PURDUE
UNIVERSITY

Environmental and Ecological Engineering

Memorandum

To: The Faculty of the College of Engineering

From: Environmental and Ecological Engineering

Date: April 21, 2023

Re: EFD 98-23

Combined Degree Program

Reason: We request the addition of the Mechanical Engineering undergraduate program to the list of baccalaureate programs eligible for entry to the EEE combined degree program. The initial combined degree program was approved in March 2016.

John W. Sutherland
Professor and Fehsenfeld Family Head

Potter Engineering Center, Room 364 ■ 500 Central Drive ■ West Lafayette, IN 47907
Phone: 765-496-9697 ■ Facsimile: 765-494-4482 ■ email: jwsuther@purdue.edu

PURDUE UNIVERSITY
Environmental and Ecological Engineering
COLLEGE OF ENGINEERING

TO: James Mohler, Associate Dean of the Graduate School
CC: Dana Weinstein, Associate Dean for Graduate Education, College of Engineering
FROM: John Howarter, Chair of the Environmental and Ecological Engineering Graduate Committee
DATE: April 21, 2023
SUBJECT: Additional BS to Environmental and Ecological Engineering combined degree program

Environmental and Ecological Engineering (EEE) currently has a combined degree program with eight other programs on campus. Students receive a BS in Agricultural Engineering, Biological Engineering, Chemical Engineering, Civil Engineering, Environmental and Ecological Engineering, Industrial Management, Materials Engineering, or Natural Resources and Environmental Science and then with one additional year at MS in Environmental and Ecological Engineering (Approved proposals attached with a revision).

Mechanical Engineering has requesting that they become part of this combined degree program. Students would complete their BSME and with one additional year receive a MS in EEE. Proposed date of initiation would be Fall 2023. Attached is a proposed plan of study for semesters 7 and 8. By approving the proposal ME agrees to the terms of the original proposal.

As mentioned in the original proposal, in the Indiana Commission for Higher Education (ICHE) publication “Reaching Higher, Achieving More” they call for a higher education system that is student centered, mission driven, and workforce-aligned. With the approval of the EEE Graduate program there is an opportunity for high achieving students to earn both a BS in different disciplines and MS in environmental and ecological engineering in two additional semesters beyond the BS. Allowing students to receive an advanced degree in one additional year of course work aligns well with workforce needs and is student centered by lowering the cost for receiving a master’s degree.

The admission requirements to the program will remain the same including the revision. Students must have a GPA of 3.25 to be admitted to the program and must be admitted prior to the start of semester 7 (assuming they will receive their BS at the conclusion of semester 8). They must maintain a GPA of 3.25 to remain in the program over the last two semesters of their BS.

Approved:

Dana Weinstein	Date	James Mohler	Date
Associate Dean for Graduate Education		Associate Dean	
College of Engineering		Graduate School	

Example semester 7 and 8 for Mechanical Engineering

C	Fall 4th Year	C	Spring 4th Year
4	ME 315 (L) Heat and Mass Transfer	3	ME 463 (L) Engineering Design
3	MSE 230 Struc. and Prop. Materials	3	Tech. El. (TE-3)
3	ME 514 Fundamentals Wind Energy*	3	ME 525 Combustion*
3	EEE 530 Life Cycle Assessment Principles and Applications*	3	Free El. (free)
3	World/Cult El (WAC)	3	Gen Ed. (GE - 4)
16		**15**	

* These 9 credits will be dual counted for both BS and MS.

PURDUE UNIVERSITY | School of Mechanical Engineering

To: James Mohler, Associate Dean of the Graduate School
cc: Dana Weinstein, Associate Dean for Graduate Education, College of Engineering

From: Eckhard A. Groll
William E. and Florence E. Perry Head of Mechanical Engineering
Reilly Professor of Mechanical Engineering

Date: April 16, 2023

Subject: Combined BSME-MSEEE Degree Program

Dear Deans Mohler and Weinstein, please note that the School of Mechanical Engineering is confirming our request to be added to the combined degree program in Environmental and Ecological Engineering.

