Curriculum Course Request WES Change Course AE 2610 - A-2018-ME-130; effective term: 202040

Koorosh Naghshineh
Thu 12/20/2018 2:56 PM

To: Raja G Aravamuthan <raja.aravamuthan@wmich.edu>; Said M Abubakr <said.abubakr@wmich.edu>
Cc: Holly Blanks <holly.blanks@wmich.edu>

2 attachments (215 KB)
AE2610_Fall2020_Proposed.pdf; AE2610_Fall2020_Assessment.pdf;

Please verify your data for New Curriculum Course Request for department: ME; college: A.
Go to the following URL to complete your worklist items: https://bwfp1.cc.wmich.edu:7102/wfbprod

Date of request: 05-DEC-2018
Request ID: A-2018-ME-130
College: A
Department: ME
Initiator name: Peter Gustafson
Initiator email: peter.gustafson@wmich.edu

Proposed effective term: 202040

Does course need General Education approval?: Y
Will course be used in teacher education?: N
If 5000 level course, prerequisites apply to: U

Proposed course data:
WES Change Course AE 2610
Specific Course Change type selected: Description
Specific Course Change type selected: WMU Essential Studies - Level 1: Foundations

1. Existing course prefix and number:
AE 2610

2. Level 1: Foundations
Indicate which course category the course should be placed in:
Oral and Digital Communication
This course will be more difficult due to the increased content. This may adversely affect student time to graduation.

It is not practical to remove the introductory technical content from the course. Hence the addition of content (i.e., instruction and study time in communication methods) will make the course more difficult. (More time will be spent in laboratory, more time in preparing reports outside of laboratory). Assignments will be more diverse and therefore may be more difficult for the student.

The increased course difficulty may have the effect of decreasing the course GPA. This risk may be mitigated by the college committing more resources to this and similar courses. (See the resources section.)

Note that due to increasing numbers of Aerospace Engineering students, this course is now being offered twice a year in a typical year. This is a change from a few years ago.

K. Student or external market demand. What is your anticipated student audience? What evidence of student or market demand or need exists? What is the estimated enrollment? What other factors make your proposal beneficial to students?

There is demand for these skills in the workplace and beyond. Many students have, or desire, to develop these professional skills.

L. Effects on resources. Explain how your proposal would affect department and University resources, including faculty, equipment, space, technology, and library holdings. Tell how you will staff additions to the program. If more advising will be needed, how will you provide for it? How often will course(s) be offered? What will be the initial one-time costs and the ongoing base-funding costs for the proposed program? (Attach additional pages, as necessary.)

The college should invest in more communication instruction (tutoring), especially in oral and digital communication. This will be an ongoing cost to enhance this educational objective required by WES.

The college should invest in resources for digital communication (servers, microphones and cameras for blogs, vlogs, student Wordpress sites, etc). This is likely to require ongoing investment as digital media equipment will occasional be damaged in use. Further, this equipment has a typical best-case lifespan of a few years.

Faculty time commitment will be increased due to the grading of more diverse assignments, the requirement to providing more guidance on writing and oral communication (these are not specialty areas of the teaching faculty).

Some of the teaching faculty may not have 'modern' skills in digital communication (blogging, vlogging, website development, etc) and thus may require some training.

The increases in the number of aerospace engineering students (and the typical failure rate for students in this course) justify that the catalog list this course as occurring twice per academic year (a change from once per year). MAE has been doing this for several years now, however, the college should be aware that this has increased the teaching demand on the department faculty.

M. With the change from General Education to WMU Essential Studies, this question is no longer used.

For courses requesting approval as a WMU Essential Studies course, a syllabus identifying the student learning outcomes and an action plan for assessing the student learning outcomes must be attached in the Banner Workflow system.

Not Applicable

N. (Undergraduate proposals only) Describe, in detail, how this curriculum change affects transfer articulation for Michigan community colleges. For course changes, include detail on necessary changes to transfer articulation from Michigan community college courses. For new majors or minors, describe transfer guidelines to be developed with Michigan community colleges. For revisions to majors or minors, describe necessary revisions to Michigan community college guidelines. Department chairs should seek assistance from college advising directors or from the admissions office in completing this section.

