



Campus Curricula Committee Meeting Agenda

December 8, 2022

8:15am - 9:30am, Bertelsmeyer 110H

(For Faculty Senate Meeting of January 26, 2023)

Review of submitted Course Change forms:

File: 4898 AERO ENG 6410 : Optimal Control and Estimation
File: 4897 AERO ENG 6430 : Robust Control Systems
File: 4893 BIO SCI 5523 : Ichthyology
File: 4904 EDUC 4375 : Cross Categorical Special Education
File: 4903 EDUC 4380 : Methods in Cross-Categorical Special Ed
File: 580.1 ELEC ENG 6310 : Optimal Control And Estimation
File: 582.1 ELEC ENG 6330 : Robust Control Systems
File: 1328.1 EXP ENG 6312 : Scientific Instrumentation For Explosives Testing & Blasting
File: 1417.5 HISTORY 3443 : The American Military Experience
File: 4895 MECH ENG 6410 : Optimal Control and Estimation
File: 4896 MECH ENG 6430 : Robust Control Systems
File: 4728.2 PHILOS 4554 : Technology, Ethics, and Philosophy

Review of submitted Program Change forms:

File: 3.4 AE ENG-PHD : Aerospace Engineering PhD
File: 147.21 BIO SC-BS : Biological Sciences BS
File: 234.30 INORGPS-MS : Industrial Organizational Psychology MS
File: 89.5 MC ENG-PHD : Mechanical Engineering PhD

Review of submitted Experimental Course forms:

File: 4901 CHEM ENG 5001.017 : Vaccine Manufacturing
File: 4883 CIV ENG 6001.008 : Advanced River Mechanics and Sediment Transport
File: 4905 GEO ENG 4001.001 : Mapping with Drones

New Business:

Spring 2023 CCC meetings will continue to be held on Thursdays at 8:15a.m. in Bertelsmeyer 110H, as indicated on the 2022-2023 CCC Calendar.

Course Change Request

New Course Proposal

Date Submitted: 09/21/22 3:10 pm

Viewing: **AERO ENG 6410 : Optimal Control and Estimation**

File: 4898

Last edit: 10/21/22 8:51 am

Changes proposed by: nisbett

Requested Fall 2023

Effective Change

Date

Department Mechanical & Aerospace Engineering

Discipline Aerospace Engineering (AERO ENG)

Course Number 6410

Title

Optimal Control and Estimation

Abbreviated Optimal Control

Course Title

Catalog

Description

Review of linear quadratic regulators, LQR extensions; constrained optimization (Pontragin's minimum principle); review of probability theory and random processes; optimal prediction and filters; frequency domain properties of LQR and Kalman filters; linear quadratic Gaussian (LQG) control; model uncertainties, frequency shaping, LQG/LTR design methodology.

Prerequisites

Elec Eng 6300 or Mech Eng 5481 or Aero Eng 5481.

Field Trip

Statement

Credit Hours

LEC: 3

LAB: 0

IND: 0

RSD: 0

Total: 3

In Workflow

1. RMECHENG Chair

2. CCC Secretary

3. Engineering DSCC
Chair

4. Pending CCC
Agenda post

5. CCC Meeting
Agenda

6. Campus Curricula
Committee Chair

7. FS Meeting
Agenda

8. Faculty Senate
Chair

9. Registrar

10. CAT entry

11. Peoplesoft

Approval Path

1. 09/21/22 3:16 pm
David Bayless

(djbkqf):

Approved for
RMECHENG Chair

2. 09/27/22 8:30 am
Jennifer

Pohlsander

(jpnfd): Approved
for CCC Secretary

3. 10/05/22 9:16 am
Mark Fitch

(mfitch):

Approved for
Engineering DSCC
Chair

Required for Majors	No
Elective for Majors	Yes

Justification for new course:

This is adding ME and AE colistings for the existing Elec Eng 6310, to allow greater access to this topic from all three majors. The only change from the existing Elec Eng 6310 is to expand the options for prereqs. Elec Eng is concurrently submitting the same prereq changes.

Semesters previously offered as an experimental course

The experimental phase is not required since this course is being added as a colist for an existing course.

Co-Listed Courses:

MECH ENG 6410 - Optimal Control and Estimation
ELEC ENG 6310 - **Course Not Found**

Course Reviewer Comments	jpnfd (09/26/22 1:00 pm): Added punctuation to prerequisites. esdk3 (10/21/22 9:18 am): Rollback: Rollback to be resubmitted/reviewed along with EE 6310. -es 10/21/22
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4. 10/05/22 2:34 pm
Jennifer Pohlsander (jpnfd): Approved for Pending CCC Agenda post

5. 10/21/22 9:18 am
Evie Sherlock (esdk3): Rollback to Pending CCC Agenda post for CCC Meeting Agenda

6. 12/02/22 10:15 am
Jennifer Pohlsander (jpnfd): Approved for Pending CCC Agenda post

Key: 4898

[Preview Bridge](#)

Course Change Request

New Course Proposal

Date Submitted: 09/21/22 3:08 pm

Viewing: **AERO ENG 6430 : Robust Control Systems**

File: 4897

Last edit: 10/21/22 9:25 am

Changes proposed by: nisbett

Requested Fall 2023

Effective Change

Date

Department Mechanical & Aerospace Engineering

Discipline Aerospace Engineering (AERO ENG)

Course Number 6430

Title

Robust Control Systems

Abbreviated Robust Control Systems

Course Title

Catalog

Description

Performance and robustness of multivariable systems, linear fractional transformations, LQG/LTR advanced loop shaping, Youla parameterization, H_∞ (subscript infinity) optimal control, mixed H_2 (subscript 2) and H_∞ (subscript infinity) control, controller synthesis for multiple objective optimal control, linear matrix inequalities theory and case studies.

Prerequisites

Elec Eng 6300 or Mech Eng 5481 or Aero Eng 5481.

Field Trip

Statement

Credit Hours

LEC: 3

LAB: 0

IND: 0

RSD: 0

Total: 3

Required for

No

In Workflow

1. RMECHENG Chair
2. CCC Secretary
3. Engineering DSCC Chair
4. Pending CCC Agenda post
5. CCC Meeting Agenda
6. Campus Curricula Committee Chair
7. FS Meeting Agenda
8. Faculty Senate Chair
9. Registrar
10. CAT entry
11. Peoplesoft

Approval Path

1. 09/21/22 3:09 pm
David Bayless (djbkqf):
Approved for RMECHENG Chair
2. 09/30/22 3:49 pm
Jennifer Pohlsander (jpnfd): Approved for CCC Secretary
3. 10/05/22 9:16 am
Mark Fitch (mfitch):
Approved for Engineering DSCC Chair

Majors

Elective for
Majors Yes

Justification for
new course:

This is adding ME and AE colistings for the existing Elec Eng 6330, to allow greater access to this topic from all three majors. The only change from the existing Elec Eng 6330 is to expand the options for prereqs. Elec Eng is concurrently submitting the same prereq changes.

We request effective date of Spring 2023, since the Elec Eng course already exists, and since it will already be on the schedule for Spring 2023.

Semesters
previously
offered as an
experimental
course

The experimental phase is not required since this course is being added as a colist for an existing course.

Co-Listed

Courses: MECH ENG 6430 - Robust Control Systems
ELEC ENG 6330 - **Course Not Found**

4. 10/05/22 2:35 pm
Jennifer
Pohlsander
(jpnfd): Approved
for Pending CCC
Agenda post
5. 10/21/22 9:18 am
Evie Sherlock
(esdk3): Rollback
to Pending CCC
Agenda post for
CCC Meeting
Agenda
6. 12/02/22 10:15
am
Jennifer
Pohlsander
(jpnfd): Approved
for Pending CCC
Agenda post

Course Reviewer **jpnfd (09/26/22 1:13 pm)**: Added punctuation to prerequisites.