Please contact me if you have any questions or need additional information.

PURDUE UNIVERSITY | Environmental and Ecological Engineering
COLLEGE OF ENGINEERING

TO: James Mohler, Associate Dean of the Graduate School
CC: Dana Weinstein, Associate Dean for Graduate Education, College of Engineering
FROM: John Howarter, Chair of the Environmental and Ecological Engineering Graduate Committee
DATE: August 22, 2019
SUBJECT: Additional BS to Environmental and Ecological Engineering combined degree program

Environmental and Ecological Engineering (EEE) currently has a combined degree program with eight other programs on campus. Students receive a BS in Agricultural Engineering, Biological Engineering, Chemical Engineering, Civil Engineering, Environmental and Ecological Engineering, Industrial Management, Materials Engineering, or Natural Resources and Environmental Science and then with one additional year at MS in Environmental and Ecological Engineering (Approved proposals attached with a revision).

Earth, Atmospheric, and Planetary Sciences (EAPS) has requesting that they become part of this combined degree program. Students would complete their BS (Atmospheric Science, Environmental Geoscience, Geology Geophysics, and Planetary) and with one additional year receive a MS in EEE. Proposed date of initiation would be Spring 2020. Attached are a proposed plan of study for semesters 7 and 8 for each of the four majors in EAPS. By approving the proposal EAPS agrees to the terms of the original proposal.

As mentioned in the original proposal, in the Indiana Commission for Higher Education (ICHE) publication "Reaching Higher, Achieving More" they call for a higher education system that is student centered, mission driven, and workforce-aligned. With the approval of the EEE Graduate program there is an opportunity for high achieving students to earn both a BS in different disciplines and MS in environmental and ecological engineering in two additional semesters beyond the BS. Allowing students to receive an advanced degree in one additional year of course work aligns well with workforce needs and is student centered by lowering the cost for receiving a master's degree.

The admission requirements to the program will remain the same including the revision. Students must have a GPA of 3.25 to be admitted to the program and must be admitted prior to the start of semester 7 (assuming they will receive their BS at the conclusion of semester 8). They must maintain a GPA of 3.25 to remain in the program over the last two semesters of their BS.

Approved:

Dana Weinstein Associate Dean for Graduate Education College of Engineering	Date	James Mohler Associate Dean Graduate School	Date

150 YEARS OF GIANTLEAPS
PURDUE UNIVERSITY

Atmospheric Science

Credit	Fall 4th Year	Credit	Spring 4th Year
3	EAPS 50700 Data Analysis*	3	Multidisciplinary Experience Selective*
3	EAPS 500 Selective-EAPS 52100 (Atmospheric Chemistry)*	3	General Education III Selective
3	COM 21700* Public Speaking on Tech. Topics	3	Great Issues Selective (SCC-F)
3	General Education II Selective*	3	Free Elective-EAPS 53000 (Extreme Weather and Climate: Science and Risk)*
3	Free Elective	3	Free Elective
15		**15**	

* These 9 credits will be dual counted for both BS and MS.

Environmental Geoscience

Credit	Fall 4th Year	Credit	Spring 4th Year
3	Environmental Selective-EEE50700 (Intro to Analysis and Computing with Geoscience Data)*	3	Great Issues Selective [EAPS 364 (spring) or 327 Rec]
3	ASM 54000 GIS	3	General Education I Selective*
3	Environmental Selective-EAPS 58400 (Hydrogeology)*	3	Environmental Selective-EAPS 51800 (Soil Biochemistry)*
3	COM 21700*Public Speaking on Tech. Topics	3	Free Elective
3	Free Elective		
15		**12**	

* These 9 credits will be dual counted for both BS and MS.

Geology Geophysics

Credit	Fall 4th Year	Credit	Spring 4th Year
3	EAPS Professional Elective-EAPS 58000 (Geodynamics)*	3	EAPS Professional Elective-EAPS 51800 (Soil Biogeochemistry)*
3	Multidisciplinary Experience Selective*	3	General Education III Selective*
3	COM 21700* Public Speaking on Tech. Topics	3	Great Issues Selective (SCC-F)
3	EAPS 50700 GeoScience Data*	3	Free Elective
3	Free Elective		
15		**12**	

* These 9 credits will be dual counted for both BS and MS.

