November 14, 2012

From: Dr. Donna Wilt, Associate Dean, College of Aeronautics

To: Office of the Executive Vice President and Chief Operating Officer

Subject: New College of Aeronautics Minor Program – Aviation Environmental Science

Request your review and approval for a new College of Aeronautics minor program in Aviation Environmental Science.

See attachment 1 for program overview.

See attachment 2 for Case Statement.

Request your approval and signature on the attachment 3, Adding a New Major or Minor to the Curriculum form.

Donna Wilt
Associate Dean

Attachments
1. Aviation Environmental Science Minor
2. Case Statement for Aviation Environmental Science Minor
3. Add_New_Minor_Aviation Environmental Science
PROGRAM OVERVIEW (attachment 1)

Proposed Aviation Environmental Science Minor

Educational objective: provide the student with academic preparation to become professionals in the Aviation Environmental consulting field.

This minor will provide knowledge with respect to Air pollution analysis, hazardous waste management in Aviation, Environmental Impact Statements, EPA and FAA regulations, Noise and Emissions analysis, environmental planning and managing, and sustainable practices in the Aviation field.

Aviation Environmental Science (18 credit hours)
Age Restriction: N
Delivery mode/s: classroom only
Degree Awarded: none
Admission Status: undergraduate
Location/s: main campus

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AVT 1001</td>
<td>Aeronautics I</td>
<td>3</td>
</tr>
<tr>
<td>AVS 1201</td>
<td>Aviation Meteorology (or OCN 2407)</td>
<td>3</td>
</tr>
<tr>
<td>AVS 2402</td>
<td>Introduction to Aviation Environmental Science</td>
<td>3</td>
</tr>
<tr>
<td>AVS 4402</td>
<td>Aviation Sustainability</td>
<td>3</td>
</tr>
<tr>
<td>AVM 3201</td>
<td>Aviation Planning</td>
<td>3</td>
</tr>
</tbody>
</table>

Elective(s) from the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENS 3101</td>
<td>Atmospheric Environments</td>
<td>3</td>
</tr>
<tr>
<td>ENS 4300</td>
<td>Renewable Energy and the Environment (prerequisite: PHY 2002)</td>
<td>3</td>
</tr>
<tr>
<td>Technical Elective</td>
<td>Subject to Program Chair approval</td>
<td>3</td>
</tr>
<tr>
<td>AVM 3202</td>
<td>Airport Design (prerequisite: AVM 3201)</td>
<td>3</td>
</tr>
</tbody>
</table>

Note: This proposal allows all CoA students to earn an AES minor as 9 extra credits are required outside of the major requirements for all CoA programs.

Minors
Florida Tech offers minor degrees in several areas of study. Colleges/departments may designate minors that require 18–21 credit hours of selected course work, excluding the core courses COM 1011, COM 1102, HUM 2051 and HUM 2052. The intent of the minor is to encourage and recognize focused study in a field outside the student’s major. Therefore, no more than nine credit hours applied to the minor may be named courses in the major. At least nine credit hours of the minor must be taken at Florida Tech. A minor program GPA of at least 2.0 is required in order to receive recognition for the minor on the student’s diploma, and the minor is only awarded at the same time as the major. Additional restrictions may be placed by the college/department offering the minor.

Minors may be chosen from within or outside the student’s major college. Minors will be indicated on the student’s transcript and resulting diploma. Requests to pursue a minor will require approval of the minor program
plan by both the major and minor program chairs. The request for a minor must be made prior to filing the petition to graduate and must be indicated on the petition.

Analysis of minor availability for CoA students

Minors require students to complete at least 9 credit hours outside named courses in their major.

<table>
<thead>
<tr>
<th>Required Courses in Minor</th>
<th>7113 (Aero Sci.)</th>
<th>7114 (Av. Mgmt)</th>
<th>7102 (Aero Sci Flight)</th>
<th>7103 (Avn Flight)</th>
<th>7104 (Av Comp. Sci)</th>
<th>7105 (Met Flight)</th>
<th>7106 (Met non Flight)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AVT 1001: Aeronautics 1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>AVS 1201: Aviation Meteorology</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>AVS 2402: Intro to AES</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>AVS 4202: Aviation Sustainability</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Elective as: Aviation Planning/Design</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Elective as: OCN/MET</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Elective as: Other</td>
<td>3</td>
<td>3</td>
<td>0</td>
<td>3</td>
<td>3</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Total hours outside major (9 minimum)</td>
<td>9</td>
<td>9</td>
<td>9</td>
<td>9</td>
<td>9</td>
<td>9</td>
<td>9</td>
</tr>
</tbody>
</table>

Notes:
1. This program allows 7113, 7114, 7102, 7101, 7104, 7105 and 7106 majors to earn an AES Minor
**Case Statement:**  
(Attachment 2)

**Introduction**

Aviation Environmental Science focuses on developing a sustainable aviation infrastructure. The principles include the concept of aviation sustainability, monitoring and analyzing the airfield transport system, increasing airside and landside capacity efficiently, alternative fuels, and biotechnology in aviation.

