APPROVAL FORM FOR

DEGREE PROGRAMS

MISSISSIPPI STATE UNIVERSITY

NOTE: This form is a cover sheet that must accompany the degree program change proposal. The actual proposal should be prepared in accordance with format requirements provided in the *Guide and Format for Curriculum Proposals* published by the UCCC. Both cover sheet and proposal should be submitted to UCCC Mail Stop 9702 (281 Garner Hall), Phone: 325-9410.

College: Bagley College of Engineering **Department:** N/A

Contact Person: Lesley Strawderman **Mail Stop:** 9542 **E-mail:** strawderman@ise.msstate.edu

Nature of Change: Modification

Date Initiated: October 2022 **Effective Date:** Spring 2023

Current Degree Program Name: Engineering Education

Major: PhD in Engineering **Concentration:** Engineering Education

New Degree Program Name: no change

Major: no change **Concentration:** no change

Summary of Proposed Changes:

Change 1. Committee composition
The requirements for committee composition are removed from the catalog and are communicated via the graduate program guide that is distributed to enrolled ENE students.

Change 2. Qualifying exam
A preliminary exam has been added to the degree requirements.

Change 3. Academic performance criteria
The GPA for unsatisfactory academic performance has been changed from 3.30 to 3.00.

Approved:	Date:
Department Head	10/27/2022
Chair, College or School Curriculum Committee	
Dean of College or School	
Chair, University Committee on Courses and Curricula	
Chair, Graduate Council(if applicable)	
Chair, Deans Council	

1. CATALOG DESCRIPTION

No significant changes to the focus of the curriculum are proposed.

2. CURRICULUM OUTLINE

CURRENT Degree Description	PROPOSED Degree Description
Degree: Doctor of Philosophy Major: Engineering Concentrations: Aerospace Engineering Applied Physics Biological Engineering Chemical Engineering Civil Engineering Engineering Education Mechanical Engineering	Degree: Doctor of Philosophy Major: Engineering Concentrations: Aerospace Engineering Applied Physics Biological Engineering Chemical Engineering Civil Engineering Engineering Education Mechanical Engineering
Existing degree description is unchanged.	
OVERVIEW Dr. Kari Babski-Reeves, Associate Dean for Research & Graduate Studies 106 McCain330 Walker Engineering Building Box 9544 Mississippi State, MS 39762 Telephone: 662-325-2270 Fax: 662-325-8573 Graduate Coordinator: Dr. Lesley Strawderman 260 McCain Hall Box 9571 Mississippi State, MS 39762 Telephone: 662-325-7214 E-mail: ene-grad-coord@msstate.edu <u>An Interdisciplinary Curriculum</u> The Ph.D. in Engineering with a concentration in Engineering Education (ENE) incorporates theory and practice so that its students are prepared to be teachers and scholars in the emerging field of engineering education. Engineering education incorporates theory with applied practice to prepare its graduates for a wide range of careers. • Engineering policy • Corporate training management	OVERVIEW Dr. Kari Babski-Reeves, Associate Dean for Research & Graduate Studies 106 McCain330 Walker Engineering Building Box 9544 Mississippi State, MS 39762 Telephone: 662-325-2270 Fax: 662-325-8573 Graduate Coordinator: Dr. Lesley Strawderman 260 McCain Hall Box 9571 Mississippi State, MS 39762 Telephone: 662-325-7214 E-mail: ene-grad-coord@msstate.edu <u>An Interdisciplinary Curriculum</u> The Ph.D. in Engineering with a concentration in Engineering Education (ENE) incorporates theory and practice so that its students are prepared to be teachers and scholars in the emerging field of engineering education. Engineering education incorporates theory with applied practice to prepare its graduates for a wide range of careers. • Engineering policy • Corporate training management • Educational technology development