Planetary

Credit	Fall 4th Year	Credit	Spring 4th Year
3	EAPS 39500 Astrobiology	3	EAPS 445 Spacecraft Design
3	Planetary Science Selective-EAPS 50700 (Intro to analysis and computing with geoscience data)*	3	EAPS 57700 Remote Sensing*
3	Multidisciplinary Experience Selective*	3	Great Issues Selective
3	COM 21700* Public Speaking on Tech. Topics	3	Planetary Science Selective-EAPS 58000 (Geodynamics)*
3	Free Elective	1	Free Elective
15		**13**	

* These 9 credits will be dual counted for both BS and MS.

PURDUE UNIVERSITY

Earth, Atmospheric, and Planetary Sciences
COLLEGE OF SCIENCE

August 19, 2019

James Mohler, Associate Dean of the Graduate School
cc: Dana Weinstein, Associate Dean for Graduate Education, College of Engineering.

Dear Deans Mohler and Weinstein

The Department of Earth, Atmospheric, and Planetary Sciences is confirming our request to be added to the combined degree program in Environmental and Ecological Engineering.

Sincerely,

Daniel J. Cziczo
Professor and Department Head
Earth, Atmospheric and Planetary Sciences
Purdue University
Phone: 1-765-494-3258
Email: djcziczo@purdue.edu

PURDUE UNIVERSITY | Environmental and Ecological Engineering
COLLEGE OF ENGINEERING

TO: James Mohler, Associate Dean of the Graduate School
CC: Eckhard Groll, Associate Dean of Undergraduate and Graduate Education, College of Engineering
FROM: John Howarter, Chair of the Environmental and Ecological Engineering Graduate Committee
DATE: October 24, 2018
SUBJECT: Additional BS to Environmental and Ecological Engineering combined degree program

Environmental and Ecological Engineering (EEE) currently has a combined degree program with seven other programs on campus. Students receive a BS in Agricultural Engineering, Biological Engineering, Chemical Engineering, Civil Engineering, Environmental and Ecological Engineering, Materials Engineering, or Natural Resources and Environmental Science and then with one additional year a MS in Environmental and Ecological Engineering (Approved proposal attached with a revision).

Industrial Management (IM) has requesting that they become part of this combined degree program. Students would complete their BSIM and with one additional year receive a MS in EEE. Proposed date of initiation would be Spring 2019. Attached is a proposed plan of study for semesters 7 and 8. By approving the proposal, IM agrees to the terms of the original proposal.

As mentioned in the original proposal, in the Indiana Commission for Higher Education (ICHE) publication "Reaching Higher, Achieving More" they call for a higher education system that is student centered, mission driven, and workforce-aligned. With the approval of the EEE Graduate program, there is an opportunity for high achieving students to earn both a BS in different disciplines and MS in environmental and ecological engineering in two additional semesters beyond the BS. Allowing students to receive an advanced degree in one additional year of coursework aligns well with workforce needs and is student centered by lowering the cost for receiving a master's degree.

The admission requirements to the program will remain the same including the revision. Students must have a GPA of 3.25 to be admitted to the program and must be admitted prior to the start of semester 7 (assuming they will receive their BS at the conclusion of semester 8). They must maintain a GPA of 3.25 to remain in the program over the last two semesters of their BS.

Approved:

Eckhard Groll Associate Dean of Undergraduate and Graduate Education College of Engineering	Date	James Mohler Associate Dean Graduate School	Date

150 YEARS OF GIANT LEAPS
PURDUE UNIVERSITY

Example BSIM (Industrial Management)/MSEEE Plan of Study

Semester 7	Credits	
MGMT 38200	3	Management Information Systems
MGMT 35400	3	Legal Foundations of Business I
MGMT 36100	3	Operations Management
EEE 53000	3	LCA: Principles and Applications*
	3	General Elective
TOTAL	15	

Semester 8	Credits	
MGMT 44428	3	Human Resource Management
MGMT 45100	3	Strategic Management
EEE 595	3	Risk and Decision Analysis*
IE 54600	3	Economic Decisions in Engineering*
	3	General Elective
TOTAL	15	

* Courses that are double counted for BS and MS.