This course prepares students to apply their aviation knowledge toward environmental issues. It creates the opportunity to work with environmental consulting firms that specifically cater toward airports and other aeronautical industries.

The Aviation Environmental Scientist may use his/her knowledge to do research in the Environmental Science field, particularly in Aviation and airport environments.

**Program Relevance**

A Minor program in Aviation Environmental Science is consistent with the mission of the College of Aeronautics and the University. Sustainability and ‘green’ practices are becoming important topics particularly in the aviation industry. The College of Aeronautics’ Industry Advisory Board had recently recommended that the college pursue an environmental track in our curriculum. The curriculum developed for this program will prepare graduates to be accepted into Environmental firms in Aviation.

**Program Demand**

- *What is the market for this program?*

Aviation Environmental Science is the application of sustainability principles to the understanding and solution of aviation environmental problems. As the environmental debate and concern of depleting natural resources grows, qualified environmental scientists will be needed. As noise pollution, air pollution, and fuel costs become more of an issue in aviation, experts in the field of Aviation Environmental science will be desired.

The design of this minor also allows non-aviation students to enroll. This will allow civil, environmental, mechanical, and aerospace engineers the opportunity to get in-depth experience with aviation environmental issues and solutions.

The sustainability of aviation is an international concern. Europe has been leading the forefront with respect to mitigating pollution and resource depletion in the aviation industry. This course would attract students interested in becoming professionals in a growing field abroad.
• **How many new 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 2013. The projection for ten years is 5% growth per year.

AVS 2402, Introduction to Aviation Environmental Science, is being offered for the first time in Spring 2013 and there are already 6 students enrolled. This is a good indicator of the interest in this program.

• **What other universities offer this program?**

Currently, Embry Riddle Aeronautical University (Prescott Arizona Campus) is the only university offering a similar program. This is an opportunity to enter this market in Florida.

• **Are there current trends or forecasts for interest in this program?**

There is a large demand for ‘greener’ policies and practices. Aviation is one of the greatest contributors in terms of pollution, be it from fuel burn, noise, wildlife, airport energy use, and manufacturing of aviation parts.

The call for research in aviation and the environment has been rising within the FAA. The latest release of their Aviation Environmental Design Tool (AEDT) is a signal that there is a growing interest in modeling pollution and emissions due to aviation.

There is also a notice of FAA intent to establish the FAA Center of Excellence for Alternative Jet Fuels and Environment. This suggests that the FAA is trending towards sustainable aviation.

• **Will this program be offered to a "non-traditional" audience?**

  - Part-time students – Yes
  - Evening/weekend classes - No
  - Distance Learning – Specific Classes as desired
  - Other – No

• **What are employment opportunities after graduation?**

  As AEDT training will be part of the curriculum, there will be many opportunities in the FAA in the environmental field. This minor can also create opportunities in the EPA, ICAO, and environmental consulting firms.

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

  It is a minor program therefore not applicable.

• **Is internship part of the program?**
No.

**Competition**

- *Do other competitive universities offer this program?*

Embry Riddle (Prescott Campus) is the main university that offers this degree as a major.

- *How is this proposed program different if different?*

The proposed program will be offered as a minor compared to Embry Riddle’s course. The vision behind this proposed program is that it blends environmental science skills with aviation knowledge. It focuses on the aviation issues, allowing the student to become well versed and ready to be part of an environmental agency.

**Academic Requirements**

The academic requirement for admission is that the student be enrolled and eligible to register for the required courses. The student should be able to declare the minor as well.

The requirements for the minor are shown in Table 1.

Two new required courses are being developed to support the proposed minor curriculum. (AVS 2402 and AVS 4402) These have been approved as of Oct 2012. The remaining courses were selected from existing Florida Tech offerings.

The approved new courses are shown in Table 2.

