



Curriculum and Course Change System - Print Change/Delete Course Form

X Change a Course - Abbrev & Number: ENGR- 1020

Corresponding Lab Course: ENGR--1021

Corresponding Honors course: ENGR--1020

.. Add Honors course: --

Corresponding Graduate course: --

.. Add Graduate course: --**Course Title: Engineering Discipl & Skills****Brief Statement of Change:**

Removal of pre-req course listing to eliminate need for Banner overrides.

Last Term taught: 201401

.. Change Abbrev to:

Effective Term: 01/2015

.. Change Number to:**.. Change Catalog Title:****.. Change Transcript Title:**

from:

from: Engineering Discipl & Skills

to:

to:

.. From: Fixed Credit: 2 (1,2) To: Fixed Credit: (,)**Change of Credit** Variable Credit: - (-), (-) Variable Credit: - (-),(-)**.. Add cross-listing with the following child course(s):****.. Delete cross-listing with the following child course(s):****.. Reverse Parent/Child relationship with:****.. Change Method of Instruction****.. Change Course Modifier****.. Change General Education Designation**

from:

to:

from:

to:

from:

to:

.. A-Lecture Only**..****.. Pass/Fail Only****..****.. Creative Inquiry****..****.. B-Lab (w/fee)****..****.. X Graded****..****.. English****..****.. D-Seminar****..****.. Variable Title****..****.. Composition****..****.. E-Independent****..****.. Creative Inquiry****..****.. Oral****..****.. Study****..****.. Repeatable****..****.. Communication****..****.. F-Tutorial (w/fee)****..****.. maximum credits****..****.. Mathematics****..****.. G-Studio****..****.. from:****..****.. Natural Science****..****.. H-Field course****..****.. to:****..****.. w/Lab****..****.. I-Study Abroad****..****..****..****.. Natural Science****..****.. L-Lab (no/fee)****..****..****..****.. w/Lab****..****.. N/B-****..****..****..****.. Math or Science****..****X Lecture/Lab(w/fee)****..****..****..****.. A&H (Literature)****..****.. N/L-Lecture/Lab(no****..****..****..****.. A&H (Non-****..****.. fee)****..****..****..****.. Literature)****..****..****..****..****..****.. Social Science****..****..****..****..****..****.. CCA****..****..****..****..****..****.. STS****..****.. Change Catalog Description:****from:****to:****X Change Prerequisite(s):****from:** Preq or concurrent enrollment: MATH 1040 or MATH 1060**to:** Preq: Score of 65 or better on Clemson Mathematics Placement Test.**Learning Objectives:****Topical Outline:****Evaluation:****Form Originator:** BETHSTE, Stephan,Elizabeth Anne **Date Form Created:** 10/13/2014**Form Last Updated by:** BETHSTE, Stephan,Elizabeth Anne **Date Form Last Updated:** 10/13/2014**Form Number:** 7686**Approval**

Chair, Department Curriculum Committee	Date	<i>Carice W. Marshall</i>	11-7-2014
<i>E. Stephan</i>	10/13/14	Chair, Undergraduate Curriculum Committee	Date
Department Chair	Date	Chair, Graduate Curriculum Committee	Date
<i>* R. K. Koth</i>	10/13/14	<i>Robert K. Jones</i>	11/7/2015
Chair, College Curriculum Committee	Date	Provost	Date
<i>E. Stephan</i>	10/13/14		
College Dean	Date	President	Date
<i>E. Stephan</i>	10/13/14		
Director, Calhoun Honors College	Date		



Curriculum and Course Change System - Print Change/Delete Course Form

006105

X **Change a Course - Abbrev & Number:** ENGR- 1410

Corresponding Lab Course: ENGR--1411

Corresponding Honors course: ENGR--1410

.. **Add Honors course:** --

Corresponding Graduate course: --

.. **Add Graduate course:** --**Course Title: Programming & Problem Solving****Brief Statement of Change:**

Addition of pre-requisite course to support attempted curriculum change and eliminate need for manual overrides in Banner.

Last Term taught: 201401 .. **Change Abbrev to:**Effective Term: 01/2015 .. **Change Number to:**.. **Change Catalog Title:** .. **Change Transcript Title:**

from: from: Programming & Problem Solving

to: to:

.. From: Fixed Credit: 3 (2,2) To: Fixed Credit: (,)

Change of Credit Variable Credit: - (-), (-) Variable Credit: - (-),(-).. **Add cross-listing with the following child course(s):**.. **Delete cross-listing with the following child course(s):**.. **Reverse Parent/Child relationship with:**

