
<td>Exam 1</td>
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<td>Term Project</td>
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<table>
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<td>F</td>
<td>&lt; 64</td>
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<td>I</td>
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</table>
Homework: will consist of Learning Assessments posted on the course website.

Examinations will be closed book and may include essay questions, conceptual questions requiring diagrams and explanations, analysis questions requiring analysis, matching questions, multiple choice questions, and fill in the blank questions. The final exam is comprehensive.

Term Project:

Is a scientific research paper of one of the following topics:

1. Developing a safety management plan
2. Completing a training program for an already existing SMS plan
3. Analyzing and reporting on the results of the implementation of an SMS program at a business or company

Students will have to include in their report:
1. Planning stage
2. Data collection method (if applicable)
3. Analysis of data (if applicable)

If they are unable to collect data, a thorough literature review will need be conducted.

Instructor Policies:

Quizzes will be announced prior to class.

Please Note 75% attendance throughout the semester is required, otherwise an ‘F’ will be issued.

No texting in class.

Homework is to be handed on the date it is due. Late homework will not be accepted. Students may work together to understand homework assignments, but ultimately homework is to be completed individually. Identical homework will assume to have been copied, and will each receive 0’s.

Assistance is readily available. I am easily reached via email. Appointments may be made through the COA administrative assistants. Walk-ins are welcome during my office hours.
Departmental Classroom Policies:

Cheating or breaches of professional integrity will not be tolerated.

No smoking, eating, or drinking by any person in any classroom.

Feet will not be placed on tabletops or adjacent chairs

Distractive, disruptive, or destructive students will be admonished and may be ejected from the classroom.

If the instructor is more than ten minutes late to class, a class representative will go to the COA office to notify/inquire. Class must remain for 1/3 of period in absence of instructor.
CLASS SCHEDULE

Week 1
Introduction to Safety Management Systems
  - Defining SMS
  - Four pillars of SMS
  - Emergency Response

Week 2
History and Evolution of Safety
  - Review history of aviation safety
  - Government efforts to improve safety
  - Major safety initiatives
  - Key airline accidents

Week 3
Principles of Quality Management
  - Quality Management
  - Business Process Improvement Mapping
  - Diagramming the state of safety
  - Establishing a quality management system
  - Quality Information Systems
  - Project Management

Week 4
Hazards
  - Safety Risk Management
  - Explaining Hazards
  - Recording and mapping hazards

Week 5
Risk
  - Defining risk
  - The risk matrix
  - Severity and Liklihood
Week 6

Controls
- Principles of hazard control
- Assigning responsibility
- Measuring and monitoring
- Hierarchy of controls
- Residual risks
- Hazard control models

Week 7

Taxonomies
- Review of human factors and pilot error taxonomies

Week 8

Process-Based Safety Risk Management/Risk Assurance
- Model of safety risk management/safety assurance
- Process-based SRM/SA
- Risk management plan
- SRM/SA in the real-world

Week 9

Managing the SMS
- Management’s responsibility for safety
- Stakeholder identification and analysis
- Regulatory oversight
- Roles, responsibilities, and relationships

Week 10

Tools and Analysis Methods
- Tools
- Predictive safety risk management through modeling
- Data mining
Week 11
Implementing the SMS
- Safety change management
- The SMS Champion
- Questions of discipline
- The work of the SMS implementation team
- Four phases of implementation

Week 12
Safety Reporting Systems, Employee Buy-in, and Culture
- What is a safety culture?
- Developing and evolving safety culture
- Model of organizational culture
- Reason's components of safety culture
- Components and traits of high reliability organizations

Week 13
SMS Training
- Strategic and tactile learning
- Safety change management
- Common errors

Week 14
Completing a Safety Audit
- Audit control system
- Performing the audit
- Audits

Week 15
Practical Risk Management
- Case studies on real-world examples of practical applications of course materials
Week 16

Integrating SMS into Emergency Planning and Incident Command
- Compartmentalized awareness
- Maslow’s theory
- Failures of safety systems
- Emergency management at airports
- SMS leadership/Safety policy
- Community resource management
- Historical review of accidents and lessons learned
Florida Institute of Technology

ADDING A NEW MAJOR OR MINOR TO THE CURRICULUM

Please provide the following information when requesting a new major or minor (program or option) to be added to the curriculum. Only new majors, minors, and options are assigned a new code and print on the diploma. The code will be assigned by the Office of the Registrar and information emailed to all appropriate personnel.