This minor will be an addition to our existing programs. It will not replace or interfere with any of them.
Table 1

Aviation Environmental Science (18 credit hours)
Age Restriction: N
Delivery mode/s: classroom only
Degree Awarded: none
Admission Status: undergraduate
Location/s: main campus

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>AVT 1001</td>
<td>Aeronautics 1</td>
<td>3</td>
</tr>
<tr>
<td>AVS 1201</td>
<td>Aviation Meteorology (or OCN 2407)</td>
<td>3</td>
</tr>
<tr>
<td>AVS 2402</td>
<td>Introduction to Aviation Environmental Science</td>
<td>3</td>
</tr>
<tr>
<td>AVS 4402</td>
<td>Aviation Sustainability</td>
<td>3</td>
</tr>
<tr>
<td>AVM 3201</td>
<td>Aviation Planning</td>
<td>3</td>
</tr>
</tbody>
</table>

Elective(s) from the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENS 3101</td>
<td>Atmospheric Environments</td>
<td>3</td>
</tr>
<tr>
<td>ENS 4300</td>
<td>Renewable Energy and the Environment (prerequisite: PHY 2002)</td>
<td>3</td>
</tr>
<tr>
<td>Technical Elective</td>
<td>Subject to Program Chair approval</td>
<td>3</td>
</tr>
<tr>
<td>AVM 3202</td>
<td>Airport Design (prerequisite: AVM 3201)</td>
<td>3</td>
</tr>
</tbody>
</table>

Table 2

AVS 2402: Introduction to Aviation Environmental Science

Course Description:
Introduces the basic principles of Environmental Science directly applicable to the Aviation industry including: air and water quality, contaminants of concern, properties of contaminants, fate and transport of contaminants, hazardous waste risk assessment, and Air quality measurement. Environmental Impact Statements will also be addressed.

AVS 4402: Aviation Sustainability

Course Description:
This course 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, reducing aviation pollution, and biotechnology in aviation. Hazardous waste spill remediation practices and EPA regulations will be investigated.
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):

- *In what courses will the students be assessed for program-level student learning?*
  - Not required for a minor program

- *List the program-level student-learning Outcomes, Measures, and expected Targets for this program*
  - 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?*
  - *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 assessed (outcomes, accreditation, financial)?*
  - Normal AABI and SACS assessment procedures

- *Is program accreditation required or proposed for the program?*
  - No
Financial Resources/Uses

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

- *Will there be any assistants, fellowships available in this program*
  - No

- *What new courses, if any, will be required*
  - Departmental courses
    - AVS 2402 and AVS 4402 – both approved.
    - Service courses
      - None
  - None

- *What new faculty, if any, will be required*
  - Departmental
    - None
  - Service
    - None

- *Will new support staff be required*
  - No

- *Will new GSA’s or adjuncts be required*
  - No

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

- *What new library resources will be required*
  - None

Administrative Processes

- New Major Code: A new minor code will be required.

- University Catalog Changes: Minimal changes to university catalog will be necessary. Appropriate changes will be sent to University Publications promptly after necessary approval.

- Proposed Tuition Structure: It will be same as undergraduate tuition rate in other engineering disciplines.

- Bursar’s Office: It is anticipated that the billing and payment process work in the standard manner.
Signature Page for initial approval of proposed program:

Victoria Palbar
Department Head/Program Chair

Date

11/9/12

Dean or Associate Dean

Date

11-14-12

Executive Vice President/Chief Operating Officer

Date

11/16/12
ADD 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.) ☐ Master of Arts in Teaching (M.A.T.) ☐ Master of Science in Aviation (M.S.A.)
☐ Associate of Science (A.S.) ☐ Master of Business Administration (M.B.A.) ☐ Educational Specialist (Ed.S.)
☐ Bachelor of Arts (B.A.) ☐ Master of Education (M.Ed.) ☐ Doctor of Philosophy (Ph.D.)
☐ Bachelor of Science (B.S.) ☐ Master of Public Administration (M.P.A.) ☐ Doctor of Psychology (Psy.D.)
☐ Master of Arts (M.A.) ☐ Master of Science (M.S.) ☐ 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

AVIATION ENVIRONMENTAL SCIENCE

TERM TO BE INITIATED 1/23/2013 ADVISOR FOR NEW PROGRAM I. SMEELE C. CREMER

(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 associate vice president for institutional compliance 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) Undergraduate Curriculum Committee or Graduate Council approves academics and signs form. 5) The executive vice president or his designee gives final approval of program, signs form and forwards to Office of the Registrar.

1) Victoria A. Jones 11/4/2012 4) Chair, Graduate Council Date
   Dean or Associate Dean

2) Date
   Associate Vice President for Institutional Compliance

3) Date
   Executive Vice President

REGISTRAR'S USE ONLY

FSA ATLAS ___________ SOARREF ___________ SMARIE ___________
STVMAJR ___________ SOACURR ___________ Major Code Assigned ___________
GMVSDAX ___________ CIPC Code ___________ Operator Initials/Date

DISTRIBUTION

Original – Registrar
Copy – Academic Unit

Florida Institute of Technology • Office of the Registrar
150 West University Boulevard, Melbourne, FL 32901-6975 • (321) 674- ext. • Fax (321) 674-7927
General Information – ext. 8115, Graduation – ext. 8116, Records and Transcripts – ext. 8117, Registration – ext. 8118

10R-947-0037