.. Change Method of Instruction	.. Change Course Modifier	.. Change General Education Designation
from: to:	from: to:	from: to:
.. A-Lecture Only	.. .. Pass/Fail Only	.. .. Creative Inquiry
.. B-Lab (w/fee)	.. X Graded	.. English
.. D-Seminar	.. .. Variable Title	.. Composition
.. E-Independent	.. .. Creative Inquiry	.. Oral
.. Study	.. .. Repeatable	.. Communication
.. F-Tutorial (w/fee)	.. maximum credits	.. Mathematics
.. G-Studio	.. from:	.. Natural Science
.. H-Field course	.. to:	.. w/Lab
.. I-Study Abroad		.. Natural Science
.. L-Lab (no/fee)		.. w/Lab
.. N/B-		.. Math or Science
X Lecture/Lab(w/fee)		.. A&H (Literature)
.. N/L-Lecture/Lab(no		.. A&H (Non-
.. fee)		.. Literature)
		.. Social Science
		.. CCA
		.. STS

.. **Change Catalog Description:**

from:

to:

X **Change Prerequisite(s):**

from: Preq: ENGR 1020 with a C or better; Preq or concurrent enrollment: MATH 1060 or MATH 1070. Coreq: ENGR 1411.

to: (Preq: ENGR 1020 with a C or better) OR (Preq or concurrent enrollment: ENGR 1060 with a C or better). Coreq: ENGR 1411.

Learning Objectives:**Topical Outline:****Evaluation:****Form Originator:** BETHSTE, Stephan, Elizabeth Anne **Date Form Created:** 10/13/2014**Form Last Updated by:** BETHSTE, Stephan, Elizabeth Anne **Date Form Last Updated:** 10/13/2014**Form Number:** 7685**Approval**

Chair, Department Curriculum Committee	Date	Chair, Undergraduate Curriculum Committee	Date
<i>E. Stephan</i>	10/13/14		
Department Chair	Date	Chair, Graduate Curriculum Committee	Date
<i>* [Signature]</i>	10/13/14	<i>Robert R. Jones</i>	11/7/2015
Chair, College Curriculum Committee	Date	Provost	Date
<i>[Signature]</i>	10/17/14		
College Dean	Date	President	Date
<i>[Signature]</i>	10/17/14		
Director, Calhoun Honors College	Date		

Change 4000/6000 Course

000108

Change a Course

Subject: IE-Industrial Engineering

Number: 4910/6910

Effective Term: Spring 2015

Title: *Selected Topics*

Honors Course:

☐ Add Honors Course:

Last Term Course was taught: 201408

Brief Statement of Change Based on Assessment Results:

This is our special topics course. Students are often confused at registration time about how many credits to take. We have never wanted anything other than 3 credits since at least 2001, so we want to change to fixed credits of 3. Moreover, since we have many new faculty in the department, we find we are using more special topic titles right now. To support course development and students taking many new courses, we wish to increase the number of units this course to be taken to 12.

Rationale for Changing a Course

- ☐ Strengthen Program Requirement(s)
- ☐ Alignment of Student Learning Outcomes
- ☐ Alternative Delivery of Content
- ☐ Improve Time to Degree
- ☐ Evolution of the Discipline
- ☐ Changing Prerequisites
- ☐ Address DWF Rates
- ☐ General Education Modifications
- ☒ Other (Please specify.)

remove variable credit

Change Course Modifier

From

- ☐ Variable Title
- ☐ Creative Inquiry
- ☒ Repeatable

Max Credits: 6

To

- ☐ Variable Title
- ☐ Creative Inquiry
- ☒ Repeatable

Max Credits: 12

Change of Credit

From

Fixed Credit Course

Credit Hrs Contact Hrs

Variable Credit Course

Credit Hrs Contact Hrs

Min Max Min Max

1 3 1 3

To

Fixed Credit Course

Credit Hrs Contact Hrs

3 3

Variable Credit Course

Credit Hrs Contact Hrs

Min Max Min Max

Learning Objectives

The following is from one recent offering: • Recall human error and human processing limitations and how they can explain erroneous actions involved in accidents • Analyze interactions between operators, technologies, and organizations in the evolution of accidents • Identify shortcomings of traditional accident analyses and compare them to contemporary approaches • Develop recommendations for improvements of organization safety culture

Topical Outline

The following is from one recent offering: Human perceptual and cognitive abilities and limitations (4 weeks) How design can induce human error (4 weeks) Accident Models (4 weeks) Safety Culture (3 weeks)

Add course requirements for 6000-level courses

For example: Graduate students will complete an individual research project.

Evaluation

4000

A 90 - 100

B 80 - 89

C 70 - 79

D 60 - 69

F < 60

For example: Homework (15%) Midterm (35%) Final Project (50%)

6000

A 90 - 100

B 80 - 89

C 70 - 79

F < 70

For example: Homework (15%) Midterm (35%) Research Project (20%) Final Project (30%)

000109

Syllabus

Upload File: IE 4910 6910 sample syllabus-20140926144704.docx

FormUser ID:mkurz Name: Mary Kurz-Edsall
Date: 09/26/2014 Number:2544

Chair, Department Curriculum Committee

9/26/14
Date

Department Chair

10/6/14
Date

Chair, College Curriculum Committee

10/17/14
Date

College Dean

10/17/14
Date

Director, Calhoun Honors College

Date

Chair, Undergraduate Curriculum Committee

11-7-2014
Date

Chair, Graduate Curriculum Committee

Date

Provost

1/7/2015
Date

President

Date

X Change a Course - Abbrev & Number: ME- 2220

Corresponding Lab Course: --

Corresponding Honors course: --

.. Add Honors course: --

Corresponding Graduate course: --

.. Add Graduate course: --

Course Title: Mech Engr Lab I

Brief Statement of Change:

prereq change due to a previous oversight. Students enrolling in ME 2220 are assumed to have through calculus II to be successful.

