Program Change Request

Date Submitted: 10/26/17 8:57 am

Viewing: MEEGBS: Mechanical Engineering, Bachelor of Science in Mechanical Engineering

Last approved: 03/08/16 7:57 pm
Last edit: 11/10/17 5:04 pm
Changes proposed by: melhart

Catalog Pages Using this Program

Mechanical Engineering B.S.M.E.
Mechanical Engineering (MEEG)

Submitter: User ID: crsleaf1 Phone: 575-4153
Program Status Active
Academic Level Undergraduate
Type of proposal Major/Field of Study
Select a reason for this modification
Adding an Option, Concentration or Emphasis—(LON 3)
Are you adding a concentration? Yes

<table>
<thead>
<tr>
<th>Action</th>
<th>Code</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Add new</td>
<td>MEEGBS-AERO</td>
<td>Aerospace Concentration</td>
</tr>
<tr>
<td>Add new</td>
<td>MEEGBS-MEEG</td>
<td>Mechanical Engineering Concentration</td>
</tr>
</tbody>
</table>

Are you adding a track? No
Are you adding a focused study? No
Effective Catalog Year Fall 2018
College/School Code College of Engineering(ENGR)
Department Code Department of Mechanical Engineering(MEEG)
Program Code MEEGBS
Degree Bachelor of Science in Mechanical Engineering
Program Title Mechanical Engineering, Bachelor of Science in Mechanical Engineering
Program Delivery Method On Campus
Is this program interdisciplinary? No
Does this proposal impact any courses from another College/School? Yes
College(s)/School(s)

<table>
<thead>
<tr>
<th>College/School Name</th>
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</thead>
<tbody>
<tr>
<td>Fulbright College of Arts and Sciences(ARSC)</td>
</tr>
</tbody>
</table>

What are the total hours needed to complete the program? 124

In Workflow

1. ENGR Dean Initial
2. Provost Initial
3. Director of Program Assessment and Review
4. Registrar Initial
5. Institutional Research
6. MEEG Chair
7. ENGR Curriculum Committee
8. ENGR Faculty
9. ARSC Dean
10. ENGR Dean
11. Global Campus
12. Provost Review
13. University Course and Program Committee
14. Faculty Senate
15. Provost Final
16. Provost's Office—Documentation sent to System Office
17. Higher Learning Commission
18. Board of Trustees
19. ADHE Final
20. Provost's Office—Notification of Approval
21. Registrar Final
22. Catalog Editor Final

Approval Path

1. 09/26/17 10:33 am Norman Dennis (ndennis): Rollback to Initiator
2. 09/28/17 4:18 pm Norman Dennis (ndennis): Approved for ENGR Dean Initial
3. 10/10/17 10:01 am Alice Griffin (agiffin): Rollback to Initiator
4. 11/12/17 5:52 pm Norman Dennis (ndennis): Rollback to Initiator
Program Requirements and Description

Requirements

Requirements for B.S. in Mechanical Engineering

The Bachelor of Science in Mechanical Engineering curriculum includes, in addition to the required 18 hours of history, government, fine arts/humanities/social science elective courses, a total of 12 hours of technical and science electives. A student must select all electives with the approval of his or her adviser. The fine arts/humanities/social science electives must be selected from the University Core in the Academic Regulations chapter for university requirements for the program. It is expected that technical and science electives will be chosen to provide a coherent program within one or more areas of specialization or options available to mechanical engineers. Traditional areas of specialization are available in mechanical systems, materials, and energy systems. Other areas include pre-medical, management, and aerospace.

The first-year curriculum is essentially the same as prescribed for all engineering freshmen. Students entering the mechanical engineering program are required to take two, four hour laboratory based science electives. One of the four hour science electives must be PHYS 2074. The other four hour science elective must be chosen from one of the following:
MEEGBS: Mechanical Engineering, Bachelor of Science in Mechanical Engineering

Technical/Science Electives

The purpose of technical/science electives is to provide students with the opportunity to expand their education along lines of particular interest to them. As part of the mechanical engineering curriculum, students are required to complete 12 hours of technical/science electives. These electives can be categorized into three groups: Mechanical Engineering Electives, Other Engineering Electives, and Science-Math Electives.

Mechanical Engineering Electives. All mechanical engineering courses at or above the 4000 level not already required in the BSME curriculum are acceptable. Special Project courses, MEEG 491V, are allowed as electives only after approval in advance by the department head.

Other Engineering Electives. The rules governing the selection of engineering electives are:

Engineering or Computer Science/Computer Engineering courses at or above the 4000 level not already required in the BSME curriculum are allowed as technical-science electives. Courses with content remedial to required courses are not allowed, and courses considered redundant to required courses are not allowed.

Science-Math Electives. The approved list of science and math courses accepted as technical-science electives is available in the Mechanical Engineering department office.