This will have minimal impact on the typical transfer student from a community college. This is likely the first course they would take after transfer. This course is only rarely accepted as a transfer course, and then only from universities with rigorous
Syllabus for AE2610
INTRODUCTION TO AEROSPACE ENGINEERING
Fall 2020
3 Credits: Required for BS Aerospace Engineering

Instructor: Assoc. Prof. Peter Gustafson
Office: G-215 Floyd Hall
Phone: 276-3423
Email: peter.gustafson@wmich.edu
Faculty Web Page: http://homepages.wmich.edu/~pjm8969/
Course Web Page: on e-learning

Schedule:
Lecture: MW 4:30–5:20, C-210 Floyd Hall
Office Hours: TR 1–2, or by appointment (See the faculty web page for potential slots)

Catalog Data:
An overview of aerospace engineering disciplines; the history of aerospace, fundamental elements of aerodynamics and astrodynamics, experiments, airfoils and wings, performance, stability and control, propulsion, and structures leading toward the aerospace vehicle conceptual design. Oral and digital communications are emphasized as methods of conveying technical information to diverse audiences. This course meets the student learning outcomes in the WMU Essential Studies Level 1 – Communications (Oral and Digital Communications).

Objectives
The objective of this course is to give students a broad conceptual understanding of major branches of aerospace engineering discipline leading to aerospace vehicle design.

- To apply mathematics and physics courses to the solution of introductory level problems in aerospace engineering.
- To introduce the principals of aeronautics for use in subsequent course in aerospace curriculum.
- To expose the student to the principals of aircraft design
- To motivate the engineering students to pursue education and subsequent professional career in aerospace engineering.
- To demonstrate effective and appropriate oral and digital communications (WMU Essential Studies Learning Outcome)
- To demonstrate and apply information literacy (WMU Essential Studies Learning Outcome)

Topics:

- History of Aviation

Prof. Peter A. Gustafson

Updated: December 20, 2018
• A further goal of the laboratory work is to provide students the opportunity to develop technical communication skills. Students will practice electronic and oral communication in a variety of forms.

Laboratory Assistants

• Cameron Segard (Head)
• Heather Irish
• Thomas Kerber
• Scott Miller
- Lab Assistant Name
- Date of the lab performed

- Communication preparation and delivery should be shared across the group for each
  session. Each participating member must attest to their participation and to that of
  colleagues. A student who does not contribute equitably to the technical
  communication shall not receive credit for the laboratory work.

- Use appropriate citations for all communications. Some guidelines may be suggested
  at http://www.writing. engr.psu.edu/workbooks/laboratory.html

Assignments deadlines are strict. Assignments are typically due at the be-
inning of class. All homework must be turned in via e-learning. Late work
will be penalized 10% per day or portion of a day. (Examples: 5 minutes late
penalized 10%, 24 hours +5 minutes late penalized 20%.)

Working Together: For homework assignments, students are encouraged to discuss con-
ceptual solution methods with their colleagues. However written work must be done inde-
pendently and must accurately represent the work of the individual student. All exams
and quizzes are to be completed independently.

Classroom Etiquette: Laptop and cell phone use during lecture causes distraction in your
fellow students and in the instructor. Please disable these and all similar devices.

Illness: Attendance is important, however, the health and well-being of our community is
more important. Do not come to class if you are ill or suspect illness. Contact the instructor
to inform him of your circumstances and to coordinate assistance.

Re-grades: Re-grade requests must be submitted in writing within 1 week of the return of
any item. The instructor reserves the right to re-grade the entire item.

