

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 \(MEEG\)](#)

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

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** ~~No~~

Concentration(s):	Action	Code	Title
	Add new	MEEGBS-AERO	Aerospace Concentration
	Add new	MEEGBS-MEEG	Mechanical Engineering Concentration

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

CIP Code: 14.1901 - 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)	College/School Name
	Fulbright College of Arts and Sciences(ARSC)

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

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. 09/29/17 10:16 am Terry Martin (tmartin): Approved for Provost Initial
4. 10/10/17 10:01 am Alice Griffin (agriffin): Rollback to Initiator
5. 10/12/17 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** ~~required 15~~ 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:

6. 10/27/17 3:24 pm
Norman Dennis
(ndennis): Approved for ENGR Dean Initial
7. 10/28/17 9:32 pm
Terry Martin
(tmartin): Approved for Provost Initial
8. 11/01/17 1:08 pm
Alice Griffin
(agriffin): Approved for Director of Program Assessment and Review
9. 11/02/17 1:50 pm
Lisa Kulczak
(lkulcza): Approved for Registrar Initial
10. 11/02/17 2:46 pm
Gary Gunderman
(ggunderm): Approved for Institutional Research
11. 11/02/17 2:49 pm
Darin Nutter
(dnutter): Approved for MEEG Chair
12. 11/07/17 2:08 pm
Manuel Rossetti
(rossetti): Approved for ENGR Curriculum Committee
13. 11/08/17 9:01 am
Norman Dennis
(ndennis): Approved for ENGR Faculty
14. 11/09/17 2:28 pm
Jeannine Durdik
(jdurdik): Approved for ARSC Dean
15. 11/10/17 11:12 am
Norman Dennis
(ndennis): Approved for ENGR Dean
16. 11/10/17 12:13 pm
Kiersten Bible
(kbible): Approved for Global Campus
17. 11/10/17 12:49 pm
Terry Martin
(tmartin): Approved for Provost Review
18. 11/20/17 2:53 pm
Alice Griffin
(agriffin): Approved for University Course and Program Committee

ASTR 2003	Survey of the Universe (ACTS Equivalency = PHSC 1204 Lecture) (Sp, Su, Fa)
& ASTR 2001L	and Survey of the Universe Laboratory (ACTS Equivalency = PHSC 1204 Lab) (Sp, Su, Fa)
BIOL 1543	Principles of Biology (ACTS Equivalency = BIOL 1014 Lecture) (Sp, Su, Fa)
& BIOL 1541L	and Principles of Biology Laboratory (ACTS Equivalency = BIOL 1014 Lab) (Sp, Su, Fa)
BIOL 2213	Human Physiology (ACTS Equivalency = BIOL 2414 Lecture) (Sp, Fa)
& BIOL 2211L	and Human Physiology Laboratory (ACTS Equivalency = BIOL 2414 Lab) (Sp, Fa)
CHEM 1103	University Chemistry I (ACTS Equivalency = CHEM 1414 Lecture) (Su, Fa)
& CHEM 1101L	and University Chemistry I Laboratory (ACTS Equivalency = CHEM 1414 Lab) (Sp, Su, Fa)
GEOS 1113	General Geology (ACTS Equivalency = GEOL 1114 Lecture) (Sp, Su, Fa)
& GEOS 1111L	and General Geology Laboratory (ACTS Equivalency = GEOL 1114 Lab) (Sp, Su, Fa)
PHYS 2094	University Physics III (Fa)
PHYS 3544	Optics (Fa)
PHYS 3603	Introduction to Modern Physics (Fa)
& PHYS 360VL	and Modern Physics Laboratory (Sp)

History	4
1. Aug 15, 2014 by Leepfrog	4
Administrator (clhelp)	4
2. Feb 24, 2015 by Charlie Alison	4
(calison)	
3. Mar 8, 2016 by	4
Charlie Alison	
(calison)	4
4. Mar 8, 2016 by	4
Charlie Alison	4
(calison)	

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 3000 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)	1-6
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 2013	History of the American People, 1877 to Present (ACTS Equivalency = HIST 2123) (Sp, Su, Fa)	
or PLSC 2003	American National Government (ACTS Equivalency = PLSC 2003) (Sp, Su, Fa)	
ECON 2143	Basic Economics: Theory and Practice (Sp, Su, Fa)	3
or ECON 2013	Principles of Macroeconomics (ACTS Equivalency = ECON 2103) (Sp, Su, Fa)	
PHIL 3103	Ethics and the Professions (Sp, Su, Fa)	3