Aerospace Concentration Electives

The Aerospace concentration in Mechanical Engineering provides students an opportunity to concentrate on engineering and scientific issues associated with aircraft, spacecraft, and space exploration. The Aerospace concentration consists of the 112-credit hour MEEGBS core, plus 12 hours of specified elective courses.

Students must complete at least two (6 hours) of the following courses:

- **MEEG 4503** Introduction to Flight (Fa) 3
- **MEEG 4433** Aerospace Propulsion (Irregular) 3
- **MEEG 4523** Astronautics (Irregular) 3
- **MEEG 5503** Advanced Fluid Dynamics I (Sp) 3
- **MEEG 5533** Fundamentals of Aerodynamics (Irregular) 3

The remaining 6 hours of technical electives must include two of the following courses:

- **MEEG 4503** Introduction to Flight (Fa) 3
- **MEEG 4903H** Honors Mechanical Engineering Research (Sp, Fa) 3
- **MEEG 491V** Special Topics in Mechanical Engineering (Sp, Su, Fa) 1-3
- **MEEG 492V** Individual Study in Mechanical Engineering (Sp, Su, Fa) 1-3
- **MEEG 4433** Aerospace Propulsion (Irregular) 3
- **MEEG 4523** Astronautics (Irregular) 3
- **MEEG 5503** Advanced Fluid Dynamics I (Sp) 3
- **MEEG 5533** Fundamentals of Aerodynamics (Irregular) 3
- **MEEG 5473** Radiation Heat Transfer (Even years, Su) 3
- **ASTR 4033** Astrophysics I: Stars and Planetary Systems (Odd years, Fa) 3
- **ASTR 4043** Astrophysics II: Galaxies and the Large-Scale Universe (Even years, Sp) 3
- **GEOS 4413** Principles of Remote Sensing (Fa) 3
- **SPAC 5033** Stars and Planetary Systems (Odd years, Fa) 3

Fine Arts/Humanities/Social Science Electives

Students must follow the University Core curriculum in selecting their history, government, fine arts, humanities, arts, and social science electives. Each student in the College of Engineering is required to complete 18 semester hours in the humanities and social sciences.

The courses taken must include:

- **HIST 2003** History of the American People to 1877 (ACTS Equivalency = HIST 2113) (Sp, Su, Fa) 3
- or **HIST 2113** History of the American People to 1877 (ACTS Equivalency = HIST 2123) (Sp, Su, Fa) 3
- or **PLSC 2003** American National Government (ACTS Equivalency = PLSC 2003) (Sp, Su, Fa) 3
- **ECON 2143** Basic Economics: Theory and Practice (Sp, Su, Fa) 3
- or **ECON 2103** Principles of Macroeconomics (ACTS Equivalency = ECON 2103) (Sp, Su, Fa) 3
- **PHIL 3103** Ethics and the Professions (Sp, Su, Fa) 3
The **remaining three** courses must be selected from an approved list. The humanities and social sciences chart should be used as a guide for selecting these courses.

### 8-Semester Plan

**Mechanical Engineering B.S.M.E.**

**Eight-Semester Degree Program**

The following section contains the list of courses required for the Bachelor of Science in Mechanical Engineering degree and a suggested sequence. Not all courses are offered every semester, so students who deviate from the suggested sequence must pay careful attention to course scheduling and course prerequisites. Students interested in obtaining a sequencing schedule of courses may contact the Mechanical Engineering office.

Students wishing to follow the eight-semester degree plan should see the [Eight-Semester Degree Policy](#) in the Academic Regulations chapter for university requirements of the program.

Either the science elective in the second semester of Year 1 or the science elective in the first semester of Year 2 must include **PHYS 2074**. Other science electives should be chosen from an approved list. See the mechanical engineering office.

#### First Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Units</th>
<th>Fall</th>
<th>Spring</th>
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</thead>
<tbody>
<tr>
<td>ENGL 1013 Composition I (ACTS Equivalency = ENGL 1013)</td>
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<td></td>
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<tr>
<td>CHEM 1103 University Chemistry I (ACTS Equivalency = CHEM 1414 Lecture)</td>
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<td>PHYS 2054 University Physics I (ACTS Equivalency = PHYS 2034)</td>
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<tr>
<td>MATH 2554 Calculus I (ACTS Equivalency = MATH 2405)</td>
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<tr>
<td>GNEG 1111 Introduction to Engineering I (Sp, Fa)</td>
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<tr>
<td>Select one of the following:</td>
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<td>3</td>
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<tr>
<td>HIST 2003 History of the American People to 1877 (ACTS Equivalency = HIST 2113)</td>
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<tr>
<td>GNEG 1121 Introduction to Engineering II (Sp, Fa)</td>
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**Year Total:** 15 15