Comments **jpnfd (09/28/22 9:22 am)**: Effective date Spring 23 per CCC Chair email 9/27/22

esdk3 (10/21/22 9:18 am): Rollback: Rollback to be resubmitted/reviewed along with EE 6330. -es 10/21/22

esdk3 (10/21/22 9:25 am): updated effective term to FS23 as discussed at CCC mtg. This will be re-submitted/reviewed along with the EE 6330 course change submission. -es 10.21.22

Key: 4897

[Preview Bridge](#)

Course Change Request

New Course Proposal

Date Submitted: 09/12/22 11:10 am

Viewing: **BIO SCI 5523 : Ichthyology**

File: 4893

Last edit: 09/20/22 3:07 pm

Changes proposed by: niyogid

Programs [BIO SC-BS: Biological Sciences BS](#)
referencing this
course

Requested Summer 2023

Effective Change
Date

Department Biological Sciences

Discipline Biological Sciences (BIO SCI)

Course Number 5523

Title
Ichthyology

Abbreviated Ichthyology
Course Title

Catalog

Description

An introduction to evolutionary relationships, ecology, morphology, physiology and behavior of fishes. Includes a lab that focuses on anatomy, taxonomy, and identification with an emphasis on regional fauna. The lab includes some required field trips.

Prerequisites

Bio Sci 1113 or Bio Sci 1213; and Bio Sci 1219, and Bio Sci 1223, and Bio Sci 1229.

Field Trip

Statement

Students will be required to attend field trips to local sites to collect and examine fish

In Workflow

1. **RBIOLSCI Chair**
2. **CCC Secretary**
3. **Sciences DSCC Chair**
4. **Pending CCC Agenda post**
5. **CCC Meeting Agenda**
6. Campus Curricula Committee Chair
7. FS Meeting Agenda
8. Faculty Senate Chair
9. Registrar
10. CAT entry
11. Peoplesoft

Approval Path

1. 09/12/22 11:15 am
David Duvernell (duvernell): Approved for RBIOLSCI Chair
2. 09/20/22 4:00 pm
Jennifer Pohlsander (jpnfd): Approved for CCC Secretary
3. 10/07/22 3:03 pm
Katie Shannon (shannonk): Approved for Sciences DSCC

communities. Students are encouraged to carpool with classmates, GTA, or instructor.

Credit Hours LEC: 3 LAB: 1 IND: 0 RSD: 0
Total: 4

Required for No
Majors

Elective for Yes
Majors

Chair

4. 12/02/22 10:15

am

Jennifer

Pohlsander

(jpnfd): Approved

for Pending CCC

Agenda post

Justification for
new course:

This advanced class has had good enrollment during two offerings as an experimental class. It is now being given a permanent number.

Semesters
previously
offered as an
experimental
course

Fall 2019 - 20, Spring 2022 - 20

Co-Listed
Courses:

Course Reviewer **esdk3 (09/20/22 3:07 pm):** updated to SS23 per CCC deadlines; updated formatting
Comments on prerequisites. Enrollment numbers as follows: Fall 2019 = 20, and Spring
2022=20. - ems 9/20/22

Key: 4893

[Preview Bridge](#)

Course Change Request

New Course Proposal

Date Submitted: 10/04/22 4:40 pm

Viewing: **EDUC 4375 : Cross Categorical Special Education**

File: 4904

Last edit: 10/05/22 3:33 pm

Changes proposed by: bakm75

Requested	Fall 2023
Effective Change Date	
Department	Teacher Education and Certification
Discipline	Education (EDUC)
Course Number	4375
Title	Cross Categorical Special Education
Abbreviated Course Title	CrossCat SPED

Catalog Description	Study of characteristics of students with cross categorical disabilities and other pertinent issues including inclusion, assessment, and evaluation practices.			
Prerequisites	EDUC 3216.			
Field Trip Statement				
Credit Hours	LEC: 3	LAB: 0	IND: 0	RSD: 0
Total: 3				
Required for Majors	Yes			
Elective for Majors	No			

- In Workflow
1. REDUCATION Chair
 2. CCC Secretary
 3. Social Sciences DSCC Chair
 4. Pending CCC Agenda post
 5. CCC Meeting Agenda
 6. Campus Curricula Committee Chair
 7. FS Meeting Agenda
 8. Faculty Senate Chair
 9. Registrar
 10. CAT entry
 11. Peoplesoft

- Approval Path
1. 10/04/22 4:41 pm
Beth Kania-Gosche (bkaniagosche): Approved for REDUCATION Chair
 2. 10/06/22 2:25 pm
Jennifer Pohlsander (jpnfd): Approved for CCC Secretary
 3. 10/06/22 3:28 pm
Cecil Eng Huang Chua (cchua):

Justification for
new course:

We are seeking to create a special education minor and option for certification for education students. The first step is to create the courses in the catalog, then we can seek DESE approval. We are going to first offer these as a course share with Mizzou.

Semesters
previously
offered as an
experimental
course

We need a permanent course number for DESE.

Co-Listed
Courses:

Course Reviewer **jpnfd (10/05/22 3:33 pm):** Added punctuation to prerequisite.
Comments

Approved for
Social Sciences
DSCC Chair
4. 12/02/22 10:16
am
Jennifer
Pohlsander
(jpnfd): Approved
for Pending CCC
Agenda post

Key: 4904

[Preview Bridge](#)

Course Change Request

New Course Proposal

Date Submitted: 10/04/22 4:33 pm

Viewing: **EDUC 4380 : Methods in Cross-Categorical
Special Ed**

File: 4903

Last edit: 10/05/22 3:34 pm

Changes proposed by: bakm75

Requested Fall 2023

Effective Change

Date

Department Teacher Education and Certification

Discipline Education (EDUC)

Course Number 4380

Title

Methods in Cross-Categorical Special Ed

Abbreviated SPED Methods

Course Title

Catalog

Description

This course is designed to provide students with research-based instructional and behavior management methods for use with student with cross-categorical disabilities.

Prerequisites

EDUC 3216.

Field Trip

Statement

Credit Hours

LEC: 3

LAB: 0

IND: 0

RSD: 0

Total: 3

Required for

Yes

Majors

In Workflow

1. **REDUCATION**

Chair

2. **CCC Secretary**

3. **Social Sciences**

DSCC Chair

4. **Pending CCC**

Agenda post

5. **CCC Meeting**

Agenda

6. Campus Curricula

Committee Chair

7. FS Meeting

Agenda

8. Faculty Senate

Chair

9. Registrar

10. CAT entry

11. Peoplesoft

Approval Path

1. 10/04/22 4:33 pm

Beth Kania-

Gosche

(bkaniagosche):

Approved for

REDUCATION

Chair

2. 10/06/22 2:26 pm

Jennifer

Pohlsander

(jpnfd): Approved

for CCC Secretary

3. 10/06/22 3:28 pm

Cecil Eng Huang

Chua (cchua):

Elective for
Majors

No

Justification for
new course:

This course is one of several needed to offer special education as a minor and certification area for teacher education students. We will be using course share with Mizzou to offer these courses to S&T students. This description, title, and number matches Mizzou's DESE approved course list. The first step in obtaining DESE approval is to have the special education courses listed in the catalog.

Semesters

previously
offered as an
experimental
course

This course needs a permanent number for DESE.

Co-Listed

Courses:

Course Reviewer
Comments

jpnfd (10/05/22 3:34 pm): Added punctuation to prerequisite.

Approved for
Social Sciences
DSCC Chair
4. 12/02/22 10:17
am
Jennifer
Pohlsander
(jpnfd): Approved
for Pending CCC
Agenda post

Key: 4903

[Preview Bridge](#)

Course Change Request

Date Submitted: 10/21/22 8:59 am

Viewing: **ELEC ENG 6310 : Optimal Control And Estimation**

File: 580.1

Last edit: 10/21/22 9:14 am

Changes proposed by: esdk3

Programs
referencing this
course

[ADVCNTL-CT: Advanced Control Systems CT](#)
[CNTLSYS-CT: Control Systems CT](#)

Requested Fall 2023 ~~2014~~

Effective Change
Date

Department Electrical and Computer Engineering

Discipline Electrical Engineering (ELEC ENG)

Course Number 6310

Title
Optimal Control And Estimation

Abbreviated Optimal Cntrl&Estimation
Course Title

Catalog

Description

Review of linear quadratic regulators, ~~regulators (LQR)~~, LQR extensions; constrained optimization (Pontragin's minimum principle); review of probability theory and random processes; optimal prediction and filters; frequency domain properties of LQR and Kalman filters; linear quadratic Gaussian (LQG) control; model uncertainties, frequency shaping, LQG/LTR design methodology.