PURDUE UNIVERSITY
Environmental and Ecological Engineering
COLLEGE OF ENGINEERING

TO: James Mohler, Associate Dean of the Graduate School
CC: Eckhard Groll, Associate Dean of Undergraduate and Graduate Education, College of Engineering
FROM: Ananth Iyer, Susan Bulkeley Butler Chair of Operations Management; Professor of Management
DATE: November 30, 2018
SUBJECT: Addition of BS in Industrial Management to Environmental and Ecological Engineering combined degree program

Industrial Management is confirming the request to be added to the combined degree program in Environmental and Ecological Engineering.

Approved:

Ananth Iyer, PhD — 12/3/18 Date
Susan Bulkeley Butler Chair of Operations Management
Professor of Management

Potter Engineering Center, Room 364 | 500 Central Drive | West Lafayette, IN, 47907-2022 | 765-496-9697 | eee@purdue.edu | www.purdue.edu/EEE

MEMO **PURDUE**
UNIVERSITY

THE GRADUATE SCHOOL
Office of the Dean

TO: Debasish (Deba) Dutta, Provost
FROM: Mark J. T. Smith, Dean
DATE: March 10, 2016
SUBJECT: Combined Bachelor of Science Degree with Several Undergraduate Programs; and a Master of Science in Environmental and Ecological Engineering

I am transmitting for your information, review, and approval, a suite of combined degree proposals that combine a Bachelor of Science (B.S.) Degree with a Master of Science in Environmental and Ecological Engineering (M.S.E.E.E.). The B.S. degrees are to be offered by the Schools of Agricultural and Biological Engineering, Chemical Engineering, Civil Engineering, Environmental and Ecological Engineering, Materials Engineering, and the Natural Resources and Environmental Science Program in the College of Health and Human Sciences. The master's degree will be offered by the College of Engineering at Purdue University, West Lafayette.

The programs involved feel that there is an opportunity for high achieving students to earn both a Bachelor of Science and a Master of Science in Environmental and Ecological Engineering in two additional semesters beyond the B.S. Allowing students to receive an advanced degree in one additional year of course work aligns well with workforce needs. All of the disciplines participating in the combined degree program include fundamental principles of environmental science and engineering such that these students will be prepared to be successful in the M.S.E.E.E. degree program. By obtaining a Master's degree in EEE students will obtain the disciplinary content and credential necessary to obtain employment in the profession and earn a professional engineer license which is a common requirement for environmental engineers.

The Graduate School will review the combined degree in four years to assure that the enrollments are reasonable and the combined degree offering will continue. If enrollments are not significant, the combined degree program offering will be discontinued.

The Graduate School has reviewed the proposal for compliance with our policies and procedures governing combined degree programs. The proposed program meets our criteria. Students who graduate from this program will meet all the requirements for both degrees. I recommend approval of the proposal. Since these degrees are already recognized degrees, they do not require action by the Board of Trustees or by the Indiana Commission for Higher Education.

Please let me know if you have any questions. Thanks for your consideration of this important innovation in graduate education.

Copies: James Mohler, Candiss Vibbert, John Sutherland, Dulcy Abraham, Jay Akridge, John Graveel, Bernard Engel, Arvind Varma, David Bahr

Enclosure: Proposal with signature page

MJTS/tlp

Young Hall, Room 160 ● 155 S. Grant Street ● West Lafayette, IN 47907-2114
(765) 494-2604 ● Fax: (765) 494-0136 ● mjts@purdue.edu ● www.gradschool.purdue.edu

PROPOSAL

COMBINED DEGREE PROGRAM

BACHELOR OF SCIENCE IN ONE OF THE

FOLLOWING UNDERGRADUATE PROGRAMS:

Agricultural Engineering

Biological Engineering

Chemical Engineering

Civil Engineering

Environmental and Ecological Engineering

Materials Engineering

Natural Resources and Environmental Science Program

COMBINED WITH A

MASTER OF SCIENCE IN

ENVIRONMENTAL AND ECOLOGICAL ENGINEERING

OFFERED BY THE COLLEGE OF ENGINEERING

PURDUE UNIVERSITY

WEST LAFAYETTE

Combined Degree Program

Names of Multiple Degree Program – Bachelor of Science in Agricultural Engineering (BSAE) and Master of Science in Environmental and Ecological Engineering (MSEEE); Bachelor of Science in Biological Engineering (BSBE) and Master of Science in Environmental and Ecological Engineering (MSEEE); Bachelor of Science in Chemical Engineering (BSChE) and Master of Science in Environmental and Ecological Engineering (MSEEE); Bachelor of Science in Civil Engineering (BSCE) and Master of Science in Environmental and Ecological Engineering (MSEEE); Bachelor of Science in Environmental and Ecological Engineering (BSEEE) and Master of Science in Environmental and Ecological Engineering (MSEEE); Bachelor of Science in Materials Engineering (BSMSE) and Master of Science in Environmental and Ecological Engineering (MSEEE); OR Bachelor of Science (NRES) and Master of Science in Environmental and Ecological Engineering (MSEEE).

Names of schools/programs collaborating to offer the combined degree – Agricultural and Biological Engineering (ABE); Chemical Engineering (ChE); Civil Engineering (CE); Environmental and Ecological Engineering (EEE); Materials Engineering (MSE); and Natural Resources and Environmental Science Program (NRES).

Proposed date of Initiation: Fall 2016

Combined Degree Program
Signature Page

Degree Title: Bachelor of Science (multiple academic units) and Master of Science in Environmental and Ecological Engineering (MSEEE)

Names of Division/Program/Schools offering the dual degree:

John Graveel
Director of Natural Resources and Environmental Science Program

12/15/15
Date

Jay Akridge
Glenn W. Sample Dean of Agriculture

12/15/15
Date

Bernard Engel
Head of Agricultural and Biological Engineering

12/15/15
Date

Arvind Varma
Jay and Cynthia Ihlenfeld Head of Chemical Engineering

11/18/2015
Date

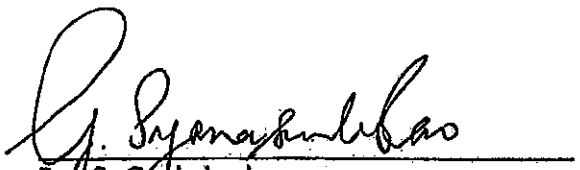
John W. Sutherland
Fehsenfeld Family Head of Environmental and Ecological Engineering

12/15/15
Date

David Bahr
Head of Materials Engineering

12/15/15
Date

Addendum to Signature Page



Rao S. Govindaraju
Bowen Engineering Head of Civil Engineering
Christopher B. and Susan S. Burke Professor

01/26/16
Date

Leah Jamieson
The John A. Edwardson Dean of Engineering

12/15/15
Date

RECEIVED
MAR 04 2016
GRADUATE SCHOOL

M. J. T. Smith
Dean of the Graduate School

3/10/16
Date

Debasish Dutta
Provost

3-21-16
Date

Combined Degree Program

1. *Proposal Summary:* Environmental and Ecological Engineering in collaboration with other departments, schools, and program will have a combined degree program in which a Purdue student can receive a BS degree and with one additional year a Master of Science in Environmental and Ecological Engineering.

2. *Degrees to be Conferred:* In the following table the combined degrees for each participating division, program, and school are listed.