• Educational technology development • University assessment • University administration • Academia • Research and scholarship Graduates of the doctoral program will be able to conduct and direct research in engineering education, develop, review, and critique effective research designs, effectively teach engineering subjects, design and assess engineering programs, and address critical issues facing engineering education.	• University assessment • University administration • Academia • Research and scholarship Graduates of the doctoral program will be able to conduct and direct research in engineering education, develop, review, and critique effective research designs, effectively teach engineering subjects, design and assess engineering programs, and address critical issues facing engineering education.
The engineering education graduate program is interdisciplinary, with faculty drawn from the academic departments of the Bagley College of Engineering and the College of Education. The program of study and research leads to the Doctor of Philosophy in Engineering degree with a concentration in Engineering Education *and is offered on the Starkville campus*.	The engineering education graduate program is interdisciplinary, with faculty drawn from the academic departments of the Bagley College of Engineering and the College of Education. The program of study and research leads to the Doctor of Philosophy in Engineering degree with a concentration in Engineering Education.
Admission Criteria--An applicant for admission to graduate study must hold a bachelor's degree from a fully recognized four-year educational institution that has unconditional accreditation with appropriate accreditation agencies. He/she must meet the admission requirements of the Graduate School and receive a positive recommendation by the Engineering Education Program Committee. Admission is based primarily on past performance, letters of recommendation, Grade Record Examination (GRE) scores, and the applicant's demonstrated ability to be successful in the ENE Ph.D. program. Applicants with a bachelor's or master's degree from a program accredited by the Engineering Accreditation Commission (EAC) of ABET are preferred.	Admission Criteria--An applicant for admission to graduate study must hold a bachelor's degree from a fully recognized four-year educational institution that has unconditional accreditation with appropriate accreditation agencies. He/she must meet the admission requirements of the Graduate School and receive a positive recommendation by the Engineering Education Program Committee. Admission is based primarily on past performance, letters of recommendation, Graduate Record Examination (GRE) scores, and the applicant's demonstrated ability to be successful in the ENE Ph.D. program. Applicants with a bachelor's or master's degree from a program accredited by the Engineering Accreditation Commission (EAC) of ABET are preferred.
Regular admission to graduate study in the ENE Ph.D. program for students entering with only a Bachelor's degree requires a minimum grade point average (last four semesters of undergraduate work) of 3.50/4.00. Regular admission to graduate study in the ENE Ph.D. program for students entering with a Master's degree requires a minimum grade point average of 3.30/4.00 in the student's graduate work. When a student is deficient in one of the criteria cited, the student's application, nevertheless, may be considered for admission based on the strength of other materials contained in the student's application. However, reasonable minimum levels of performance must be achieved in both the applicant's GPA and GRE scores. International applicants not holding degrees from U.S. institutions must submit a Test of English as a Foreign Language (TOEFL) report of 575 PBT (84 iBT) or an International English Language Testing Systems (IELTS) score of 7.0 or higher to be considered for admission.	Regular admission to graduate study in the ENE Ph.D. program for students entering with only a bachelor's degree requires a minimum grade point average (last four semesters of undergraduate work) of 3.50/4.00. Regular admission to graduate study in the ENE Ph.D. program for students entering with a master's degree requires a minimum grade point average of 3.30/4.00 in the student's graduate work. When a student is deficient in one of the criteria cited, the student's application, nevertheless, may be considered for admission based on the strength of other materials contained in the student's application. However, reasonable minimum levels of performance must be achieved in both the applicant's GPA and GRE scores. International applicants not holding degrees from U.S. institutions must submit a Test of English as a Foreign Language (TOEFL) report of 575 PBT (84 iBT) or an International English Language Testing Systems (IELTS) score of 7.0 or higher to be considered for admission.

Provisional Admission--An applicant who has not fully met the GPA requirement stipulated by the University may be admitted on a provisional basis. The provisionally-admitted student is eligible for a change to regular status after receiving a 3.50 GPA on the first 9 hours of graduate courses at Mississippi State University (with no grade lower than a B). The first 9 hours of graduate courses must be within the student's program of study. Courses with an S grade, transfer credits, or credits earned while in Unclassified status cannot be used to satisfy this requirement. If a 3.50 GPA is not attained on the first 9 hours of graduate courses, the provisional student shall be dismissed from the graduate program. While in the provisional status, a student is not eligible to hold a graduate assistantship. The minimum acceptable undergraduate grade point average for admission as a provisional student is 3.00/4.00 for the junior and senior years.	Provisional Admission--An applicant who has not fully met the GPA requirement stipulated by the University may be admitted on a provisional basis. The provisionally-admitted student is eligible for a change to regular status after receiving a 3.50 GPA on the first 9 hours of graduate courses at Mississippi State University (with no grade lower than a B). The first 9 hours of graduate courses must be within the student's program of study. Courses with an S grade, transfer credits, or credits earned while in Unclassified status cannot be used to satisfy this requirement. If a 3.50 GPA is not attained on the first 9 hours of graduate courses, the provisional student shall be dismissed from the graduate program. While in the provisional status, a student is not eligible to hold a graduate assistantship. The minimum acceptable undergraduate grade point average for admission as a provisional student is 3.00/4.00 for the junior and senior years.
Contingent Admission--A student not possessing a B.S. or M.S. degree in an engineering or computer science discipline may be granted contingent admission, depending on qualifications and experienced. A plan of action toward regular admission is formed by the ENE Graduate Coordinator and ENE Program Committee on a case-by-case basis. Typically, contingency is removed by completing undergraduate prerequisite courses in the first few terms after admission. Contingency-admitted students must maintain at least a 3.50/4.00 GPA on all undergraduate prerequisite courses prescribed by their contingency plan of action. For more information, please contact the ENE Graduate Coordinator.	Contingent Admission--A student not possessing a B.S. or M.S. degree in an engineering or computer science discipline may be granted contingent admission, depending on qualifications and experience. A plan of action toward regular admission is formed by the ENE Graduate Coordinator and ENE Program Committee on a case-by-case basis. Typically, contingency is removed by completing undergraduate prerequisite courses in the first few terms after admission. Contingency-admitted students must maintain at least a 3.50/4.00 GPA on all undergraduate prerequisite courses prescribed by their contingency plan of action. For more information, please contact the ENE Graduate Coordinator.
PROGRAM OF STUDY The specific requirements for the Ph.D. in Engineering with a concentration in engineering Education degree are governed by the requirements of the Graduate School, the Bagley College of Engineering, and by the student's graduate committee. *The ENE Ph.D. student's graduate committee must include at least two Engineering Education faculty, one College of Education faculty member, and one faculty member from their engineering technical subject area.* The graduate committee will ensure that the student's program of study adequately addresses each of the three primary cross-disciplinary areas: engineering education, educational theory/cognitive science/psychology, and an engineering technical area. The Engineering Education Graduate Coordinator must approve the composition of the graduate committee.	PROGRAM OF STUDY The specific requirements for the Ph.D. in Engineering with a concentration in Engineering Education degree are governed by the requirements of the Graduate School, the Bagley College of Engineering, and by the student's graduate committee. The graduate committee will ensure that the student's program of study adequately addresses each of the three primary cross-disciplinary areas: engineering education, educational theory/cognitive science/psychology, and an engineering technical area. The Engineering Education Graduate Coordinator must approve the composition of the graduate committee.