Prerequisites

Elec Eng 6300 or Mech Eng 5481 or Aero Eng 5481. ~~6300~~.

Field Trip

Statement

In Workflow

1. RELECENG Chair
2. CCC Secretary
3. Engineering DSCC
Chair
4. Pending CCC
Agenda post
5. CCC Meeting
Agenda
6. Campus Curricula
Committee Chair
7. FS Meeting
Agenda
8. Faculty Senate
Chair
9. Registrar
10. CAT entry
11. Peoplesoft

Approval Path

1. 10/21/22 10:53
am
Jonathan Kimball
(kimballjw):
Approved for
RELECENG Chair
2. 10/26/22 9:59 am
Jennifer
Pohlsander
(jpnfd): Approved
for CCC Secretary
3. 10/28/22 10:46
am
Mark Fitch
(mfitch):
Approved for

Credit Hours LEC: 3 LAB: 0 IND: 0 RSD: 0

Total: 3

Required for
Majors NoElective for
Majors No

Engineering DSCC

Chair

4. 12/02/22 10:17
am

Jennifer

Pohlsander

(jpnfd): Approved
for Pending CCC

Agenda post

Justification for
change:

This is adding ME and AE colistings for this existing course to allow greater access to this topic from all three majors. The only change is to expand options for prereqs.

Semesters
previously
offered as an
experimental
course

Co-Listed [AERO ENG 6410 - Optimal Control and Estimation](#)
Courses: [MECH ENG 6410 - Optimal Control and Estimation](#)

Course Reviewer **esdk3 (10/21/22 9:14 am):** submitted via workflow to be reviewed along with
Comments ME/AE6410. -Corrected description here to match the AE/ME descriptions. Same
with prereqs. Emailed Dept. Chair - es 10/21/22

Key: 580

[Preview Bridge](#)

Course Change Request

Date Submitted: 10/21/22 9:06 am

Viewing: **ELEC ENG 6330 : Robust Control Systems**

File: 582.1

Last edit: 10/21/22 9:15 am

Changes proposed by: esdk3

Programs [ADVNTL-CT: Advanced Control Systems CT](#)
referencing this
course

Requested Fall 2023 ~~2014~~

Effective Change
Date

Department Electrical and Computer Engineering

Discipline Electrical Engineering (ELEC ENG)

Course Number 6330

Title
Robust Control Systems

Abbreviated Robust Control Systems
Course Title

Catalog

Description

Performance and robustness of multivariable systems, linear fractional transformations, LQG/LTR advanced loop shaping, Youla parameterization, H_∞ (subscript infinity) optimal control, mixed H_2 and H_∞ (subscript infinity) control, controller synthesis for multiple objective optimal control, linear matrix inequalities theory and case studies.

Prerequisites

Elec Eng 6300 or Mech Eng 5481 or Aero Eng 5481. ~~6300.~~

Field Trip

Statement

In Workflow

1. RELECENG Chair
2. CCC Secretary
3. Engineering DSCC
Chair
4. Pending CCC
Agenda post
5. CCC Meeting
Agenda
6. Campus Curricula
Committee Chair
7. FS Meeting
Agenda
8. Faculty Senate
Chair
9. Registrar
10. CAT entry
11. Peoplesoft

Approval Path

1. 10/21/22 10:54
am
Jonathan Kimball
(kimballjw):
Approved for
RELECENG Chair
2. 10/26/22 9:58 am
Jennifer
Pohlsander
(jpnfd): Approved
for CCC Secretary
3. 10/28/22 10:46
am
Mark Fitch
(mfitch):
Approved for

Credit Hours	LEC: 3	LAB: 0	IND: 0	RSD: 0
Total: 3				
Required for Majors	No			
Elective for Majors	No			

Engineering DSCC
Chair
4. 12/02/22 10:17
am
Jennifer
Pohlsander
(jpnfd): Approved
for Pending CCC
Agenda post

Justification for
change:

This is adding ME and AE colistings for this existing course to allow greater access to this topic from all three majors. Changed prereq to expand options.

Semesters
previously
offered as an
experimental
course

Co-Listed [AERO ENG 6430 - Robust Control Systems](#)
Courses: [MECH ENG 6430 - Robust Control Systems](#)

Course Reviewer **esdk3 (10/21/22 9:15 am)**: submitted via workflow to be reviewed along with
Comments ME/AE 6430. -Emailed Dept. Chair - es 10/21/22

Key: 582

[Preview Bridge](#)

Course Change Request

Date Submitted: 10/04/22 3:23 pm

Viewing: **EXP ENG 6312 : Scientific Instrumentation For Explosives Testing & Blasting**

File: 1328.1

Last edit: 10/05/22 10:17 am

Changes proposed by: caseysc

Programs [EXP TC-MS: Master of Science in Explosives Technology](#)
referencing this [EXP EN-MS: Explosives Engineering MS](#)
course

Requested Fall ~~2014~~ 2023

Effective Change

Date

Department Mining & Nuclear Engineering

Discipline Explosives Engineering (EXP ENG)

Course Number 6312

Title

Scientific Instrumentation For Explosives Testing & Blasting

Abbreviated Sci Instr/Explosives Tst

Course Title

Catalog

Description

Application of scientific principles, equipment description and operation for instrumentation of explosive events including blasting and high explosives. ~~blasting~~. Topics: Set up ~~Blast chamber design, set up, high-speed photography, motion detection~~ and use of high-speed photography, motion detection and measurement, explosives ~~sensitivity testing, explosives~~ properties testing, vibration measurement & analysis. ~~analysis, destruction & demilitarization~~.

Prerequisites

Exp Eng 5612 and Successful background check. Consent of instructor.

Field Trip

In Workflow

1. MINEXP ENG
Chair
2. CCC Secretary
3. Engineering DSCC
Chair
4. Pending CCC
Agenda post
5. CCC Meeting
Agenda
6. Campus Curricula
Committee Chair
7. FS Meeting
Agenda
8. Faculty Senate
Chair
9. Registrar
10. CAT entry
11. Peoplesoft

Approval Path

1. 07/18/22 9:26 pm
Kwame Awuah-
Offei (kwamea):
Rollback to
Initiator
2. 10/04/22 3:21 pm
Evie Sherlock
(esdk3): Rollback
to Initiator
3. 10/04/22 3:26 pm
Kwame Awuah-
Offei (kwamea):
Approved for
MINEXP ENG
Chair

Statement

Credit Hours LEC: 1 LAB: 2 IND: 0 RSD: 0

Total: 3

Required for
Majors NoElective for
Majors NoJustification for
change:

In order to make sure students have a successful background check before taking the course, consent of instructor has been added as a prerequisite so that students need a permission number before they can enroll for the class. Once they have a background check file they will be approved so that they remain in the class.