Last Term taught: 201401 .. Change Abbrev to:

Effective Term: 01/2015 .. Change Number to:

.. Change Catalog Title: .. Change Transcript Title:

from: from: Mech Engr Lab I

to:

.. From: Fixed Credit: 2 (0,6) To: Fixed Credit: (,)

Change of Credit Variable Credit: - (-), (-) Variable Credit: - (-),(-)

.. Add cross-listing with the following child course(s):

.. Delete cross-listing with the following child course(s):

.. Reverse Parent/Child relationship with:

.. Change Method of Instruction .. Change Course Modifier .. Change General Education Designation

from:	to:	from:	to:	from:	to:
.. A-Lecture Only	.. .. Pass/Fail Only	..	..	.. Creative Inquiry	..
X B-Lab (w/fee)	.. X Graded	..	..	.. English Composition	..
.. D-Seminar	.. .. Variable Title	..	..	.. Oral Communication	..
.. E-Independent Study	.. .. Creative Inquiry	..	..	.. Mathematics	..
.. F-Tutorial (w/fee)	.. .. Repeatable	..	..	.. Natural Science w/Lab	..
.. G-Studio	.. maximum credits	..	..	.. Natural Science w/Lab	..
.. H-Field course	.. from:	..	..	.. Math or Science	..
.. I-Study Abroad	.. to:	..	..	.. A&H (Literature)	..
.. L-Lab (no/fee)	..	..	..	.. A&H (Non-Literature)	..
.. N/B-Lecture/Lab(w/fee)	..	..	..	.. Social Science	..
.. N/L-Lecture/Lab(no fee)	..	..	..	.. CCA	..
		..	..	.. STS	..

.. Change Catalog Description:

from:

to:

X Change Prerequisite(s):

from: prereq: Phys 1220 and Phys 1240

to: Prereq: Phys 1220, Phys 1240, and Math 1080

Learning Objectives:

Topical Outline:



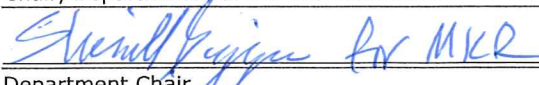

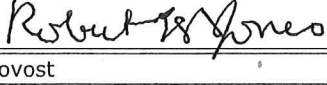
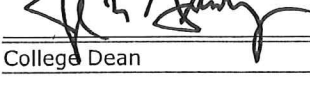
Evaluation:

Form Originator: JANEEN, Putman, Janeen Marie Date Form Created: 10/8/2014

Form Last Updated by: JANEEN, Putman, Janeen Marie Date Form Last Updated: 10/8/2014

Form Number: 7675

Approval

	10-8-14		11-7-2014
Chair, Department Curriculum Committee	Date	Chair, Undergraduate Curriculum Committee	Date
	10/8/14		
Department Chair	Date	Chair, Graduate Curriculum Committee	Date
	10/17/14		11/7/2015
Chair, College Curriculum Committee	Date	Provost	Date
	10/17/14		
College Dean	Date	President	Date
Director, Calhoun Honors College	Date		

000111

X Change a Course - Abbrev & Number: ME- 3060

Corresponding Lab Course: --

Corresponding Honors course: --

.. Add Honors course: --

Corresponding Graduate course: --

.. Add Graduate course: --

Course Title: Fund Machine Design

Brief Statement of Change:

Prereq. change due to students needing linear algebra and differential equations.

Last Term taught: 201405 .. Change Abbrev to:

Effective Term: 01/2015 .. Change Number to:

.. Change Catalog Title: .. Change Transcript Title:

from: from: Fund Machine Design

to: to:

.. From: Fixed Credit: 3 (3,0) To: Fixed Credit: (,)

Change of Credit Variable Credit: - (-), (-) Variable Credit: - (-),(-)

.. Add cross-listing with the following child course(s):

.. Delete cross-listing with the following child course(s):

.. Reverse Parent/Child relationship with:

.. Change Method of Instruction	.. Change Course Modifier	.. Change General Education Designation
---------------------------------	---------------------------	---

from:	to:	from:	to:	from:	to:
X A-Lecture Only	.. .. Pass/Fail Only	..	.. Creative Inquiry	..	
.. B-Lab (w/fee)	.. X Graded	..	.. English Composition	..	
.. D-Seminar	.. .. Variable Title	..	.. Oral Communication	..	
.. E-Independent Study	.. .. Creative Inquiry	..	.. Mathematics	..	
.. F-Tutorial (w/fee)	.. .. Repeatable	..	.. Natural Science w/Lab	..	
.. G-Studio	.. maximum credits	..	.. Natural Science w/Lab	..	
.. H-Field course	from:	..	.. Math or Science	..	
.. I-Study Abroad	to:	..	.. A&H (Literature)	..	
.. L-Lab (no/fee)	..	..	.. A&H (Non-Literature)	..	
.. N/B-Lecture/Lab(w/fee)	..	..	.. Social Science	..	
.. N/L-Lecture/Lab(no fee)	..	..	.. CCA	..	
		..	.. STS	..	

