

Cover Sheet: Request 10304

EAS4101 Aerodynamics

Info

Process	Course Modify Ugrad/Pro
Status	Pending
Submitter	Carroll, Bruce F bfc@ufl.edu
Created	7/10/2015 9:57:26 AM
Updated	11/16/2015 12:39:02 PM
Description	Incompressible aerodynamics, integral and differential governing equations, potential flow, boundary layers, airfoils, wings, numerical techniques. (3 credit hours)

Actions

Step	Status	Group	User	Comment	Updated
Department	Approved	ENG - Mechanical and Aerospace Engineering 011902000	Carroll, Bruce F		7/10/2015
No document changes					
College	Approved	ENG - College of Engineering	Caple, Elizabeth		10/7/2015
Replaced ucc2 EAS4101.docx					9/9/2015
Replaced Syllabus - EAS4101 Aerodynamics.docx					9/9/2015
University Curriculum Committee	Comment	PV - University Curriculum Committee (UCC)	Baker, Brandi N	Added to November agenda.	10/27/2015
No document changes					
University Curriculum Committee	Pending	PV - University Curriculum Committee (UCC)			10/27/2015
No document changes					
Statewide Course Numbering System					
No document changes					
Office of the Registrar					
No document changes					
Student Academic Support System					
No document changes					
Catalog					
No document changes					
College Notified					
No document changes					

compressible flow material is being removed from this course allowing expanded coverage of boundary layer theory. This course is being moved earlier in the curriculum (start of Junior year) with new sophomore level course as a pre-requisite. This change is being done to allow aerospace engineering topics to be spread over a larger number of semesters.

Syllabus Requirements Checklist

The University's complete Syllabus Policy can be found at:

http://www.aa.ufl.edu/Data/Sites/18/media/policies/syllabi_policy.pdf

The syllabus of the proposed course **must** include the following:

- Course title
- Instructor contact information (if applicable, TA information may be listed as TBA)
- Office hours during which students may meet with the instructor and TA (if applicable)
- Course objectives and/or goals
- A weekly course schedule of topics and assignments.
- Methods by which students will be evaluated and their grades determined
- Information on current UF grading policies for assigning grade points. This may be achieved by including a link to the appropriate undergraduate catalog web page:
<https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>.
- List of all required and recommended textbooks
- Materials and Supplies Fees, if any
- A statement related to class attendance, make-up exams and other work such as: *"Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found in the online catalog at: <https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>."*
- A statement related to accommodations for students with disabilities such as: *"Students requesting classroom accommodation must first register with the Dean of Students Office. The Dean of Students Office will provide documentation to the student who must then provide this documentation to the Instructor when requesting accommodation."*
- A statement informing students of the online course evaluation process such as: *"Students are expected to provide feedback on the quality of instruction in this course based on 10 criteria. These evaluations are conducted online at <https://evaluations.ufl.edu>. Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at <https://evaluations.ufl.edu/results>."*

It is **recommended** that the syllabus contain the following:

- Critical dates for exams or other work
- Class demeanor expected by the professor (e.g. tardiness, cell phone usage)
- The university's honesty policy regarding cheating, plagiarism, etc.

Suggested wording: UF students are bound by The Honor Pledge which states, "We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment." The Honor Code (<http://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/>) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class.

- Contact information for the Counseling and Wellness Center: <http://www.counseling.ufl.edu/cwc/>, 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies

Syllabus

EAS4101 Aerodynamics

1. **Catalog Description:** Incompressible aerodynamics, integral and differential governing equations, potential flow, boundary layers, airfoils, wings, numerical techniques. (3 credit hours)
2. **Pre-requisites:** COP2271, (EAS3020C or EGN3353C), EML3100(C), MAC2313(C), & MAP2302(C)
3. **Co-requisites:** None
4. **Course Objectives:** This is an intermediate level undergraduate course required for the aerospace engineering BS degree. The course is typically taken at the start of the Junior year. Students will learn to formulate and solve incompressible aerodynamics problems commonly found in aerospace applications, including flow over two dimensional airfoils and three dimensional wings. Students will also develop a basic understanding of numerical solution methods.
5. **Instructor:** Lawrence Ukeiley
 - a. Office location: 312 MAEA
 - b. Telephone: 392-9459
 - c. E-mail address: ukeiley@ufl.edu
 - d. Office hours: TBD
6. **Teaching Assistant:** To be announced
7. **Meeting Times and Location:**
 - a. **Lectures**
MWF 2, Location TBD
8. **Material and Supply Fees:** None
9. **Textbooks Required:** Anderson, J., *Fundamentals of Aerodynamics, 5th Edition, Mc Graw Hill, 2010.*
10. **Recommended Reading:** None
11. **Course Outline and Schedule:**
 - Week 1: Aerodynamic forces and moments, dimensional analysis, flow similarity
 - Week 2: Vector relations, control volumes and fluid elements, continuity equation
 - Week 3: Momentum equation, energy equation
 - Week 4: Substantial derivative, pathlines, streamlines, vorticity, stream function
 - Week 5: Velocity potential, Bernoulli's equation
 - Exam 1
 - Week 6: Potential flow, elementary flows
 - Week 7: Flow superposition, lifting flow over a cylinder, Kutta-Joukowski theorem
 - Week 8: Incompressible flow over airfoils, Kutta condition, starting vortex

Week 9: Thin airfoil theory, symmetric and cambered airfoils

Exam 2

Week 10: Incompressible flow over wings, lifting-line theory

Week 11: Elliptical lift distributions, aspect ratio

Week 12: Numerical methods: nonlinear lifting-line methods, vortex lattice methods

Week 13: Viscous flow, Navier-Stokes equations

Week 14: Boundary-layer equations

Week 15: Review

Final Exam

12. Assessment Methods and Grading:

- | | |
|---------------|-----|
| a. Attendance | 5% |
| b. Homework | 20% |
| c. Exam 1 | 25% |
| d. Exam 2 | 25% |
| e. Final Exam | 25% |

If a student thinks there is an error in the grading, it should be brought to the attention of the instructor within two weeks after the graded material is handed back. Scores will not be reconsidered beyond the two week period.

13. Grading Scale:

93 – 100: A	87 – 89.9: B+	77 – 79.9: C+	67 – 69.9: D+	0 – 59.9: E
90 – 92.9: A-	83 – 86.9: B	73 – 76.9: C	63 – 66.9: D	
	80 – 82.9: B-	70 – 72.9: C-	60 – 62.9: D-	

See the current undergraduate catalog for information on how grade points are assigned:

<https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>.

14. Class Attendance and Make-up Policy: Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found in the online catalog at:

<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>.

Attendance is mandatory. Excused absences will be given for documented reasons listed in the university attendance policy referenced above.

Late assignments and makeup exams are not normally allowed. Arrangements for late assignments or makeup exams will be made on a case by case basis for excused absences.

15. Class Demeanor Expectations: During class, cell phones must be turned off or set to silent ringer mode.

16. Accommodation for Students with Disabilities: Students requesting classroom accommodation must first register with the Disability Resource Center. That office will provide the student with documentation that he/she must provide to the course instructor when requesting accommodation.

17. **Online Course Evaluations:** Students are expected to provide feedback on the quality of instruction in this course based on 10 criteria. These evaluations are conducted online at <https://evaluations.ufl.edu>. Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at <https://evaluations.ufl.edu/results>.
18. **Honesty Policy:** UF students are bound by The Honor Pledge which states, “We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: “On my honor, I have neither given nor received unauthorized aid in doing this assignment.” The Honor Code (<http://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/>) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class.
19. **UF Counseling Services:** Resources are available on-campus for students having personal problems or lacking clear career and academic goals. The resources include:
 - UF Counseling & Wellness Center, 3190 Radio Rd, 392-1575, psychological and psychiatric services.
 - Career Resource Center, Reitz Union, 392-1601, career and job search services.