Semesters
previously
offered as an
experimental
course

Co-Listed
Courses:

4. 10/06/22 2:27 pm

Jennifer
Pohlsander
(jpnfd): Approved
for CCC Secretary

5. 10/28/22 10:46
am

Mark Fitch
(mfitch):
Approved for
Engineering DSCC
Chair

6. 12/02/22 10:18
am

Jennifer
Pohlsander
(jpnfd): Approved
for Pending CCC
Agenda post

Course Reviewer **kabp3 (07/18/22 9:26 pm):** Rollback: In the description, "...setup and use.." is
Comments written as "...setup and us...". Correct and resend.

esdk3 (10/04/22 3:21 pm): Rollback: per phone conversation/Chair comments on CC

esdk3 (10/05/22 10:17 am): Removed "Fly in lab weekend required" from the
description per conversation with department, this descriptive is more appropriately
applied at section-level as it is only required for XDIS (distance) sections. -es 10/5/22

Key: 1328

[Preview Bridge](#)

Course Change Request

Date Submitted: 08/26/22 1:59 pm

Viewing: **HISTORY 3443 : The American Military Experience**

File: 1417.5

Last approved: 05/24/16 4:57 am

Last edit: 10/26/22 9:53 am

Changes proposed by: dewittp

Programs
referencing this
course

[SCTCPL-MI: Science, Tech,& Politics Minor](#)
[SCITEC-CTU: UCT - Science, Technology, and Society](#)
[MILSEC-CTU: UCT - Military and Security Studies](#)
[WARSOC-CTU: UCT - War and Society](#)
[MIL SC-MI: Adaptive Leadership Minor](#)

Requested [Fall 2023](#) ~~Fall 18~~ Prereq

Effective Change ~~Attribute Update~~

Date

Department History and Political Science

Discipline History (HISTORY)

Course Number 3443

Title

The American Military Experience

Abbreviated The Amer Mil Experience

Course Title

Catalog

Description

A study of American military history, strategy, policy and institutions from the colonial period to the present. War will be viewed in the mainstream of history with emphasis on the American Revolution, the Civil War, and the 20th century conflicts.

Prerequisites

History [1100](#) ~~1200~~ or History [1200](#) ~~1300~~ or History [1300](#) ~~1310~~ or [History 1310](#) or Pol Sci 1200.

In Workflow

1. RHISTORY Chair
2. RMILARMY Chair
3. CCC Secretary
4. Arts & Humanities DSCC Chair
5. Pending CCC Agenda post
6. CCC Meeting Agenda
7. Campus Curricula Committee Chair
8. FS Meeting Agenda
9. Faculty Senate Chair
10. Registrar
11. CAT entry
12. Peoplesoft

Approval Path

1. 03/06/18 3:08 pm
Shannon Fogg
(sfogg): Rollback to Initiator
2. 08/26/22 2:05 pm
Michael Bruening
(bruening): Approved for RHISTORY Chair
3. 10/20/22 1:17 pm
Matthew Burmeister
(mrb34d): Approved for

Field Trip
Statement

Credit Hours LEC: 3 LAB: 0 IND: 0 RSD: 0

Total: 3

Required for
Majors No

Elective for
Majors Yes ~~No~~

Justification for
change:

The department of History and Political Science is updating its prerequisite requirements for upper level humanities/social science courses so that students will be able to select from a variety of courses.

Semesters
previously
offered as an
experimental
course

Co-Listed
Courses:

Course Reviewer **sfogg (03/06/18 3:08 pm):** Rollback: Change in minor instead of course change
Comments **jpnfd (10/26/22 9:53 am):** Updated prerequisite format. Changed term to Fall 2023.

RMILARMY Chair

4. 10/26/22 9:57 am

Jennifer

Pohlsander

(jpnfd): Approved
for CCC Secretary

5. 10/26/22 10:41
am

Petra Dewitt

(dewittp):

Approved for Arts
& Humanities
DSCC Chair

6. 12/02/22 10:18
am

Jennifer

Pohlsander

(jpnfd): Approved
for Pending CCC
Agenda post

History

1. May 24, 2016 by
dewittp (1417.1)

Key: 1417

[Preview Bridge](#)

Course Change Request

New Course Proposal

Date Submitted: 09/21/22 3:00 pm

Viewing: **MECH ENG 6410 : Optimal Control and Estimation**

File: 4895

Last edit: 10/21/22 8:52 am

Changes proposed by: nisbett

Requested Fall 2023

Effective Change

Date

Department Mechanical & Aerospace Engineering

Discipline Mechanical Engineering (MECH ENG)

Course Number 6410

Title

Optimal Control and Estimation

Abbreviated Optimal Control

Course Title

Catalog

Description

Review of linear quadratic regulators, LQR extensions; constrained optimization (Pontragin's minimum principle); review of probability theory and random processes; optimal prediction and filters; frequency domain properties of LQR and Kalman filters; linear quadratic Gaussian (LQG) control; model uncertainties, frequency shaping, LQG/LTR design methodology.

Prerequisites

Elec Eng 6300 or Mech Eng 5481 or Aero Eng 5481.

Field Trip

Statement

Credit Hours

LEC: 3

LAB: 0

IND: 0

RSD: 0

Total: 3

In Workflow

1. RMECHENG Chair

2. CCC Secretary

3. Engineering DSCC
Chair

4. Pending CCC
Agenda post

5. CCC Meeting
Agenda

6. Campus Curricula
Committee Chair

7. FS Meeting
Agenda

8. Faculty Senate
Chair

9. Registrar

10. CAT entry

11. Peoplesoft

Approval Path

1. 09/21/22 3:06 pm
David Bayless

(djbkqf):

Approved for
RMECHENG Chair

2. 09/27/22 8:31 am
Jennifer

Pohlsander

(jpnfd): Approved
for CCC Secretary

3. 10/05/22 9:16 am
Mark Fitch

(mfitch):

Approved for
Engineering DSCC
Chair

Required for Majors No

Elective for Majors Yes

Justification for new course:

This is adding ME and AE colistings for the existing Elec Eng 6310, to allow greater access to this topic from all three majors. The only change from the existing Elec Eng 6310 is to expand the options for prereqs. Elec Eng is concurrently submitting the same prereq changes.

Semesters previously offered as an experimental course

The experimental phase is not required since this course is being added as a colist for an existing course.

Co-Listed Courses:

AERO ENG 6410 - Optimal Control and Estimation
ELEC ENG 6310 - **Course Not Found**

Course Reviewer **jpnfd (09/26/22 1:00 pm):** Added punctuation to prerequisites.

Comments **esdk3 (10/21/22 9:18 am):** Rollback: Rollback to be resubmitted/reviewed along with EE 6310. -es 10/21/22

4. 10/05/22 2:37 pm
Jennifer Pohlsander (jpnfd): Approved for Pending CCC Agenda post

5. 10/21/22 9:18 am
Evie Sherlock (esdk3): Rollback to Pending CCC Agenda post for CCC Meeting Agenda

6. 12/02/22 10:19 am
Jennifer Pohlsander (jpnfd): Approved for Pending CCC Agenda post

Key: 4895

[Preview Bridge](#)

Course Change Request

New Course Proposal

Date Submitted: 09/21/22 2:58 pm

Viewing: **MECH ENG 6430 : Robust Control Systems**

File: 4896

Last edit: 10/21/22 9:21 am

Changes proposed by: nisbett

Requested Fall 2023

Effective Change

Date

Department Mechanical & Aerospace Engineering

Discipline Mechanical Engineering (MECH ENG)

Course Number 6430

Title

Robust Control Systems

Abbreviated Robust Control Systems

Course Title

Catalog

Description

Performance and robustness of multivariable systems, linear fractional transformations, LQG/LTR advanced loop shaping, Youla parameterization, H_∞ (subscript infinity) optimal control, mixed H_2 (subscript 2) and H_∞ (subscript infinity) control, controller synthesis for multiple objective optimal control, linear matrix inequalities theory and case studies.

Prerequisites

Elec Eng 6300 or Mech Eng 5481 or Aero Eng 5481.

Field Trip

Statement

Credit Hours

LEC: 3

LAB: 0

IND: 0

RSD: 0

Total: 3

Required for

No

In Workflow

1. RMECHENG Chair

2. CCC Secretary

3. Engineering DSCC
Chair

4. Pending CCC
Agenda post

5. CCC Meeting
Agenda

6. Campus Curricula
Committee Chair

7. FS Meeting
Agenda

8. Faculty Senate
Chair

9. Registrar

10. CAT entry

11. Peoplesoft

Approval Path

1. 09/21/22 3:06 pm
David Bayless
(djbkqf):

Approved for
RMECHENG Chair

2. 09/30/22 3:49 pm
Jennifer

Pohlsander
(jpnfd): Approved
for CCC Secretary

3. 10/05/22 9:16 am
Mark Fitch

(mfitch):
Approved for
Engineering DSCC
Chair

Majors

Elective for
Majors Yes

Justification for
new course:

This is adding ME and AE colistings for the existing Elec Eng 6330, to allow greater access to this topic from all three majors. The only change from the existing Elec Eng 6330 is to expand the options for prereqs. Elec Eng is concurrently submitting the same prereq changes.