.. Change Catalog Description:

from:

to:

X Change Prerequisite(s):

from: Prereq: ME 3070 and ME 2040

to: Prereq: ME 3070, ME 2040 Prereq or concurrent enrollment: MATH 3650

Learning Objectives:

Topical Outline:


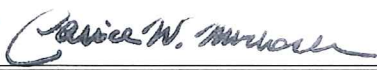
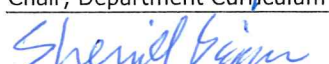
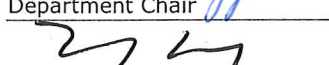
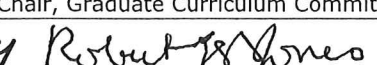

Evaluation:

Form Originator: JANEEN, Putman, Janeen Marie Date Form Created: 10/8/2014

Form Last Updated by: JANEEN, Putman, Janeen Marie Date Form Last Updated: 10/8/2014

Form Number: 7676

Approval

	10-8-14		11-7-2014
Chair, Department Curriculum Committee	Date	Chair, Undergraduate Curriculum Committee	Date
	10/8/14		
Department Chair	Date	Chair, Graduate Curriculum Committee	Date
	10/17/14		11/7/2015
Chair, College Curriculum Committee	Date	Provost	Date
	10/17/14		
College Dean	Date	President	Date
Director, Calhoun Honors College	Date		

X Delete a Course - Abbrev & Number: ME- 4050

Corresponding Graduate Course: --

.. Corresponding Honors course: --

Course Title: Kin & Dyn of Mach I

Brief Statement of Change:

Course has not been taught in many years and won't be taught in the foreseeable future.

Last Term taught: 201008

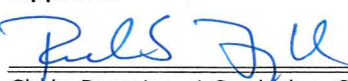
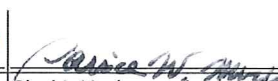
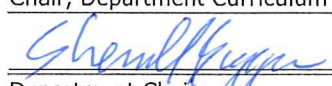
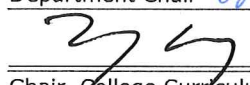
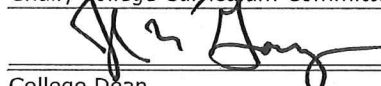
Effective Term: 01/2015

Form Originator: JANEEN, Putman, Janeen Marie Date Form Created: 10/8/2014

Form Last Updated by: JANEEN, Putman, Janeen Marie Date Form Last Updated: 10/8/2014

Form Number: 7672

Approval

	10-8-14		11-7-2014
Chair, Department Curriculum Committee	Date	Chair, Undergraduate Curriculum Committee	Date
	10/8/14		
Department Chair	Date	Chair, Graduate Curriculum Committee	Date
	10/17/14	Robert B. Jones	1/7/2015
Chair, College Curriculum Committee	Date	Provost	Date
	10/17/14		
College Dean	Date	President	Date
Director, Calhoun Honors College	Date		

Curriculum and Course Change System - Print Change/Delete Course Form

X Delete a Course - Abbrev & Number: ME- 4070

Corresponding Graduate Course: ME--6070

.. Corresponding Honors course: --

Course Title: Appl Heat Transfer

Brief Statement of Change:

Course has not been taught in many, many years and won't be taught in the foreseeable future.

Last Term taught: 199508


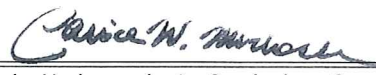
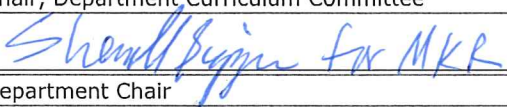

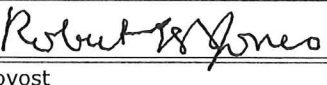
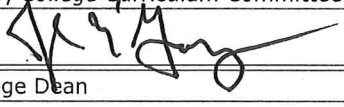
Effective Term: 01/2015

Form Originator: JANEEN, Putman, Janeen Marie Date Form Created: 10/8/2014

Form Last Updated by: JANEEN, Putman, Janeen Marie Date Form Last Updated: 10/8/2014

Form Number: 7672

Approval

	10-8-14		11-7-2014
Chair, Department Curriculum Committee	Date	Chair, Undergraduate Curriculum Committee	Date
	10/8/14		
Department Chair	Date	Chair, Graduate Curriculum Committee	Date
	10/17/14		11/7/2015
Chair, College Curriculum Committee	Date	Provost	Date
	10/17/14		
College Dean	Date	President	Date
Director, Calhoun Honors College	Date		

Curriculum and Course Change System - Print Change/Delete Course Form

X Delete a Course - Abbrev & Number: ME- 4160

Corresponding Graduate Course: --

.. Corresponding Honors course: --

Course Title: Control of Mech Sys

Brief Statement of Change:

Course has not been taught in many years and won't be taught in the foreseeable future.

