FLORIDA INSTITUTE OF TECHNOLOGY

ADDITIONAL COURSE TO THE CURRICULUM

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

<table>
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<th>SUBJECT</th>
<th>A</th>
<th>V</th>
<th>S</th>
<th>COURSE NO.*</th>
<th>4 4 0 2</th>
<th>CREDIT HOURS</th>
<th>3</th>
<th>TERM TO BE ADDED TO THE FILE: Spring 2013</th>
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<td>(e.g., 1301)</td>
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*Justify level if 1000-level+ and no co- or prerequisites

<table>
<thead>
<tr>
<th>CLASS HOURS</th>
<th>45/semester</th>
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<tr>
<th>DEPARTMENT</th>
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<td>(e.g., Computer Sciences)</td>
<td>(e.g., Lecture, Lab or Special Topics/Project)</td>
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<tr>
<th>COLLEGE OF AERONAUTICS</th>
<th>23</th>
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<tbody>
<tr>
<td>NATHAN M. BISK COLLEGE OF BUSINESS</td>
<td>24</td>
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<tr>
<td>COLLEGE OF ENGINEERING</td>
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<td>EXTENDED STUDIES DIVISION / NATHAN M. BISK COLLEGE OF BUSINESS</td>
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| COMPUTER TITLE | Restricted to 25 characters, including spaces | Aviation Sustainability |

| CATALOG TITLE | Aviation Sustainability |

| CATALOG DESCRIPTION OF COURSE | Restricted to 350 characters, including spaces |

Focuses on developing a sustainable aviation infrastructure. Discusses the principles of sustainability in aviation, monitoring and analyzing the airfield transport system, alternative fuels and biotechnology in aviation.

This description has been approved by the catalog office. □ Yes □ No

**Catalog Director**

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

**RESTRICTIONS**

<table>
<thead>
<tr>
<th>Prerequisite</th>
<th>Course Number</th>
<th>Corequisite</th>
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**GRADES TO BE ISSUED**

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<td>P, F</td>
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**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.

**APPROVALS:** Upon completion of appropriate department approvals, submit form to Chair, Graduate Council, or Chair, Undergraduate Curriculum Committee for approval below and forward to Catalog Director.

**Catalog Director**

**Registrar's Use Only**

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**DISTRIBUTION**

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ROR-10-412
Proposed Aviation Environmental Science Course

FLORIDA INSTITUTE OF TECHNOLOGY
COLLEGE OF AERONAUTICS

AVS 4402
Aviation Sustainability

Instructor: Ismael Cremer: icremer@fit.edu, Extension: 7629

Course Description:
Focuses on developing a sustainable aviation infrastructure. The principles that are discussed include: the concept of sustainability, monitoring and analyzing the airfield transport system, increasing airside and landside capacity efficiently, alternative fuels, and biotechnology in aviation.

Recommended Text:
Sustainability in Aviation, Janic, 2011.

Objectives:

Students who successfully complete this course will be able:
1) Explain the key concepts of Sustainability in Aviation
2) Identify areas that need modification to become sustainable in an airport setting
3) Describe the different alternative energy solutions available
4) Analyze and interpret airport data to be used for creating more efficient models
5) Describe the basic methods of reducing pollution in the aviation industry

Grading:

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<td>F</td>
<td>50-59</td>
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<tr>
<td>I</td>
<td>Incomplete</td>
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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.

**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 Sustainability

Week 2

The current state of the Aviation Industry
  - Sustainability in Aviation

Week 3

The sustainable Air Transport System
  - Structure, concept, and principles
  - Aircraft fuel consumption
  - Emissions
  - ATC and ATC management

Week 4

'Greening' Airports part 1
  - Main concepts
  - Effects
  - Costs
  - Application

Week 5

'Greening' Airports part 2
  - Airside operations
  - Increasing runway capacity without increasing airport size
**Week 6**

'Greening' airports part 3
- Alternative fuels
  - Fuel supply systems
  - Previous research
  - Inputs/Outputs
  - Feasibility of proposed methods

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**Week 7**

Landside sustainability analysis
- Light rail rapid access transit systems
- Alternative energy methods for buildings

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**Week 8**

Landside part 2
- Alternative energy design proposal exercise

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**Week 9**

Landside part 3
- Water consumption at airports
- Water reuse technology
- Wastewater reuse in Aviation

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**Week 10**

Solid Waste Management (SWM)
- Sustainable practices
- Recycling solid waste
Week 11

Pollution and environmental ethics
   - Ethics
   - Conservation and Preservation

Week 12

Socio-economic impacts of sustainable air transportation

Week 13

Laws and regulations of environmental issues
   - Public awareness of issues

Week 14

Biotechnology in Aviation
   - Environmental biotechnology
   - Principles and applications
   - Microbial kinetics

Week 15

Biotechnology part 2
   - Bio-reactors
   - Detoxification of Aviation Hazardous Chemicals using biotechnology
   - Bioremediation