The **remaining three** ~~remaining four~~ 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		Units
		FallSpring
ENGL 1013 Composition I (ACTS Equivalency = ENGL 1013) (Sp, Su, Fa)		3
CHEM 1103 University Chemistry I (ACTS Equivalency = CHEM 1414 Lecture) (Su, Fa)		3
PHYS 2054 University Physics I (ACTS Equivalency = PHYS 2034) (Sp, Su, Fa)		4
MATH 2554 Calculus I (ACTS Equivalency = MATH 2405) (Sp, Su, Fa)		4
GNEG 1111 Introduction to Engineering I (Sp, Fa)		1
Select one of the following:		3
HIST 2003 History of the American People to 1877 (ACTS Equivalency = HIST 2113) (Sp, Su, Fa)		
HIST 2013 History of the American People, 1877 to Present (ACTS Equivalency = HIST 2123) (Sp, Su, Fa)		
PLSC 2003 American National Government (ACTS Equivalency = PLSC 2003) (Sp, Su, Fa)		
GNEG 1121 Introduction to Engineering II (Sp, Fa)		1
MATH 2564 Calculus II (ACTS Equivalency = MATH 2505) (Sp, Su, Fa)		4
Freshman Science Elective (See Above)		4
ENGL 1023 Composition II (ACTS Equivalency = ENGL 1023) (Sp, Su, Fa)		3
Year Total:		15 15
Second Year		Units
		FallSpring
MEEG 2100 Computer-aided Design Competency (Sp, Fa)		0
Science Elective (See Note Above)		4
MATH 2574 Calculus III (ACTS Equivalency = MATH 2603) (Sp, Su, Fa)		4
MEEG 2303 Introduction to Materials (Sp, Fa)		3
MEEG 2003 Statics (Sp, Su, Fa)		3
MATH 2584 Elementary Differential Equations (Sp, Su, Fa)		4
MEEG 2013 Dynamics (Sp, Su, Fa)		3
MEEG 2403 Thermodynamics (Sp, Su, Fa)		3
MEEG 2703 Computer Methods in Mechanical Engineering (Sp, Su)		3
MEEG 2103 Introduction to Machine Analysis (Sp, Su)		3
Year Total:		14 16
Third Year		Units
		FallSpring
MEEG 3013 Mechanics of Materials (Sp, Su, Fa)		3
MEEG 3113 Machine Dynamics and Control (Su, Fa)		3
MEEG 3202L Mechanical Engineering Laboratory I (Sp, Fa)		2
MEEG 3503 Mechanics of Fluids (Su, Fa)		3
ELEG 3903 Electric Circuits and Machines (Sp, Fa)		3
ECON 2013 Principles of Macroeconomics (ACTS Equivalency = ECON 2103) (Sp, Su, Fa)		3
or ECON 2143 Basic Economics: Theory and Practice (Sp, Su, Fa)		
MEEG 3212L Mechanical Engineering Laboratory II (Sp, Fa)		2
MEEG 4413 Heat Transfer (Sp, Su)		3
MEEG 4104 Machine Element Design (Sp, Su)		4
ELEG 3933 Circuits & Electronics (Sp)		3
Technical/Science Elective		3
PHIL 3103 Ethics and the Professions (Sp, Su, Fa)		3

Year Total:	17 18
Fourth Year	
	Units
	FallSpring
MEEG 4132 Professional Engineering Practices (Sp, Fa)	2
MEEG 4131 Creative Project Design I (Sp, Fa)	1
MEEG 4202L Mechanical Engineering Laboratory III (Sp, Su, Fa)	2
MEEG 4483 Thermal Systems Analysis and Design (Su, Fa)	3
Technical/Science Elective	3
Fine Arts Elective (from University/State Core List)	3
MEEG 4133 Creative Project Design II (Sp, Fa)	3
Two Technical/Science Elective	6
Two Social Science Elective (from University/State Core List)	6
Year Total:	14 15
Total Units in Sequence:	124

No	Are Similar Programs available in the area?
Estimated Student Demand for Program	50 ↕
Scheduled Program Review Date	2020 ↕
Program Goals and Objectives	
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	
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	
Description of specific change	Justification for this change
Adding aerospace concentration to current degree plan	Student and industry needs for aerospace-related education

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: Next review will be in 2020.Second 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 (lkulcza) (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.

Key: 494