Last Term taught: 200808



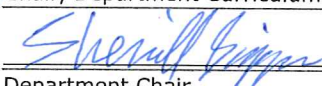
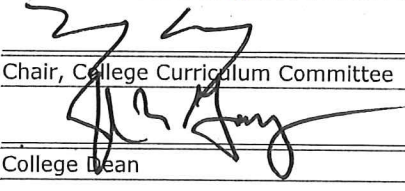
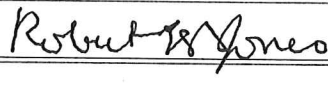
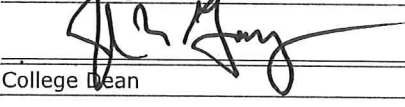
Effective Term: 01/2015

Form Originator: JANEEN, Putman, Janeen Marie Date Form Created: 10/8/2014

Form Last Updated by: JANEEN, Putman, Janeen Marie Date Form Last Updated: 10/8/2014

Form Number: 7673

Approval

	10-8-14		11-7-2014
Chair, Department Curriculum Committee	Date	Chair, Undergraduate Curriculum Committee	Date
	10/8/14		
Department Chair	Date	Chair, Graduate Curriculum Committee	Date
	10/17/14		1/7/2015
Chair, College Curriculum Committee	Date	Provost	Date
	10/17/14		
College Dean	Date	President	Date
Director, Calhoun Honors College			

X Change a Course - Abbrev & Number: ME- 4260

Corresponding Lab Course: --

Corresponding Honors course: --

.. Add Honors course: --

Corresponding Graduate course: ME--6260

.. Add Graduate course: --

Course Title: Nuclear Energy

Brief Statement of Change:

Prerequisite change to allow other majors to take this course without overrides and to allow students to also have knowledge in the material needed to be successful.

Last Term taught: 201401 .. Change Abbrev to:

Effective Term: 01/2015 .. Change Number to:

.. Change Catalog Title: .. Change Transcript Title:

from: from: Nuclear Energy

to:

.. From: Fixed Credit: 3 (3,0) To: Fixed Credit: (,)

Change of Credit Variable Credit: - (-), (-) Variable Credit: - (-),(-)

.. Add cross-listing with the following child course(s):

.. Delete cross-listing with the following child course(s):

.. Reverse Parent/Child relationship with:

.. Change Method of Instruction .. Change Course Modifier .. Change General Education Designation

from: to: from: to: from: to:

X A-Lecture Only	..	.. Pass/Fail Only	..	.. Creative Inquiry	..
.. B-Lab (w/fee)	..	.. X Graded	..	.. English Composition	..
.. D-Seminar	..	.. Variable Title	..	.. Oral Communication	..
.. E-Independent Study	..	.. Creative Inquiry	..	.. Mathematics	..
.. F-Tutorial (w/fee)	..	.. Repeatable	..	.. Natural Science w/Lab	..
.. G-Studio	..	.. maximum credits	..	.. Natural Science w/Lab	..
.. H-Field course	..	from:	..	.. Math or Science	..
.. I-Study Abroad	..	to:	..	.. A&H (Literature)	..
.. L-Lab (no/fee)	..		..	.. A&H (Non-Literature)	..
.. N/B-Lecture/Lab(w/fee)	..		..	.. Social Science	..
.. N/L-Lecture/Lab(no fee)	..		..	.. CCA	..
			..	.. STS	..

.. Change Catalog Description:

from:

to:

X Change Prerequisite(s):

from: Prereq: ME 3030 and ME 3040

to: ME 4260: ME 303 and ME 304, or ME 3100, or EES 3100, or PHYS 3220, or ChE 3210, or MSE 3270, or CE 3410 all with a C or better. ME 6260: No prereqs

Learning Objectives:

Topical Outline:


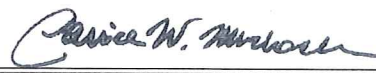
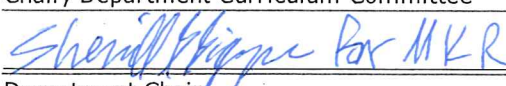
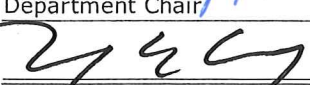
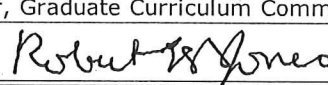
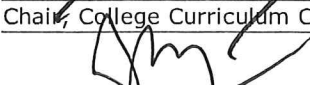
Evaluation:

Form Originator: JANEEN, Putman, Janeen Marie Date Form Created: 10/13/2014

Form Last Updated by: JANEEN, Putman, Janeen Marie Date Form Last Updated: 10/13/2014

Form Number: 7684

Approval

	10-13-14		11-7-2014
Chair, Department Curriculum Committee	Date	Chair, Undergraduate Curriculum Committee	Date
	10/13/14		
Department Chair	Date	Chair, Graduate Curriculum Committee	Date
	10/23/14		11/7/2015
Chair, College Curriculum Committee	Date	Provost	Date
	10/21/14		
College Dean	Date	President	Date

X Change a Course - Abbrev & Number: PHYS- 3000

Corresponding Lab Course: --

Corresponding Honors course: PHYS--3000

.. Add Honors course: --

Corresponding Graduate course: --

.. Add Graduate course: --

Course Title: Intro to Research

000116

Brief Statement of Change:

Change of credit hours from 1 to 2. (1) Increase of student requirements. Students are required to attend every week one hour of faculty presentations and and one hour of department colloquia and write short reports/research papers on both. (2) Deletion of PHYS 1010 in old curriculum and moved PHYS 3000 from 3rd to 2nd year. PHYS 3000 is a 2-hour departmental course that addresses the general academic and professional development of the student.

Last Term taught: 201308 .. Change Abbrev to:

Effective Term: 08/2015 .. Change Number to:

.. Change Catalog Title: .. Change Transcript Title:

from: from: Intro to Research

to: to:

X From: Fixed Credit: 1 (2,0) To: Fixed Credit: 2 (2,0)

Change of Credit Variable Credit: - (-), (-) Variable Credit: - (-),(-)

.. Add cross-listing with the following child course(s):

.. Delete cross-listing with the following child course(s):

.. Reverse Parent/Child relationship with:

.. Change Method of Instruction	.. Change Course Modifier	.. Change General Education Designation
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from:	to:	from:	to:	from:	to:
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.. A-Lecture Only Pass/Fail Only Creative Inquiry	..	
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.. B-Lab (w/fee)	.. X Graded English Composition	..	
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X D-Seminar Variable Title Oral Communication	..	
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.. E-Independent Study Creative Inquiry Mathematics	..	
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.. F-Tutorial (w/fee) Repeatable Natural Science w/Lab	..	
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.. G-Studio	.. maximum credits Natural Science w/Lab	..	
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.. H-Field course	from: Math or Science	..	
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.. I-Study Abroad	to: A&H (Literature)	..	
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.. L-Lab (no/fee) A&H (Non-Literature)	..	
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.. N/B-Lecture/Lab(w/fee) Social Science	..	
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.. N/L-Lecture/Lab(no fee) CCA	..	
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	 STS	..	
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.. Change Catalog Description:

from:

to:

.. Change Prerequisite(s):

from:

to:

Learning Objectives: After completion of this course, students will be able to

- participate in a scientific discussion about a current physics research problem (at the appropriate level)
- compose research reports based upon faculty and colloquium presentations
- find sources on extensions and foundations of the topics and summarize them with proper citation techniques
- evaluate research areas and find a suitable topic for a senior thesis

Topical Outline: Weekly seminars and colloquia;

Departmental research topics include Atmospheric Physics, Astronomy and Astrophysics, Condensed Matter Physics, Nanomaterials, Atomic and Molecular Physics, Biophysics, Foundation of Quantum Physics;

Colloquia topics vary

Evaluation: A: >90

B: 80-90

C: 70-80

D: 60-70

F: <60

Add course requirements for honors and/or 600-level courses (if applicable): Honors students must produce an extended paper (8-10 pages) with review of research topic and summary of at least five sources.

Form Originator: GLEHMAC, Lehmacher,Gerald A **Date Form Created:** 9/8/2014

Form Last Updated by: GLEHMAC, Lehmacher,Gerald A **Date Form Last Updated:** 10/7/2014

Form Number: 7561

Approval

<i>Forced</i>	10/7/14	<i>Carice W. Munson</i>	000117
Chair, Department Curriculum Committee	Date	Chair, Undergraduate Curriculum Committee	Date
<i>Marked Lins</i>	7 Oct 20		
Department Chair	Date	Chair, Graduate Curriculum Committee	Date
<i>Y Y</i>	10/17/14	<i>Robert R. Jones</i>	1/7/2015
Chair, College Curriculum Committee	Date	Provost	Date
<i>John Jones</i>	10/17/14		
College Dean	Date	President	Date
Director, Calhoun Honors College	Date		

Change Major Name: Physics (BS - 201408)

Degree: BS

Effective Catalog Year: 2015

.. Change Major Name to:

.. Change Degree to: (CHE approval required)

X Change Curriculum Requirements

(Submit or upload Curriculum map in catalog format. CHE approval required for > 18 hours of changes)

.. Change General Education Requirements

(Must also submit a General Education Checklist)

.. Add, Change or Delete Concentration(s)

(Submit or upload Curriculum map in catalog format. CHE approval required)

X Add, Change or Delete Emphasis Area(s)

Explanation: Purpose: Create a Bachelor of Science in Physics option that allows for more emphasis on interdisciplinary study for students who want physics as their core study, but also want to be prepared for direct entry into job market, professional school, such as medical, law, business school, or graduate school in other areas than physics. It will also help students who want to pursue a minor or double major.