Academic Integrity and Personal/Professional Conduct:
Students are responsible for making themselves aware of and understanding the University
policies and procedures that pertain to Academic Honesty. These policies include cheating,
fabrication, falsification and forgery, multiple submission, plagiarism, complicity and com-
puter misuse. The academic policies addressing Student Rights and Responsibilities can be
found in the Undergraduate Catalog at http://catalog.wmich.edu/content.php?catoid=24&navoid=974
If there is reason to believe you have been involved in academic dishonesty, you
will be referred to the Office of Student Conduct. You will be given the opportunity
to review the charge(s) and if you believe you are not responsible, you will have the oppor-
tunity for a hearing. You should consult with your instructor if you are uncertain about an
issue of academic honesty prior to the submission of an assignment or test.

Students and instructors are responsible for making themselves aware of and abiding by
the “Western Michigan University Sexual and Gender-Based Harassment and Violence, In-
<table>
<thead>
<tr>
<th>Assignment</th>
<th>Objective</th>
<th>Communication Format</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lab 1</td>
<td>To understand principles ofairspeed measurement</td>
<td>Technical Abstract</td>
</tr>
<tr>
<td>Lab 2</td>
<td>To investigate the airfoil aerodynamic characteristics using a computational aerodynamic tool</td>
<td>Blog</td>
</tr>
<tr>
<td>Lab 3</td>
<td>To investigate the airfoil aerodynamic characteristics through wind tunnel experiments</td>
<td>Company Technical Briefing</td>
</tr>
<tr>
<td>Lab 4</td>
<td>This lab exercise is intended to give the students an opportunity to investigate the effect of Aspect Ratio (AR) on lift and drag for rectangular wings using computational aerodynamic software called Xflr5</td>
<td>Conference Article</td>
</tr>
<tr>
<td>Lab 5</td>
<td>To familiarize with names and functions of major aircraft components.</td>
<td>Media Article</td>
</tr>
<tr>
<td></td>
<td>To familiarize with names and functions of cockpit control and flight instrument system</td>
<td></td>
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<tr>
<td>Lab 6</td>
<td>This lab exercise is intended to provide the students with an opportunity to understand the concept of Bernoulli's equation, flow speed, pressure, and wake survey through a flow over circular cylinder experiment using the Small Wind Tunnel.</td>
<td>Journal Article</td>
</tr>
<tr>
<td>Glider Design, Build &amp; Fly (DBF) Project</td>
<td>The goal of this project is to provide an opportunity to work as a team in the design, fabrication and construction of a glider aircraft.</td>
<td>Elevator Pitch, Whitepaper, Technical Report</td>
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Table 1: Laboratory Assignments
<table>
<thead>
<tr>
<th>Criteria</th>
<th>Message Adaptation</th>
<th>Message Construction</th>
<th>Supporting Material</th>
<th>Oral Presentation</th>
<th>Mediated Presentation (digital)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beginning</td>
<td>Demonstrates awareness of message to audience, channel, context, and purpose.</td>
<td>Exemplary compels compelling central message with skilled and cohesive organizational pattern.</td>
<td>Uses credible and relevant sources and evidence.</td>
<td>Includes effective delivery techniques that support the presentation.</td>
<td>Uses creative or production techniques that are highly effective and appropriate with compelling adherence to professional practice and norms.</td>
</tr>
<tr>
<td>Developing</td>
<td>Demonstrates clear and consistent central message and organizational pattern.</td>
<td>Exhibits compelling central message with skilled and cohesive organizational pattern.</td>
<td>Utilizes multiple, varied, credible and relevant sources and evidence.</td>
<td>Incorporates delivery techniques that are compelling and memorable to support the presentation.</td>
<td>Uses creative or production techniques that are partially effective and shows minimal adherence with attention to professional practice and norms.</td>
</tr>
<tr>
<td>Proficient</td>
<td>Demonstrates thorough awareness of message to audience, channel, context, and purpose.</td>
<td>Message compelling central message with skilled and cohesive organizational pattern.</td>
<td>Incorporates delivery techniques that are compelling and memorable to support the presentation.</td>
<td>Uses delivery techniques that partially support the presentation and overall effectiveness.</td>
<td>Uses creative or production techniques that are partially effective and shows minimal adherence with attention to professional practice and norms.</td>
</tr>
</tbody>
</table>