COLLEGE: Aeronautics
DELIVERY MODE(S): Classroom (classroom, online)

DEPARTMENT: Aeronautics
CAMPUS/SITE(S): Melbourne

PROGRAM TO BE ADDED: □ Major □ Minor □ Option for ____________________ (existing degree program)

NOTE: Only Majors, Minors and Options receive new codes and print on the diploma; use Option for new program name to appear with existing degree name.

☐ Associate of Arts (A.A.)
☐ Associate of Science (A.S.)
☐ Bachelor of Arts (B.A.)
☐ Bachelor of Science (B.S.)
☐ Master of Arts (M.A.)
☐ Master of Science in Aviation (M.S.A.)
☐ Master of Business Administration (M.B.A.)
☐ Master of Education (M.Ed.)
☐ Master of Public Administration (M.P.A.)
☐ Master of Science (M.S.)
☐ Educational Specialist (Ed.S.)
☐ Doctor of Business Administration (DBA)
☐ Doctor of Philosophy (Ph.D.)
☐ Doctor of Psychology (Psy.D.)
☐ Graduate Certificate

OTHER ADDITION TO THE CURRICULUM (NOTE: Only Majors, Minors and Options receive new codes and print on the diploma; use Concentration or Specialization if the new program represents less than a full degree curriculum.)

☐ Concentration or ☐ Specialization for ____________________ (existing degree program)

PROGRAM TITLE Restricted to 30 characters, including spaces

Applied Human Factors

TERM TO BE INITIATED: Fall 2014

ADVISOR FOR NEW PROGRAM: Dr. Stephen Rice

(Date program to be initiated must be no sooner than the next term for which registration has not begun)

ROUTING APPROVALS: 1) Department head/program chair and college dean approve and sign form. 2) The vice president for institutional effectiveness reviews and signs form. 3) The executive vice president or his designee approves business plan of the program in terms of financial viability and impact on the university mission and signs form. 4) Graduate Council or Undergraduate Curriculum Committee approves academics and signs form. 5) The vice president for academic affairs reviews and signs form. 6) The executive vice president or his designee gives final approval of program, signs form and forwards to Office of the Registrar.

1) Victoriabar
   Department Head/Program Chair
   Date 2/4/14

2) Vice President for Institutional Effectiveness
   Date 3/24/14

3) Executive Vice President
   Date 3/24/14

4) Chair, Graduate Council
   Date

   OR

   Chair, Undergraduate Curriculum Committee
   Date

5) Vice President for Academic Affairs
   Date

6) Executive Vice President
   Date

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**Applied Human Factors (18 credit hours)**

*Age Restriction: N*

*Delivery mode/s: classroom only*

*Degree Awarded: none*

*Admission Status: undergraduate*

*Location/s: main campus*

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<td>AHF 3101</td>
<td>Introduction to Human Factors</td>
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<tr>
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<td>Advanced Human Factors</td>
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<td>AHF 4302</td>
<td>Human-Automation Interaction</td>
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<td>AHF 4001</td>
<td>Research Methods in Human Factors</td>
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*Elective(s) from the following:*

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New Program Case Statement Proposal
Applied Human Factors

I. Program Relevance

- How is this program consistent with the mission of Florida Tech?

A Minor program in Applied Human Factors is consistent with the mission of the University. Human factors issues have long been important topics, particularly in the aviation industry. The curriculum developed for this program will prepare graduates to be accepted into human factors firms in Aviation. We also hope that it eventually leads to interest in an undergraduate major.

- How is this program consistent with the mission of the department/college?

A Minor program in Applied Human Factors is consistent with the mission of the College of Aeronautics. Human factors issues have long been important topics, particularly in the aviation industry. The College of Aeronautics’ faculty have recommended that the college pursue a human factors track in our curriculum.

II. Program Demand

- Market:
  - What is the local market for this program?

Applied Human Factors is the study of the relationship between humans and machines. In the aviation industry, much of the human factors research is focused on the relationship between operators and systems (e.g. pilot and cockpit). As the aviation industry moves towards more automated systems, it is critical to have a strong human factors understanding of how operators will react and interact with these new systems. The design of this minor also allows non-aviation students to enroll. This will allow computer science, civil, environmental, mechanical, and aerospace engineers the opportunity to get in-depth experience with human factors issues and solutions. Since human factors is often about the psychology of human-machine systems, it will also allow the psychology students access to a minor that complements their studies.