We request an effective date of Spring 2023, since the course is planned to be offered then, and the home course already exists and will already be on the Spring 2023 schedule.

Semesters
previously
offered as an
experimental
course

The experimental phase is not required since this course is being added as a colist for an existing course.

Co-Listed AERO ENG 6430 - Robust Control Systems
Courses: ELEC ENG 6330 - **Course Not Found**

Course Reviewer
Comments

jpnfd (09/26/22 1:12 pm): Added punctuation to prerequisites.

jpnfd (09/28/22 9:21 am): Effective date Spring 23 per CCC Chair email 9/27/22
esdk3 (10/21/22 9:19 am): Rollback: Rollback to be resubmitted/reviewed along with EE 6330. -es 10/21/22

esdk3 (10/21/22 9:21 am): updated effective term to FS23 as discussed at CCC mtg. This will be re-submitted/reviewed along with the EE 6330 course change submission. -es 10.21.22

4. 10/05/22 2:38 pm
Jennifer
Pohlsander
(jpnfd): Approved
for Pending CCC
Agenda post
5. 10/21/22 9:19 am
Evie Sherlock
(esdk3): Rollback
to Pending CCC
Agenda post for
CCC Meeting
Agenda
6. 12/02/22 10:19
am
Jennifer
Pohlsander
(jpnfd): Approved
for Pending CCC
Agenda post

Key: 4896

[Preview Bridge](#)

Course Change Request

Date Submitted: 11/01/22 4:12 pm

Viewing: **PHILOS 4554 ~~4666~~ : Technology, Ethics, and Philosophy**

File: 4728.2

Last approved: 11/16/20 6:01 am

Last edit: 11/04/22 10:57 am

Changes proposed by: cht3m

Requested Fall 2023 ~~Spring 2021~~

Effective Change

Date

Department Arts, Languages, & Philosophy

Discipline Philosophy (PHILOS)

Course Number 4554 ~~4666~~

Title

Technology, Ethics, and Philosophy

Abbreviated Tech Ethics & Philosophy

Course Title

Catalog

Description

Students will learn the conceptual tools & skills for reflection on the ethical, social, and philosophical dimensions of life in a technological society. Topics covered might include: philosophy of engineering, artificial intelligence, information ethics, cybernetics, technological unemployment, human enhancement and biotechnology, posthumanism, and others.

Prerequisites

Sophomore standing or above.

Field Trip

Statement

No field trips.

Credit Hours

LEC: 3

LAB: 0

IND: 0

RSD: 0

Total: 3

In Workflow

1. RPHILOS Chair
2. CCC Secretary
3. Arts & Humanities DSCC Chair
4. Pending CCC Agenda post
5. CCC Meeting Agenda
6. Campus Curricula Committee Chair
7. FS Meeting Agenda
8. Faculty Senate Chair
9. Registrar
10. CAT entry
11. Peoplesoft

Approval Path

1. 11/03/22 9:42 am
Audra Merfeld-Langston
(audram):
Approved for RPHILOS Chair
2. 11/04/22 11:00 am
Jennifer Pohlsander
(jpnfd): Approved for CCC Secretary
3. 11/04/22 11:09 am
Petra Dewitt

Required for Majors	No
Elective for Majors	Yes

Justification for change:

The philosophy section requested this change after reviewing the alignment of the philosophy course numbering system.

Semesters previously offered as an experimental course

1 (as Philosophy 3001 - special topics: Philosophy of Technology)

Co-Listed Courses:

Course Reviewer Comments	jpnfd (11/04/22 10:57 am): Updated term to Fall 2023
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(dewittp):
Approved for Arts & Humanities
DSCC Chair
4. 12/02/22 10:20 am
Jennifer Pohlsander
(jpnfd): Approved for Pending CCC Agenda post

History

1. Nov 16, 2020 by
Patrick Gamez
(gamezp)

Key: 4728

[Preview Bridge](#)

Program Change Request

Date Submitted: 10/04/22 2:57 pm

Viewing: **AE ENG-PHD : Aerospace Engineering PhD**

File: 3.4

Last approved: 07/23/15 3:51 pm

Last edit: 11/21/22 1:37 pm

Changes proposed by: yangxia

Catalog Pages Using this Program

[Aerospace Engineering](#)

Start Term

Fall 2023 ~~08/17/2015~~

Program Code

AE ENG-PHD

Department

Mechanical & Aerospace Engineering

Title

Aerospace Engineering PhD

Program Requirements and Description

In Workflow

1. RMECHENG Chair
2. CCC Secretary
3. Engineering DSCC Chair
4. Pending CCC Agenda post
5. CCC Meeting Agenda
6. Campus Curricula Committee Chair
7. FS Meeting Agenda
8. Faculty Senate Chair
9. Registrar

Approval Path

1. 10/04/22 3:13 pm
David Bayless
(djbkqf): Approved
for RMECHENG
Chair
2. 10/06/22 2:24 pm
Jennifer Pohlsander
(jpnfd): Approved
for CCC Secretary
3. 10/28/22 10:46 am
Mark Fitch (mfitch):
Approved for
Engineering DSCC
Chair
4. 12/02/22 10:20 am
Jennifer Pohlsander
(jpnfd): Approved
for Pending CCC
Agenda post

History

1. Mar 23, 2015 by
[Lahne Black \(lahne\)](#)
2. Jul 23, 2015 by
[pantaleoa](#)

A student holding an M.S. degree and pursuing the doctor of philosophy degree must complete at least ~~42~~ 60 total credit hours, including the following requirements: at least ~~18~~ 24 credit hours of lecture courses, at least ~~24~~ 36 credit hours of [MECH ENG 6099](#), at least 12 credit hours of course work in the MAE department, at least 3 credit hours of mathematics, statistics, or computer science ([AERO ENG 5830](#) Applied Computational Methods may be used to satisfy this requirement), and at least 9 credit hours of 6000-level courses (of which at least 6 credit hours must be in the MAE department). In addition to these course requirements, a candidate must prepare a dissertation based on analytical, numerical, and/or experimental research. Note that no course below the 5000-level level may be applied to the degree requirements.

A student holding a B.S. degree and pursuing the direct doctor of philosophy degree must complete at least ~~72~~ **90** total credit hours, including the following requirements: at least ~~36~~ **45** credit hours of lecture courses, at least ~~36~~ **45** credit hours of [MECH ENG 6099](#), at least 21 credit hours of course work in the MAE department, at least 6 credit hours of mathematics, statistics, or computer science ([AERO ENG 5830](#) Applied Computational Methods may be used to satisfy three credit hours of this requirement), and at least 15 credit hours of 6000-level courses (of which at least 9 credit hours must be in the MAE department). In addition to these course requirements, a candidate must prepare a dissertation based on analytical, numerical, and/or experimental research. Note that no course below the 5000-level level may be applied to the degree requirements.

A candidate for the degree of doctor of philosophy must pass a qualifying examination. The candidate is considered to have passed the qualifying examination if the candidate has taken at least four courses and has a GPA ≥ 3.5 at the end of the candidate's fourth semester. At least two courses must be in the MAE department, one of which must be at the 6000-level.

Justification for request

The MAE faculty has recently approved the reduction of the minimum credit hours required for AE and ME PhD programs, please see the edited credit hours. The MAE department would like to implement this updated requirement for our current and future PhD students.

Supporting Documents

Course Reviewer Comments

jpnfd (10/05/22 3:13 pm): Start Term Updated to Fall 2023

jpnfd (11/21/22 1:37 pm): Email from Zandra Kent Senior Program Coordinator UM System Office of Academic Affairs on 10/3/22 states, "We've reviewed the information and spoken to MDHE. We are in agreement that the changes do not warrant submission to MDHE since the number of required credit hours appears to be the only change. If the department had been changing credit hours, adding/deleting courses in the program requirements, then it may have warranted State approval. However, it appears the approvals for these changes lie at the university level."