BS Degree	MS Degree
BS Agricultural Engineering	MS Environmental and Ecological Engineering
BS Biological Engineering	MS Environmental and Ecological Engineering
BS Chemical Engineering	MS Environmental and Ecological Engineering
BS Civil Engineering	MS Environmental and Ecological Engineering
BS Environmental and Ecological Engineering	MS Environmental and Ecological Engineering
BS Materials Engineering	MS Environmental and Ecological Engineering
Bachelor of Science (NRES)	MS Environmental and Ecological Engineering

3. *Rationale and Need for the Combined or Dual-Degree -- Include a description of the impact and benefits of the proposed program and the relationships of the proposed program to the mission and scope of the campus, to already existing campus programs, and to human resource supply and demand.*

In the Indiana Commission for Higher Education (ICHE) publication "Reaching Higher, Achieving More" they call for a higher education system that is student centered, mission driven, and workforce-aligned. With the approval of the EEE Graduate program there is an opportunity for high achieving students to earn both a BS in different disciplines (see section 2) and MS in environmental and ecological engineering in two additional semesters beyond the BS. Allowing students to receive an advanced degree in one additional year of course work aligns well with workforce needs and is student centered by lowering the cost for receiving a master's degree.

All of the disciplines participating in the combined degree program include fundamental principles of environmental science and engineering such that these students will be prepared to be successful in the MSEEE degree program. By obtaining a Master's degree in EEE students will obtain the disciplinary content and credential necessary to obtain employment in the profession and earn a professional engineer license which is a common requirement for environmental engineers.

Data from the Bureau of Labor Statistics indicate that in 2010-11 35.5% of environmental engineers have master's degrees. With the expected growth in the profession overall (15.3% in the US (2012-2022) and 29.3% in Indiana (2010-2020)) the graduates from the combined degree program will be well positioned to join this workforce with a master's degree. Since EEE is the only program within the Purdue system in which the degree is in environmental and ecological

engineering there are no combined degree programs in this area. No additional human resources will be needed to implement this degree option.

4. Objectives of the Combined or Dual-Degree Program

The objective of the combined degree program is to allow Purdue students, in certain disciplines, to receive a master's degree in environmental engineering with one additional year at Purdue. As mentioned above, 35.5% of environmental engineers have a master's degree and with the expected growth in this area more students with master's degrees will be needed to fill the demand.

5. Proposed Program Structure

a. admission requirements and process

In the following, semesters are identified by numbers 6, 7, and 8 where semesters 7 and 8 refer to the next-to-last and last semester, respectively, of the undergraduate program. Although some students may be in different semester numbers due to delays or advanced credits, the meaning still can be interpreted relative to the graduation semester.

At the beginning of semester 6 students in the above listed programs interested in a BS/MS degree will submit an application to the EEE Graduate Office. This application will include a statement of purpose (essay of 300-500 words stating clearly and succinctly the reason for seeking graduate study and the applicant's career goals) and 2 letters of recommendation. Students must have a cumulative GPA of 3.25 to apply. When the application is received the EEE Graduate Office will make a decision to accept or not accept. If the student is accepted an EEE advisor will work with the student and the student's current advisor to decide which 500 level courses should be taken in semester 7 and 8 that will meet the requirements of the combined degree program. In addition, if the student is approved for the combined degree program the student will be required to submit a Graduate School application in semester 7. Upon admission to the Graduate School, the student will have primary status of undergraduate until the BS degree is awarded (at the end of semester 8).

While completing their Baccalaureate degree the student must complete 9 hours of graduate courses (e.g. three 3-credit 50000 level courses). These graduate level courses will be added to the MSEEE plan of study and will be "dual-counted" for both the undergraduate and graduate degrees. Grades of B- or better are required in the dual-counted courses to remain in the combined degree program.

The student's record will be reviewed by the EEE graduate office at the end of semesters 7 and 8. It is required that the undergraduate cumulative GPA of at least 3.25 is maintained and grades of B- or better are received in the dual-counted graduate courses. If these conditions are not met the student will not be permitted to remain in the combined degree program.

The BS degree will be awarded after satisfactory completion of the respective degree requirements. The student will then have graduate status starting in semester 9.