Background: Other universities, including University of Michigan, University of Illinois, Georgia Tech, have implemented similar, alternative plans of study. Illinois has significantly increased the number of physics majors and retention.

Implementation: Nine hours of upper level physics courses have been replaced by additional emphasis area courses. Students can choose from pre-approved emphasis areas or design their own plans of study with departmental approval. Students may replace introductory chemistry with other introductory courses.

Advising: Students interested in this option will, from the freshmen year on, closely work with the departmental advisor and an advisor from the emphasis area. The physics department will designate a special advisor for these students who will also help tracking their degree progress. The emphasis area and plan of study must be declared by the end of the sophomore year (which is earlier than for standard emphasis area declarations).

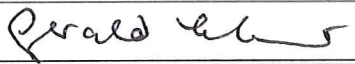

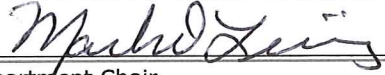
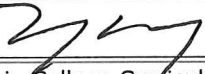

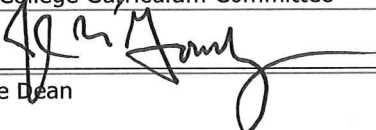
For all physics curricula, PHYS 3000 has been changed from 1 to 2 credit hours and the 1-hour elective has been deleted. This applies to BS Physics, BS Physics (Biophysics concentration), BA Physics, and the new proposed BS Physics (Emphasis Plus/Interdisciplinary). Curriculum maps are attached.

Form Originator: GLEHMAC, Lehmacher, Gerald A **Date Form Created:** 9/9/2014

Form Last Updated by: GLEHMAC, Lehmacher, Gerald A **Date Form Last Updated:** 10/7/2014

Form Number: 7568

Approval

	10/7/14		11-7-2014
Chair, Department Curriculum Committee	Date	Chair, Undergraduate Curriculum Committee	Date
	7 Oct 2014		
Department Chair	Date	Chair, Graduate Curriculum Committee	Date
	10/17/14		1/7/2015
Chair, College Curriculum Committee	Date	Provost	Date
	10/17/14		
College Dean	Date	President	Date

PHYSICS

Bachelor of Science

Emphasis Interdisciplinary

This option allows students to supplement their core study of physics with more courses in complementary fields. They can use this option to effectively prepare for direct entry into the job market, for graduate study in the sciences, or for medical, law, and business schools. Students who are certain that they want to go on to graduate school in physics or in a closely related field should consider the regular curriculum with emphasis on physics. In some cases, however, the greater flexibility of this option may make it a better choice for graduate school preparation for those who want to pursue a combined major and minor, or a double major.

Since students choosing the flexible option have a wide variety of career goals, advising from the department and tracking the degree progress is especially important. Students in this option must choose an approved technical or professional emphasis area no later than the end of the second semester of the sophomore year. However, if students plan to pursue a minor, certain prerequisites should be taken already in the first or second year. A set of options is available from the department and on its web site. Students may also design and follow a custom option subject to departmental approval.

Freshman Year

First Semester

- 4 - CH 1010 General Chemistry¹
- 4 - MATH 1060 Calculus of One Variable I
- 3 - PHYS 1220 Physics with Calculus I
- 1 - PHYS 1240 Physics Lab. I
- 3 - ENGL 1030 Accelerated Composition

15

Second Semester

- 4 - CH 1020 General Chemistry¹
- 4 - MATH 1080 Calculus of One Variable II
- 3 - PHYS 2210 Physics with Calculus II
- 1 - PHYS 2230 Physics Lab. II
- 3 - Arts and Humanities (Non-Lit.) Requirement²

15

Sophomore Year

First Semester

- 4 - MATH 2060 Calculus of Several Variables
- 3 - PHYS 2220 Physics with Calculus III
- 3 - PHYS 3250 Experimental Physics I
- 2 - PHYS 3000 Introduction to Research
- 3 - Emphasis Area Requirement³

15

Second Semester

- 4 - MATH 2080 Intr. to Ordinary Diff. Equations
- 3 - PHYS 3110 Intro. Meth. Theor. Phys. I
- 3 - PHYS 3260 Experimental Physics II
- 3 - Physics Writing Requirement⁴
- 3 - Emphasis Area Requirement³

16

Junior Year

First Semester

- 3 - PHYS 3210 Mechanics I
- 3 - PHYS 3150 Intro. Computational Physics
- 3 - Oral Communication Requirement²
- 4 - Foreign Language Requirement⁵
- 3 - Emphasis Area Requirement³