Key: 3

Program Change Request

Date Submitted: 09/27/22 1:59 pm

Viewing: **BIO SC-BS : Biological Sciences BS**

File: 147.21

Last approved: 06/14/22 4:24 pm

Last edit: 10/05/22 9:28 am

Changes proposed by: shannonk

Catalog Pages Using this Program
[Biological Sciences](#)

Start Term

Fall 2023 ~~2022~~

Program Code

BIO SC-BS

Department

Biological Sciences

Title

Biological Sciences BS

Program Requirements and Description

In Workflow

1. **RBIOLSCI Chair**
2. **CCC Secretary**
3. **Sciences DSCC Chair**
4. **Pending CCC Agenda post**
5. **CCC Meeting Agenda**
6. **Campus Curricula Committee Chair**
7. **FS Meeting Agenda**
8. **Faculty Senate Chair**
9. **Registrar**

Approval Path

1. 09/27/22 2:04 pm
David Duvernell (duvernell): Approved for RBIOLSCI Chair
2. 10/05/22 9:33 am
Evie Sherlock (esdk3): Approved for CCC Secretary
3. 10/07/22 3:03 pm
Katie Shannon (shannonk): Approved for Sciences DSCC Chair
4. 12/02/22 10:20 am
Jennifer Pohlsander (jpnfd): Approved for Pending CCC Agenda post

History

1. Aug 1, 2014 by Katie Shannon (shannonk)
2. Feb 1, 2016 by Ilene Morgan (imorgan)
3. Jun 18, 2018 by Katie Shannon (shannonk)
4. Jan 30, 2020 by Katie Shannon (shannonk)
5. Apr 28, 2020 by Katie Shannon

(shannonk)
 6. Feb 3, 2021 by
 Katie Shannon
 (shannonk)
 7. Jun 14, 2022 by
 Katie Shannon
 (shannonk)

Bachelor of Science Biological Sciences Degree Requirements

A minimum of 124 credit hours is required for a Bachelor of Science degree in Biological Science.

A minimum grade of "C" is required for each Biological Science course used to fulfill the B.S. degree requirements.

These requirements for the B.S. degree are in addition to credit that is received for basic ROTC.

The Biological Science B.S. degree must include 48 semester hours of biological sciences course work, to include:

BIO SCI 1201	Biological Sciences Freshman Seminar	1
BIO SCI 1113	General Biology	3
or BIO SCI 1213	Principles of Biology	
BIO SCI 1219	General Biology Lab	1
BIO SCI 1223	Biodiversity	3
BIO SCI 1229	Biodiversity Lab	1
BIO SCI 2213	Cell Biology	3
BIO SCI 2219	Cell Biology Laboratory	1
BIO SCI 2223	General Genetics	3
BIO SCI 2263	Ecology	3
BIO SCI 3233	Evolution	3
BIO SCI 4010	Seminar	1
Advanced biological sciences or approved course work in other departments for a total of 48 credit hours of biology-related classes to include at least two laboratory courses from the following:		25
BIO SCI 2242	Cave Biology	
BIO SCI 2252	Vegetation of the Ozarks	
BIO SCI 2264	Field Ecology	
BIO SCI 2359	Zoology Laboratory	
BIO SCI 2389	Plant Biology Laboratory	
BIO SCI 3319	Microbiology Lab	
BIO SCI 3339	Human Anatomy Physiology I Lab	
BIO SCI 3349	Human Anatomy and Physiology II Laboratory	
BIO SCI 3353	Comparative Vertebrate Anatomy	
BIO SCI 3359	Physiology Lab	
BIO SCI 4099	Undergraduate Research (minimum 2 hours)	
BIO SCI 4329	Molecular Genetics Laboratory	
BIO SCI 4369	Freshwater Ecology Laboratory	

BIO SCI 5463	Course BIO SCI 5463 Not Found	
BIO SCI 5523	Course BIO SCI 5523 Not Found	
17 semester hours of chemistry to include general chemistry		17
CHEM 1310 & CHEM 1319 & CHEM 1320 & CHEM 1100	General Chemistry I and General Chemistry Laboratory and General Chemistry II and Introduction To Laboratory Safety & Hazardous Materials	
CHEM 2210 & CHEM 2219 & CHEM 2220 & CHEM 2229	Organic Chemistry I and Organic Chemistry I Lab and Organic Chemistry II and Organic Chemistry II Lab	
2 semesters of College (Engineering) Physics and labs		8
PHYSICS 1145	College Physics I	
or PHYSICS 1135	Engineering Physics I	
PHYSICS 2145	College Physics II	
or PHYSICS 2135	Engineering Physics II	
Math and Statistics		8
STAT 3425	Introduction to Biostatistics	
MATH 1211	Calculus I-B	
or MATH 1212	Survey of Calculus	
or MATH 1214	Calculus I	
12 semester hours of humanities, excluding foreign language, and to include:		12
ENGLISH 1120 & ENGLISH 1160	Exposition And Argumentation and Writing And Research (entering students will normally take ENGLISH 1120 either semester of the first year)	
9 hours of social sciences, to include		9
HISTORY 1200	Modern Western Civilization (or equivalent)	
or HISTORY 1300	American History To 1877	
or HISTORY 1310	American History Since 1877	
or POL SCI 1200	American Government	
Total Credits		102

Elective credits: In consultation with his or her advisor, each student will elect sufficient additional courses to complete a minimum of 124 credit hours.

Justification for request

Hands on learning in labs is important in biology. Our department has several new lab courses and is increasing the required upper level lab from one to two lab courses and is listing additional courses students may take to fill this requirement.

Supporting Documents

Course Reviewer Comments

esdk3 (09/28/22 3:10 pm): corrected formatting for Bio Sci 4099. - es

jpnfd (10/04/22 10:18 am): Removed "*" from title.

esdk3 (10/05/22 9:28 am): Updated term to Fall 2023. Arranged Bio Sci lab course list in numerical order. Corrected course list for the Math and Statistics section (math/stat hours were being totaled twice). Bio Sci 5463 & 5523 are new courses and will show as "not found" until approved through CCC. -es 10/5/22

Key: 147

Program Change Request

Date Submitted: 11/15/22 9:37 am

Viewing: **INORGPS-MS : Industrial Organizational Psychology MS**

File: 234.30

Last approved: 06/14/22 4:24 pm

Last edit: 11/17/22 9:44 am

Changes proposed by: reynoldscla

Catalog Pages Using this Program
[Psychology](#)

Start Term

Fall 2023 ~~2022~~

Program Code

INORGPS-MS

Department

Psychological Science

Title

Industrial Organizational Psychology MS

Program Requirements and Description

In Workflow

1. **RPSYCHOL Chair**
2. **CCC Secretary**
3. **Social Sciences DSCC Chair**
4. **Pending CCC Agenda post**
5. **CCC Meeting Agenda**
6. **Campus Curricula Committee Chair**
7. **FS Meeting Agenda**
8. **Faculty Senate Chair**
9. **Registrar**

Approval Path

1. 11/15/22 9:37 am
Clair Kueny
(reynoldscla):
Approved for
RPSYCHOL Chair
2. 11/17/22 10:06 am
Jennifer Pohlsander
(jpnfd): Approved
for CCC Secretary
3. 11/17/22 3:05 pm
Cecil Eng Huang
Chua (cchua):
Approved for Social
Sciences DSCC
Chair
4. 12/02/22 10:21 am
Jennifer Pohlsander
(jpnfd): Approved
for Pending CCC
Agenda post

History

1. Apr 17, 2014 by
Lahne Black (lahne)
2. Apr 17, 2014 by
Lahne Black (lahne)
3. Apr 24, 2014 by
Lahne Black (lahne)
4. Apr 24, 2014 by
Lahne Black (lahne)
5. Apr 24, 2014 by
Lahne Black (lahne)
6. May 7, 2014 by
Lahne Black (lahne)
7. Jul 8, 2014 by
pantaleoa

8. Jul 29, 2014 by pantaleoa
9. Jun 19, 2015 by Nancy Stone (nstone)
10. Jun 23, 2015 by pantaleoa
11. Jul 24, 2015 by pantaleoa
12. Jul 24, 2015 by pantaleoa
13. Dec 1, 2016 by Nathan Weidner (weidnern)
14. Jul 11, 2017 by Crystal Wilson (wilsoncry)
15. Feb 27, 2018 by Nathan Weidner (weidnern)
16. Jul 1, 2020 by Devin Burns (burnsde)
17. Sep 15, 2020 by Crystal Wilson (wilsoncry)
18. Jun 14, 2022 by Devin Burns (burnsde)

Master of Science in Industrial-Organizational Psychology

Admission Requirements

Students interested in the M.S. in I-O psychology program should review the admissions requirements listed on our website (<https://psych.mst.edu/academic-programs/graduate/admission-requirements/>).