  - What is the national market?

Unmanned aerial systems (UAS) are an example of an area in aviation that is growing rapidly in the United States and has made use of highly automated systems. While traditional pilots are able to interact directly with the automated systems in the cockpit, UAS pilots must interact from a distance; often from across the globe. Having a strong understanding of the human factors issues of UAS is critical to the success of the aviation institute.
What is the international market?

* Human factors is an international concern. The United States has been leading the forefront with respect to developing human factors professionals in the aviation industry; other countries are following suit. This course would attract students interested in becoming professionals in a growing field abroad.

* New Students:
  * How many new full-time/part-time students are expected to enroll in the first year?
  
  We estimate there will be 10 new full-time students in this discipline upon initiation in Fall 2014.

  * How many new domestic and international students are expected to enroll in the first year?

  We predict that the interest will follow the demographics of the university.

* What is the enrollment outlook five years from now?

AHF 3101, Introduction to Human Factors, is being offered every semester, and is attracting between 40-44 students per semester. About 80% of these students come from other colleges within Florida Tech. It is now being offered in the summer to meet demand. This is a good indicator of the interest in this program. The projection for ten years is 5% growth per year.

* What other universities offer this program? How large (enrollment) are those programs?

Currently, many of the major universities involved in human factors are offering minors at the undergraduate level. In order to keep attracting high quality students into the program, Florida Tech needs to also offer this minor.

* Are there current trends or forecasts for interest in this program? If so, what are they and what are your sources of information.

Human Factors is, and has been for some time, one of the fastest growing fields in the nation. Students usually have little trouble in finding jobs related to human factors upon graduation. A result of this is that many students from other majors who take the Intro to Human Factors course are now considering taking the Masters in Human Factors program to supplement their knowledge in their field.

Human Factors applies to almost every field in the university. Any field that involves human-machine interaction (e.g. engineering, computer science, etc.) needs to be supplemented with a strong understanding of human factors. Traditionally, at other universities, human factors courses are often offered in aviation, psychology, engineering, business, library science, education, among
others. We foresee this demand increasing in the coming years and it is our intention to keep up with the demand.

We base our current trend estimate on the fact that human factors has been a growing field for the past 20+ years. More and more universities are offering these courses individually and as a minor. Even small liberal arts colleges like Rollins College in Orlando offer a human factors course.

- Will this program be offered to a “non-traditional” audience (part-time students, evening/weekend classes, distance learning, other)? Please indicate all that apply.
  
  o Part-time students – Yes
  o Evening/weekend classes - No
  o Distance Learning – No
  o Other – No

- What are the employment opportunities after graduation?

  Human factors positions are offered in government, private industry, and academia. Every government program requires that a human factors expert be involved in any human-machine interface. Private industry hires numerous human factors graduates each year; some private human factors companies such as Mitre, SA Technologies, Alion Science, etc., focus primarily on hiring human factors graduates. Other hiring companies include NASA Ames, Boeing, Jeppesen, Airbus, Microsoft, IBM, Apple, etc. In fact, every major developer of technology has a human factors division.

- If this is an undergraduate program, what are the graduate program opportunities?

  It is a minor program; however, taking these courses could lead students to desire a masters degree in aviation human factors.

- Is internship part of the program? If so, will it be required? Will the internship be paid or unpaid?

  No.
III. Academic Requirements/Considerations

- What are the entrance requirements (GPA, SAT, math/science, etc.)?

*Not required for a minor program.*

- Is the proposed program a substantive change according to SACS?

*No.*

- Is the proposed program in line with departmental/college accreditation?

*Yes.*

- What impact will the program have on existing programs? For example, will it replace an existing program or complement/compete with another program? Which programs will be affected?

  - Does it replace an existing program?
    - No
  - Does it complement or compete with another program?
    - Yes, complements all CoA degrees
• How will the new program be financially assessed?

  • Can the program support itself financially (provide detailed estimates)?
    o Yes. This is a no additional cost program.

