Course Inventory Change Request

New Experimental Course Proposal

Date Submitted: 03/10/16 10:27 am

Viewing: **AER E 526X : Advanced Topics in Aerospace Structural Design**

Last edit: 03/10/16 11:15 am
Last edited by: paulca
Changes proposed by: vdayal

Department: Aerospace Engineering (AER E)
Catalog Year: 2015-2016
First Expected Offering Term: Fall
Instructor: Vinay Dayal
Title: Advanced Topics in Aerospace Structural Design
Transcript Title:

**Major Teaching Department**: AER E

**Cross Listed Courses**

**Dual Listed Course**: AER E 426X

**Credit Hour Details**

- **Credit Type**: Fixed
- **Credit Hours**: 2

**Grading Method**: A-F

**Instruction Type**

<table>
<thead>
<tr>
<th>Instruction Type</th>
<th>Contact Hours per Week</th>
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<tbody>
<tr>
<td>Lecture</td>
<td>2</td>
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<tr>
<td>Laboratory</td>
<td>2</td>
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**Repeatable?**

- No

**Semesters Offered**

- Fall: Yes Alternate, offered odd-numbered years
Spring
Summer

Prerequisites
'Strength of Materials

Description
Advanced topics in the design and analysis of aerospace structures. Topics related to the material selection, composite materials, strength and durability, riveted, bolted, and adhesive joining, and manufacturability, will be discussed. Large flexible space structures and non-linear aspects of structural design will be discussed. Group project will be assigned.

Graduation Restrictions

<table>
<thead>
<tr>
<th>Meets U.S. Diversity Requirement</th>
<th>Meets International Perspectives Requirement</th>
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<tbody>
<tr>
<td>No</td>
<td>No</td>
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Syllabus & Supporting Documentation
Request for Duel Listing AerE 426 and AerE 526x.docx
Syllabus_526x.docx

Reason for proposal (programmatic justification, need for course, intended use, etc.)
Design of space structures, especially large space structures is becoming important. Space industry is looking for employees with experience in large space structures. Aerospace Engineering Department has no course offering in space structures and this course will fill this important area.

Course outcomes/objective
After taking this course the students will be able to:
1. Select proper material for various aircraft and space craft structures
2. They will be able to predict long term behavior of structures
3. They will be able to design large flexible structures
4. They will be able to analyze non-linear behavior of structures
5. They will be able to integrate manufacturing aspects in their design.

Course content/major topics to be addressed (attach syllabus if required by your college/department)

1. Weekly assignments will be given
2. One end of the lectures part of the course test will be given
3. An extensive large group design project will be assigned.
4. Emphasis will be for the students to search for data and properties from various sources and come up with their structural design.

Assessment Plans: Mechanism for assessing student mastery of course outcomes/objectives

No other course of this type exists anywhere in the University.....however, Dr. Shen was contacted per suggestion from ECC member and the result of the consultation is shown in the next section below
Hello Vinay,

I have gone through the course contents. I don’t see any duplications between this course and the design courses in structural engineering focus area in CE. It should be an interesting course. I thought that such an important course would have long been a core course in Aerospace area.

Best wishes,

Jay

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paulca (03/07/16 9:36 am): Rollback: From: Rehmann, Chris R [CCE] Sent: Friday, March 4, 2016 5:22 PM To: Sturges, Leroy D [AER] <sturges@iastate.edu>; Castleberry, Paul S [ENGSS] <paulca@iastate.edu>; eccc [ENGSS] <eccc@iastate.edu> Cc: Dayal, Vinay [AER] <vdayal@iastate.edu> Subject: RE: AER E 526X/426X submitted to ECC on 030416 The section “Relationship of this course...” says, “No other course of this type exists anywhere in the University”, but several courses in civil engineering involved advanced topics in structural design (e.g., CE 533, 534, 535, 536, 545, 546, 547, 548). I suspect there’s little overlap in terms of the applications covered by these courses and the proposed course, but I recommend (a) changing the title to “Advanced Topics in the Design of Aerospace Structures”—or something similar—and (b) verifying with a faculty member in structural engineering, such as Jay Shen (jshen@iastate.edu), that there is no overlap. Chris