Program Requirements

The M.S. in industrial-organizational psychology requires ~~37~~ 49 credit hours which includes a thesis or non-thesis option. Students will complete ~~21~~ 24 credit hours of core courses, 10 hours of methods courses, and either 6 hours of elective credits or 6 hours of thesis credits. Applied internship experiences are suggested, but not required as part of the program. The program will take at least 2 years to complete and classes are offered both on-campus and via distance.

Core Courses (21 hours)

PSYCH 5020	Introduction to Industrial-Organizational Psychology
PSYCH 5601	Small Group Dynamics
PSYCH 5602	Organizational Development
PSYCH 5700	Job Analysis and Performance Management
PSYCH 6610	Leadership, Motivation, and Culture
PSYCH 6702	Personnel Selection
PSYCH 6602	Employee Affect and Behavior
PSYCH 6700	Training and Development

Methods Courses (10 hours)

PSYCH 5201	Psychometrics
PSYCH 5210	Advanced Research Methods
PSYCH 5012	Ethics and Professional Responsibilities
PSYCH 5202	Applied Psychological Data Analysis
Electives from list below or Thesis (6 hours)	
PSYCH 5710	Advanced Human Factors
PSYCH 5600	Advanced Social Psychology
PSYCH 5740	Occupational Health and Safety
PSYCH 5001	Special Topics
Students completing a thesis would need to complete the following in place of electives:	
PSYCH 6099	Research

Justification for request

Removing an unnecessary course and making time towards completion easier for students. Also making requirements less challenging, but still well-above campus requirement of MS degrees to have 30 credit hours

Supporting Documents**Course Reviewer Comments**

jpnfd (11/17/22 9:44 am): Updated term to Fall 2023

Key: 234

Program Change Request

Date Submitted: 10/04/22 3:07 pm

Viewing: **MC ENG-PHD : Mechanical Engineering PhD**

File: 89.5

Last approved: 07/23/15 3:40 pm

Last edit: 11/21/22 1:37 pm

Changes proposed by: yangxia

Catalog Pages Using this Program

[Mechanical Engineering](#)

Start Term

Fall 2023 ~~08/17/2015~~

Program Code

MC ENG-PHD

Department

Mechanical & Aerospace Engineering

Title

Mechanical Engineering PhD

Program Requirements and Description

In Workflow

1. RMECHENG Chair
2. CCC Secretary
3. Engineering DSCC Chair
4. Pending CCC Agenda post
5. CCC Meeting Agenda
6. Campus Curricula Committee Chair
7. FS Meeting Agenda
8. Faculty Senate Chair
9. Registrar

Approval Path

1. 10/04/22 3:15 pm
David Bayless
(djbkqf): Approved
for RMECHENG
Chair
2. 10/06/22 2:41 pm
Jennifer Pohlsander
(jpnfd): Approved
for CCC Secretary
3. 10/28/22 10:46 am
Mark Fitch (mfitch):
Approved for
Engineering DSCC
Chair
4. 12/02/22 10:22 am
Jennifer Pohlsander
(jpnfd): Approved
for Pending CCC
Agenda post

History

1. Feb 19, 2014 by J.
Keith Nisbett
(nisbett)
2. Mar 24, 2015 by
pantaleoa
3. Jun 29, 2015 by
pantaleoa
4. Jul 23, 2015 by
pantaleoa

beyond the M.S. degree. For those with M.S. degree, the 42 60 hours will consist of 18 24 hours of course work and 24 36 hours of thesis research. The Ph.D. course work must satisfy the departmental core course requirements for the M.S. degree. For the 18 24 hours of course work, a minimum of 12 hours must be completed within the department and at least three credit hours of mathematics/statistics. At least nine credit hours of course work must be at the 6000-level in the major field of study. In addition to these course requirements, a candidate must prepare a dissertation based on analytical and/or experimental research in a major area. This research must be equivalent to a minimum of 24 36 hours beyond the M.S. degree. There are no foreign language requirements for the master of science, doctor of engineering and doctor of philosophy degrees in mechanical engineering. However, a reading knowledge of one foreign language, German, French or Russian, may be required for the doctor of philosophy degree if the candidate's advisory committee feels that it is necessary.

A candidate for the degree of doctor of philosophy must pass a qualifying examination. The qualifying examination consists of taking a minimum of nine credit hours of approved graduate course work at the 5000- and 6000-level, including six hours in the major field, of which three hours must be at the 6000-level, and three hours of mathematics/statistics. To pass the qualifying examination, a student must have obtained a grade of B or better for all the courses with a GPA of at least 3.25.

A student holding a B.S. degree and pursuing the direct doctor of philosophy degree must complete at least 72 90 total credit hours, including the following requirements: at least 36 45 credit hours of lecture courses, at least 36 45 credit hours of [MECH ENG 6099](#), at least 21 credit hours of course work in the MAE department, at least 6 credit hours of mathematics, statistics, or computer science ([AERO ENG 5830/MECH ENG 5830](#) Applied Computational Methods may be used to satisfy three credit hours of this requirement), and at least 15 credit hours of 6000-level courses (of which at least 9 credit hours must be in the MAE department). In addition to these course requirements, a candidate must prepare a dissertation based on analytical, numerical, and/or experimental research. Note that no course below the 5000-level may be applied to the degree requirements.

A candidate for the degree of doctor of philosophy must pass a qualifying examination. The candidate is considered to have passed the qualifying examination if the candidate has taken at least four courses and has a GPA ≥ 3.5 at the end of the candidate's fourth semester. At least two courses must be in the MAE department, one of which must be at the 6000-level.

A candidate for the degree of doctor of engineering must complete the equivalent of three years (six semesters) of full-time work beyond the bachelor's degree for a total of at least 90 semester hours. The six semesters must include a minimum of two semesters in residence at Missouri S&T with a graduate registration of at least 12 hours per semester. At least two semesters above the M.S. must be in residence at Missouri S&T with a registration of at least six hours per semester. The course work must be directed toward two major engineering areas plus one area from the physical sciences, mathematics, or another field of engineering. In addition, a non-technical group of courses of 9 to 12 hours is required. The formal course work is expected to consist of at least 65 hours (the average is 72 hours). In addition to the formal course work, the candidate is expected to complete an internship with an industrial organization. This internship will consist of a minimum of one year of planned and approved high-level engineering experience. At the end of the internship period, the candidate will prepare a dissertation which will earn from 18 to 25 hours credit and will be included in the total of 90 hours for the degree of doctor of engineering.

A candidate for the degree of doctor of philosophy must pass a qualifying examination. The candidate is considered to have passed the qualifying examination if the candidate has taken at least four courses and has a GPA ≥ 3.5 at the end of the candidate's fourth semester. At least two courses must be in the MAE department, one of which must be at the 6000-level. The candidate must also pass a comprehensive examination and a final examination, which consists of the dissertation defense. These examinations are conducted according to the rules of the graduate faculty and the department. The graduate faculty has residency requirements which must be satisfied by all doctoral students.