16

Second Semester

- 3 - PHYS 3220 Mechanics II
- 3 - PHYS 4650 Thermodynamics and Statistical Mechanics
- 3 - Science Requirement⁶
- 4 - Foreign Language Requirement⁴
- 3 - Emphasis Area Requirement³

16

Senior Year

First Semester

- 3 - PHYS 4010 Senior Thesis⁷
- 3 - PHYS 4410 Electromagnetics I
- 3 - PHYS 4550 Quantum Physics I
- 3 - Arts and Humanities (Lit.) Requirement¹
- 3 - Emphasis Area Requirement³

15

Second Semester

- 3 - HIST 1720 The West and the World I or
3 - HIST 1730 The West and the World II
- 3 - Social Science Requirement²
- 3 - Emphasis Area Requirement³
- 3 - Emphasis Area Requirement³

12

120 Total Semester Hours¹

¹ Other introductory courses, e.g. CPSC 1010 and 1020, may be chosen with departmental approval.

² See General Education Requirements. Three of these credit hours must also satisfy the Science and Technology in Society Requirement.

³ See advisor. Twenty-one credit hours, with at least nine at the 3000-4000 level, are required. Courses and emphasis area must be approved by the department. *Note:* Requirements for a minor may be satisfied with these courses. For details see list of approved minors.

⁴ ENGL 3040, 3120, 3140, 3150, 3160, 3450, 3460, 3480, M L 4020, or THEA (ENGL) 3470

⁵ Two semesters (through 1020) in same modern foreign language are required.

⁶ Any 2000-4000-level science course in ASTR, BIOL, CH, ENSP, GEOL, PHYS, STS. Other science courses require departmental approval.

⁷ Students may select an approved synthesis or capstone course or directed research in their emphasis area. Students in the honors program must complete a senior thesis in physics.

000119

Minor

Name: Nuclear Engineering and Radiological Sciences
Lead Dept: Environmental Engr & Earth Sci

Add Minor

Effective Catalog Year: 2015-2016

Catalog Description

A minor in Nuclear Engineering and Radiological Sciences (NERS) requires 15 credits, 12 of which come from the 4 required courses: EES 3100, EES 4100, EES 4120, and ME 4260. The remaining 3 credits should be chosen from the following courses: EES 4110, EES 4800, PHYS 4520, or a course approved by a NERS advisor.

Summary / Explanation

Clemson University has the faculty expertise and student interest to support a self-sustaining Nuclear Engineering and Radiological Science (NERS) minor that will provide students with the basic competencies in the fundamentals of nuclear reactions, radiation, neutron transport, reactor operating principles, health physics, radiation monitoring and detection, the nuclear fuel cycle, and handling radioactive materials. This new educational program will not only serve the needs of industry, but also produce graduates who are able to compete in this evolving field and help advance science and technology in the Nation. By leveraging our experience from Clemson's highly successful graduate Nuclear Environmental Engineering and Science (NEES) program (housed in the Environmental Engineering and Earth Science department) and the popularity of the undergraduate nuclear energy course in Mechanical Engineering, we plan to develop an interdisciplinary NERS minor. By doing so, Clemson University will provide undergraduate students with the opportunity for a more holistic and practical education related to nuclear energy and radiological sciences. As part of the minor, students will be encouraged to participate in a summer internship with an outside partner such as a national laboratory, utility, or regulatory agency. This will provide students with an opportunity both to interact with a practicing professional and to apply their academic knowledge in the nuclear sector. In support of the development of the NERS minor, Clemson University recently received a Nuclear Regulatory Commission Undergraduate Scholarship award totaling \$200,000 over the next two years. The scholarship program is expected to attract the top students from: Chemistry, Chemical Engineering, Civil Engineering, Electrical Engineering, Environmental Engineering, Geology, Industrial Engineering, Materials Science and Engineering, Mechanical Engineering, and Physics, for participation in the NERS minor.

Rationale for Add New Minor

- ☐ Strengthen Program Requirement(s)
- ☐ Alignment of Student Learning Outcomes
- ☐ Alternative Delivery of Content
- ☐ Improve Time to Degree
- ☒ Evolution of the Discipline
- ☐ Changing Prerequisites
- ☐ Address DWF Rates
- ☐ General Education Modifications
- ☐ Other (Please specify.)

Form

User ID: lshulle **Name:** Lindsay Shuller-Nickles
Date: 10/17/2014 **Number:** 3768

000120

9/11/2014

Chair, Department Curriculum Committee

Date

Department Chair

9/11/14

Date

Chair, College Curriculum Committee

10/17/14

Date

College Dean

10/17/14

Date

Director, Calhoun Honors College

Date

Chair, Undergraduate Curriculum Committee

11-07-2014

Date

Chair, Graduate Curriculum Committee

Date

Provost

1/7/2015

Date

President

Date