A graduate plan of study must be completed before the end of semester 9 and must be approved by the EEE graduate office before registration for semester 10.

b. degree requirements

Including the 9 dual-counted hours, 21 additional hours of course work will be required to meet the 30 credit MSEEE degree requirement. A thesis option is not available for combined degree students. All MSEEE students will be required to complete a two semester course

sequence containing three 1-credit five week modules per semester (six total credits). These five week modules are currently being offered as EEE 59500. EEE is in the process of requesting a new course, EEE 56000, to replace this temporary course number.

c. scope, size of the program

As many as 24 students can be enrolled in the combined degree program. The anticipated students from each of the partnering units is outlined in the following table.

Academic Unit	Students
ABE	2
ChE	2
CE	5
EEE	7
MSE	2
NRES	5
TOTAL	23

d. administrative structure -- Include a description of the curriculum for the program, including plans of study for each of the separate programs, with specific notations of courses (numbers and titles) to be used to fulfill requirements for each program in the combined or dual-degree plan.

See Appendix A for proposed plans of study for each partnering academic unit.

6. Sustainability and Impact on the State and Region

Within the state of Indiana there is an anticipated growth of 29.3% for environmental engineers by 2020. Based on data from Bureau of Labor Statistics about 35% of these environmental engineers will have master's degree. This program will allow Purdue to make a significant contribution to the needs of additional environmental engineers in Indiana. In addition there is growing trend in the industry to require a MS degree.

7. Staffing and Infrastructure -- Describe the resources over and above present levels required to initiate the program (space and other physical needs, faculty and staff, fiscal needs, other).

No additional resources will be needed for this program.

Appendix A – Example plans of study for each participating academic unit

For each partnering academic unit there is a unique plan of study for semesters 7 and 8. For semesters 9 and 10 there is a single plan of study.

Agricultural Engineering

Semester 7		
Course Number	Credits	Course Title
ABE 45000	3	Finite Element Method in Design and Optimization
ABE 48400	1	Project Planning and Management
ABE 49000	1	Professional Practice in Agricultural and Biological Engineering
ABE 53100	3	Instrumentation and Data Acquisition†
CE 54200	3	Hydrology†
	3	Written or Oral Communication Elective
TOTAL	14	

Semester 8		
Course Number	Credits	Course Title
ABE 48600	3	Agricultural Engineering Design
ABE 52700	3	Computer Models In Environmental and Natural Resources Engineering†
	3	Humanities or Social Elective
	3	Humanities or Social Elective (30000+)
	2	Elective
TOTAL	14	

† dual counted courses

Biological Engineering

Semester 7		
Course Number	Credits	Course Title
ABE 46000	3	Sensors and Process Controls
ABE 49000	1	Professional Practice in Agricultural and Biological Engineering
ABE 55700	3	Transport Operations in Food and Biological Engineering II†
	3	Biological Science or Science Elective
	3	Written or Oral Communication Elective
	3	Humanities or Social Science Elective
TOTAL	16	

Biological Engineering (cont)

Semester 8		
Course Number	Credits	Course Title
ABE 44000	3	Cell and Molecular Design Principles
ABE 55800	3	Process Design for Food and Biological Systems†
ABE 58000	3	Process Engineering of Renewable Resources†
	3	Humanities or Social Science Elective (30000+ level)
	3	University Core Curriculum Humanities Course
TOTAL	15	

† dual counted courses

Chemical Engineering

Semester 7		
Course Number	Credits	Course Title
CHE 40000	1	Professional Guidance
CHE 45600	3	Process Dynamics and Control
CHE 43500	4	Chemical Engineering Laboratory
CHE 42000	3	Process Safety Management
EAPS 58400	3	Hydrogeology†
TOTAL	14	

Semester 8		
Course Number	Credits	Course Title
CHE 45000	4	Design and Analysis Of Processing Systems
CHE 53600	3	Particulate Systems†
ABE 58000	3	Process Engineering of Renewal Resources†
	3	Engineering Elective
	3	General Education Elective
TOTAL	16	