Justification for request

The MAE faculty has recently approved the reduction of the minimum credit hours required for AE and ME PhD programs, please see the edited credit hours. The MAE department would like to implement this updated requirement for our current and future PhD students.

Supporting Documents

Course Reviewer Comments

jpnfd (10/18/22 9:57 am): Start term updated to Fall 2023.

jpnfd (11/21/22 1:37 pm): Email from Zandra Kent Senior Program Coordinator UM System Office of Academic Affairs on 10/3/22 states, "We've reviewed the information and spoken to MDHE. We are in agreement that the changes do not warrant submission to MDHE since the number of required credit hours appears to be the only change. If the department had been changing credit hours, adding/deleting courses in the program requirements, then it may have warranted State approval. However, it appears the approvals for these changes lie at the university level."

Key: 89

Course Change Request

New Experimental Course Proposal

Date Submitted: 09/29/22 7:18 pm

Viewing: **CHEM ENG 5001.017 : Vaccine Manufacturing**

File: 4901

Last edit: 10/06/22 1:21 pm

Changes proposed by: forcinit

Requested Spring 2023

Effective Change
Date

Department Chemical and Biochemical Engineering

Discipline Chemical Engineering (CHEM ENG)

Course Number 5001

Topic ID 017

Experimental
Title

Vaccine Manufacturing

Experimental Vaccine Manufacturing

Abbreviated

Course Title

Instructors Daniel Forciniti

Experimental

Catalog

Description

The development, manufacturing and approval process of vaccines are covered. Vaccines that use attenuated or inactivated viruses, viral components and mRNA as the active ingredient are discussed. The manufacturing process includes the making of the active ingredient, vaccine formulation and delivery. The class includes three remote lab experiments.

Prerequisites

Senior standing in an engineering discipline, physics, chemistry or biology.

Field Trip

In Workflow

1. RCHEMENG Chair

2. CCC Secretary

3. Engineering DSCC
Chair

4. Pending CCC
Agenda post

5. CCC Meeting
Agenda

6. Campus Curricula
Committee Chair

7. CAT entry

8. Registrar

Approval Path

1. 10/04/22 12:34
pm

Hu Yang (huyang):

Approved for

RCHEMENG Chair

2. 10/06/22 2:25 pm
Jennifer

Pohlsander

(jpnfd): Approved

for CCC Secretary

3. 10/28/22 10:46
am

Mark Fitch

(mfitch):

Approved for

Engineering DSCC
Chair

4. 12/02/22 10:21
am

Jennifer

Pohlsander

Statement

(jpnfd): Approved
for Pending CCC
Agenda post

Credit Hours
Total: 3

LEC: 3

LAB: 0

IND: 0

RSD: 0

Justification for
new course:

This course will be part of a certificate in vaccine manufacturing that I am planning with the Biology Dept. But it also stands by itself considering the current interest on vaccines.

Semester(s)
previously taught

Co-Listed
Courses:

Course Reviewer
Comments

jpnfd (10/05/22 3:17 pm): Assigned topic ID number.

jpnfd (10/06/22 1:21 pm): Updated prerequisite format. Topic ID number assigned.

Key: 4901

[Preview Bridge](#)

Course Change Request

New Experimental Course Proposal

Date Submitted: 07/25/22 3:57 pm

Viewing: **CIV ENG 6001.008 : Advanced River Mechanics and Sediment Transport**

File: 4883

Last edit: 10/26/22 10:06 am

Changes proposed by: seelyj

Requested Spring 2023

Effective Change

Date

Department Civil, Architectural, and Environmental Engineering

Discipline Civil Engineering (CIV ENG)

Course Number 6001

Topic ID 008

Experimental

Title

Advanced River Mechanics and Sediment Transport

Experimental Adv Riv Mech

Abbreviated

Course Title

Instructors Dr. Robert Holmes

Experimental

Catalog

Description

Advanced studies in the field of river mechanics and sediment transport. Each student will be assigned a special research topic in river mechanics and sediment transport that will require a research paper and an advanced project that will require programming algorithms to predict river behavior from sediment processes.

Prerequisites

A grade of "C" or better in Civ Eng 3330 or graduate standing.

Field Trip

In Workflow

1. RCIVILEN Chair
2. CCC Secretary
3. Engineering DSCC Chair
4. Pending CCC Agenda post
5. CCC Meeting Agenda

6. Campus Curricula Committee Chair
7. CAT entry
8. Registrar

Approval Path

1. 10/19/22 2:40 pm
Joel Burken
(burken):
Approved for
RCIVILEN Chair
2. 10/26/22 10:07
am
Jennifer
Pohlsander
(jpnfd): Approved
for CCC Secretary
3. 10/28/22 10:46
am
Mark Fitch
(mfitch):
Approved for
Engineering DSCC
Chair
4. 12/02/22 10:21
am
Jennifer

Statement

na

Credit Hours

LEC: 3.0

LAB: 0

IND: 0

RSD: 0

Total: 3.0

Pohlsander

(jpnfd): Approved
for Pending CCC
Agenda postJustification for
new course:

Creating new relevant courses for graduate students in the area of water resources.

Semester(s)
previously taughtCo-Listed
Courses:Course Reviewer
Comments**jpnfd (10/26/22 10:06 am):** Standardized prerequisite format. Assigned topic ID
number.

Key: 4883

[Preview Bridge](#)

Course Change Request

New Experimental Course Proposal

Date Submitted: 10/05/22 1:13 pm

Viewing: **GEO ENG 4001.001 : Mapping with Drones**

File: 4905

Last edit: 10/06/22 8:05 am

Changes proposed by: jlmd9g

Requested Spring 2023

Effective Change

Date

Department Geosciences and Geological and Petroleum
Engineering

Discipline Geological Engineering (GEO ENG)

Course Number 4001

Topic ID 001

Experimental

Title

Mapping with Drones

Experimental Mapping with Drones

Abbreviated

Course Title

Instructors Jeremy Maurer

Experimental

Catalog

Description

The course will start with a brief overview of UAS mapping technology and its rules and regulations. The principles of UAS data collection are explained along with hands-on practice in flight planning and execution, as well as processing collected imagery.

Prerequisites

None, but GEO ENG 3148 is highly recommended.

Field Trip

In Workflow

1. **RGEOENG Chair**
2. **CCC Secretary**
3. **Engineering DSCC Chair**
4. **Pending CCC Agenda post**
5. **CCC Meeting Agenda**
6. Campus Curricula Committee Chair
7. CAT entry
8. Registrar

Approval Path

1. 10/05/22 1:35 pm
Jeff Cawlfeld
(jdc): Approved
for RGEOENG
Chair
2. 10/06/22 2:41 pm
Jennifer
Pohlsander
(jpnfd): Approved
for CCC Secretary
3. 10/28/22 10:46
am
Mark Fitch
(mfitch):
Approved for
Engineering DSCC
Chair
4. 12/02/22 10:21
am
Jennifer
Pohlsander

Statement

Field trips will be done locally during class time

Credit Hours

LEC: 2

LAB: 1

IND: 0

RSD: 0

Total: 3

(jpnfd): Approved
for Pending CCC
Agenda post

Justification for
new course:

There is currently no course on unmanned aerial systems (drones) offered at Missouri S&T. Drones are big part of modern geospatial, geological, and civil mapping technology, and drone applications range across many of the disciplines taught at S&T. This course will teach students the basics of drone operations, the knowledge they need to pass the FAA's Remote Pilot Certificate exam, and teach the basics of photogrammetry and mapping with drones. It will also introduce the students to the software techniques used to process and analyze drone imagery and develop orthomosaics and 3D models.

Semester(s)
previously taught

None

Co-Listed

GEOLOGY 4001 - Special Topics

Courses:

MIN ENG 4001 - Special Topics

GEOPHYS 4001 - Special Topics

CIV ENG 4001 - Special Topics

PET ENG 4001 - Special Topics

Course Reviewer
Comments

jpnfd (10/06/22 8:05 am): Assigned topic ID number. Prerequisite punctuation added.

Key: 4905

[Preview Bridge](#)