#### Second Year

<table>
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<th>Course</th>
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<td>MEET 2100 Computer-aided Design Competency (Sp, Fa)</td>
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<td>Science Elective (See Note Above)</td>
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<td>MATH 2574 Calculus II (ACTS Equivalency = MATH 2603)</td>
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<tr>
<td>MEET 2303 Introduction to Materials (Sp, Fa)</td>
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<td>MEET 2003 Statics (Sp, Su, Fa)</td>
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<tr>
<td>MATH 2584 Elementary Differential Equations (Sp, Su, Fa)</td>
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<td>MEET 2013 Dynamics (Sp, Su, Fa)</td>
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<td>MEET 2403 Thermodynamics (Sp, Su, Fa)</td>
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<tr>
<td>MEET 2703 Computer Methods in Mechanical Engineering (Sp, Su)</td>
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<tr>
<td>MEET 2103 Introduction to Machine Analysis (Sp, Su)</td>
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**Year Total:** 14 16

#### Third Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Units</th>
<th>Fall</th>
<th>Spring</th>
</tr>
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<tbody>
<tr>
<td>MEET 3013 Mechanics of Materials (Sp, Su, Fa)</td>
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<tr>
<td>MEET 3113 Machine Dynamics and Control (Sp, Su, Fa)</td>
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<td>MEET 3202 Mechanical Engineering Laboratory I (Sp, Fa)</td>
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<tr>
<td>MEET 3203 Mechanics of Fluids (Su, Fa)</td>
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<tr>
<td>ELEG 3903 Electric Circuits and Machines (Sp, Fa)</td>
<td>3</td>
<td></td>
<td></td>
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<tr>
<td>ECON 2013 Principles of Macroeconomics (ACTS Equivalency = ECON 2103)</td>
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<tr>
<td>or ECON 2143 Basic Economics: Theory and Practice (Sp, Su, Fa)</td>
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<tr>
<td>MEET 3212 Mechanical Engineering Laboratory II (Sp, Fa)</td>
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<td>MEET 4411 Heat Transfer (Sp, Su)</td>
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<td>MEET 4104 Machine Element Design (Sp, Su)</td>
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<tr>
<td>ELEG 3933 Circuits &amp; Electronics (Sp)</td>
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<tr>
<td>Technical/Science Elective</td>
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<tr>
<td>PHIL 3103 Ethics and the Professions (Sp, Su, Fa)</td>
<td>3</td>
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### Program Goals and Objectives

Beyond the BSME, the objective of the aerospace concentration is to produce graduates who have specialized analytical, experimental and/or computational skills relating to the aerospace engineering industry.

### Learning Outcomes

In addition to the learning outcomes of the BSME, students with an aerospace concentration can demonstrate:

A. An ability to apply fundamental aerospace engineering concepts and applications; and,
B. An ability to design aerospace systems, components, and processes.

### Description and Justification of the Request

<table>
<thead>
<tr>
<th>Description of specific change</th>
<th>Justification for this change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adding aerospace concentration to current degree plan</td>
<td>Student and industry needs for aerospace-related education</td>
</tr>
</tbody>
</table>

### Upload Attachments

- Aerospace Concentration 2017.pdf
- MEEG-AERO - New Option - Ltr of Notification.docx

### Reviewer Comments

- **Norman Dennis (ndennis) (09/26/17 10:33 am):** Rollback: While you have provide the requirements for the concentration in the attachment, it the requirements will not get into the catalog unless you provide that description in the program requirements block. You may refer to a handbook for the list of elective courses but the required core courses should be in the program description.
- **Alice Griffin (agriffin) (10/10/17 10:01 am):** Rollback: Please review email correspondence from 10/10/2017 and respond appropriately. Also, with a new concentration, program goals and objectives need to be inserted into CourseLeaf, along with scheduled program review date.
- **Norman Dennis (ndennis) (10/12/17 5:52 pm):** Rollback: Second program outcome is incomplete. Program objectives are in addition to the general mechanical engineering program objectives? Learning outcomes should contain quantifiable action verbs that describe what the student should be able to do upon completing the concentration. Understanding and proficiency are not quantifiable. How do they demonstrate understanding and proficiency.
- **Alice Griffin (agriffin) (11/01/17 1:05 pm):** Uploaded revised LON from department. Also changed the program code for the concentration from CIP code to MEEG-AERO.
- **Alice Griffin (agriffin) (11/01/17 1:07 pm):** Second attempt to upload revised LON.
Lisa Kulczak (lkulcz) (11/02/17 1:49 pm): Adding a “general” Mechanical Engineering concentration so that students aren’t required to declare the AERO concentration.

Alice Griffin (agriffin) (11/10/17 1:52 pm): Changed first line in program requirements from 15 to 18 hours of fine arts/humanities/social science electives. Added PHIL 3103 as required option in the Fine Arts/Humanities/Social Science Electives section. Changed last statement from remaining four courses to remaining three courses...with permission from department.

Alice Griffin (agriffin) (11/10/17 5:04 pm): Adjusted language in program requirements as suggested by department: The Bachelor of Science in Mechanical Engineering curriculum includes, in addition to the required 18 hours of history/government/fine arts/humanities/social science elective courses.