† dual counted courses

Civil Engineering

Semester 7		
Course Number	Credits	Course Title
ME 20000	3	Thermodynamics I
EAPS 58400	3	Hydrogeology†
CE 49700	3	Wastewater Treatment
CE 54200	3	Hydrology†
CE 36100	3	Transportation Engineering
	3	General Education Elective
TOTAL	18	

Civil Engineering (cont)

Semester 8		
Course Number	Credits	Course Title
CE 49800	3	Civil Engineering Design Project
CE 45700	3	Air Pollution Control and Design
CE 51200	3	Comprehensive Urban Planning Process†
CE 38300	3	Geotechnical Engineering
	3	General Education Elective
TOTAL	15	

†dual counted courses

Environmental and Ecological Engineering

Semester 7		
Course Number	Credits	Course Title
EEE 48000	1	EEE Senior Design
EEE 49500	3	Wastewater Treatment#
EAPS 58400	3	Hydrogeology†
BIOL 58500	3	Ecology†
	3	General Education Elective
CE 44000	3	Urban Hydraulics
TOTAL	16	

Semester 8		
Course Number	Credits	Course Title
EEE 48000	2	EEE Senior Design
ABE 52700	3	Computer Models In Environmental and Natural Resources Engineering †
CE 45700	3	Air Pollution Control and Design
	3	General Education Elective
	3	General Education Elective
TOTAL	14	

† dual counted courses

EEE is in the process of creating EEE 45600 (currently EEE 49500-Wastewater Treatment) and also cross-list with CE 45600.

Materials Engineering

Semester 7		
Course Number	Credits	Course Title
MSE 43000	3	Materials Processing and Design I
MSE 44500	3	Materials Engineering Systems Analysis
ME 59700*	3	Environmental Sustainability Design and Manufacturing†
MSE 59700	3	Lean Manufacturing†
	3	General Education Elective
MSE 39000	0	Seminar
TOTAL	15	

Semester 8		
Course Number	Credits	Course Title
MSE 44000	3	Materials Processing and Design II
	6	Technical Electives
MSE 56000	3	Production of Inorganic Materials†
	6	General Education Electives
MSE 39000	0	Seminar
TOTAL	18	

† dual counted courses

* EEE is in the process a creating EEE 53000 (currently ME 59700-Environmental Sustainability Design and Manufacturing). This is a multi-step process requiring EEE faculty approval, College of Engineering faculty approval, and Graduate School approval.

Natural Resources and Environmental Science Program

Semester 7		
Course Number	Credits	Course Title
	3	Biochemistry, biology, chemistry, mathematics, physics, or statistics elective
AGRY 56000	3	Soil Physics†
	3	Social science or humanities Elective
	3	Written or oral communication Elective
	3	Unrestrictive Electives
TOTAL	15	

Semester 8		
Course Number	Credits	Course Title
AGRY 54000	3	Soil Chemistry†
AGRY 54400	3	Environmental Organic Chemistry**†
	3	Social science or humanities Elective (30000+ level)
	5	Unrestrictive Electives
TOTAL	14	

** or AGRY 58000 Soil Microbiology depending on available offerings

† dual counted courses

Combined Degree Program in EEE

Projected Student Numbers for the combined degree program in EEE.

Academic Unit	Students
ABE	2
ChE	2
CE	5
EEE	7
MSE	2
NRES	5
TOTAL	23

PURDUE
UNIVERSITY

Environmental and Ecological Engineering

Approved 4/18/16

To: James Mohler, Associate Dean, Graduate School

From: John W. Sutherland, Prof. and Fehsenfeld Family Head

Subject: Change in Combined Degree Program in Environmental and Ecological Engineering (EEE)

Date: April 15, 2016

Based on the discussions held earlier this week with Nicole Barr, Janet Beagle, Patti Finney, Chad Jafvert, Tina Payne, Nina Robinson, and you, EEE wants to make a change to the combined degree program. In the original proposal the student was to apply to the Graduate School in semester 7. The change that we are making is to the have the students apply to the Graduate School in semester 6. This will allow the students to be admitted to the Graduate School when they are taking the 9 credits that will be dual counted.

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