  • Will there be any assistants, fellowships available in this program
    o No

  • What new courses, if any, will be required
    o Departmental courses
      • AHF 3102, AHF 4302 and AHF 4001– to be approved in March UGCC meeting.
    o Service courses
      • None

  • What new faculty, if any, will be required
    o Departmental
      • None
    o Service
      • None

  • Will new support staff be required
    o No

  • Will new GSA’s or adjuncts be required
    o No

  • What type of new equipment, labs, or other facilities are required
    o None at this time.

  • What new library resources will be required
    o None

• Student-Learning Assessment (see the APAC Policies and Procedures document at www.fit.edu/apac for the required number and type of assessment items. These must be approved by the APAC before the program is reviewed by any curriculum committees. Refer to the approval procedure flowchart on page 9 of this document.
  o In what courses will the students be assessed for program-level student learning?

*AHF 3102: Advanced Human Factors*
- List the program-level student-learning Outcomes, Measures, and expected Targets for this program

**PROGRAM: Applied Human Factors Minor**

Course(s) in which the students will be assessed for program-level student learning:

AHF 3102: Advanced Human Factors

<table>
<thead>
<tr>
<th>Program Level Outcome (PLO)</th>
<th>Measure</th>
<th>Target</th>
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| PLO-1. Understand Human Factors principles and theories. Students will be able to understand the principles and theories that are associated with human factors and be able to apply them to real-world problems. | 1. Written examinations: Written examinations employing multiple written assessment methodologies will be scored by the course instructor.  
2. Final test evaluation documentation: A final evaluation test will be scored by the course instructor using a 100-point scoring rubric. | 1. Written examinations: At least 75% of students will receive a score of 80% or higher on each of their written examinations.  
2. Final test evaluation documentation: At least 75% of students will receive a score of 80 or higher on their final test evaluation document. |
| PLO-2. Design human factors studies; analyze and interpret human factors data. Students will be able to analyze and interpret human factors data to determine best possible practice. When necessary, students will be able to design new studies of discovery. | 1. Written examinations: Written examinations employing multiple assessment methodologies will be scored by the instructor.  
2. Final test evaluation documentation: A final evaluation test will be scored by the course instructor using a 100-point scoring rubric. | 1. Written examinations: At least 75% of students will receive a score of 80 or higher on each of their written examinations.  
2. Final test evaluation documentation: At least 75% of students will receive a score of 80 or higher on their final test evaluation document. |
| PLO-3. Communicate human factors solutions. Students will be able to prepare verbal/graphic presentations and written documents to communicate human factors solutions to aviation issues. | 1. Verbal/graphic presentations: Verbal/graphic presentations of environmental solutions based on environmental data will be scored by the course instructor using a 100-point scoring rubric.  
2. Final test evaluation document: A final term paper will be scored by the course instructor using a 100-point scoring rubric. | 1. Verbal/graphic presentations: At least 75% of students will receive a score of 80 or higher on each of their verbal graphic presentations.  
2. Final test evaluation document: At least 75% of students will receive a score of 80 or higher on their final term paper. |
• Programmatic Accreditation:
  o Is programmatic accreditation required or proposed for the program? If so, what are the minimum requirements for accreditation? What is the timetable for achieving accreditation status?

No, programmatic accreditation is not required.

This minor will be an addition to our existing programs. It will not replace or interfere with any of them.
  o Normal AABI and SACS assessment procedures
V. Financial Resources/Uses

- Can the program support itself financially (provide detailed estimates)?
  
  - Yes. This is a no additional cost program.

- Will there be any assistantships or fellowships available?
  
  - No

- What new courses (departmental and/or service) if any, will be required?
  
  - Departmental courses
  - AHF 3102, AHF 4302 and AHF 4001 – to be approved in March UGCC meeting.
  - Service courses
    - None

- What new faculty (departmental and/or service), if any, will be required?
  
  - Departmental
    - None
  - Service
    - None

- Will new support staff be required?
  
  - No

- Will new GSAs or adjuncts be required?
  
  - No

- What new equipment, labs, or other facilities are required?
  
  - None at this time.

- What new library resources will be required?
  
  - None
Signature Page for initial approval of proposed program:

Victoria Bulker
Department Head/Program Chair

[Signature]

Date: 3/26/14

Dean or Associate Dean

[Signature]

Date: 2/26/14

Executive Vice President/Chief Operating Officer

[Signature]

Date: 3/14/14

Created October, 2013
OIEA