The Engineering Education Graduate Coordinator and the student's graduate committee must approve the student's program of study.	The Engineering Education Graduate Coordinator and the student's graduate committee must approve the student's program of study.
The Doctor of Philosophy in Engineering with a concentration in Engineering Education, in addition to the coursework and research hours, *includes an oral preliminary, a dissertation, and a dissertation defense*. Each candidate for the doctoral degree must conduct research and in their dissertation defense on that research demonstrate a mastery of the techniques of research and make a distinct contribution to the field of Engineering Education. The dissertation must conform to the rules of the Graduate School.	The Doctor of Philosophy in Engineering with a concentration in Engineering Education, in addition to the coursework and research hours, **includes a qualifying exam, a comprehensive exam, a dissertation, and a dissertation defense**. Each candidate for the doctoral degree must conduct research and in their dissertation defense on that research demonstrate a mastery of the techniques of research and make a distinct contribution to the field of Engineering Education. The dissertation must conform to the rules of the Graduate School.
Students in the ENE PhD program are required to pass the oral comprehensive examination in accordance with the program requirements and all Graduate School policies. The student must have completed, or be within 6 hours of completing, their program of study coursework. The comprehensive exam consists of topics from the student's completed program of study, a presentation of current research activities toward the student's dissertation, and a detailed plan/proposal of dissertation research to be done. Upon successful completion of the comprehensive exam and all coursework on the student's program of study, the student advances to PhD candidacy.	
Ph.D. candidates ae required to pass a public dissertation defense to graduate. The Graduate Catalog lists dissertation defense requirements. Additionally, Ph.D. Candidates must submit two journal papers from their dissertation prior to graduation. The receive the ENE Graduate Coordinator's signature on the signature page, a Ph.D. candidate must provide proof of two journal submissions from the dissertation work; otherwise, the Ph.D. candidate will not be allowed to graduate. Journal paper submissions from work not a part of the dissertation, while strongly encouraged, cannot be used to satisfy this requirement.	Ph.D. candidates are required to pass a public dissertation defense to graduate. The Graduate Catalog lists dissertation defense requirements. Additionally, Ph.D. Candidates must submit two journal papers from their dissertation prior to graduation. To receive the ENE Graduate Coordinator's signature on the signature page, a Ph.D. candidate must provide proof of two journal submissions from the dissertation work; otherwise, the Ph.D. candidate will not be allowed to graduate. Journal paper submissions from work not a part of the dissertation, while strongly encouraged, cannot be used to satisfy this requirement.
<u>Academic Performance</u> In addition to the criteria defined in the current Graduate Catalog, unsatisfactory performance in the Ph.D. program in Engineering with a concentration in Engineering Education is defined as any of the following; • Failure to maintain a 3.50/4.00 or better GPA on all prerequisite undergraduate courses taken while in the ENE Ph.D. program. • Failure to maintain a *3.30/4.00* or better GPA on all graduate courses attempted.	<u>Academic Performance</u> In addition to the criteria defined in the current Graduate Catalog, unsatisfactory performance in the Ph.D. program in Engineering with a concentration in Engineering Education is defined as any of the following; • Failure to maintain a 3.50/4.00 or better GPA on all prerequisite undergraduate courses taken while in the ENE Ph.D. program. • Failure to maintain a **3.00/4.00** or better GPA on all graduate courses attempted.

CURRENT CURRICULUM OUTLINE	Required Hours	PROPOSED CURRICULUM OUTLINE	Required Hours
College Required Courses		College Required Courses	
Major Required Courses		Major Required Courses	
Concentration 1 (Engineering Education). Courses		Concentration 1 (Engineering Education). Courses	
ENE 8003 Foundations in Engineering Education	3	ENE 8003 Foundations in Engineering Education	3
ENE 8303 Pedagogy & Assessment in Engineering Education	3	ENE 8303 Pedagogy & Assessment in Engineering Education	3
EDF 8363 Functions & Methods of Research in Education	3	EDF 8363 Functions & Methods of Research in Education	3
EDF 9373 Education Research Design	3	EDF 9373 Education Research Design	3
IE6623 Engineering Statistics II	3	IE6623 Engineering Statistics II	3
Advanced Statistics course (see graduate coordinator for a list of approved courses)	3	Advanced Statistics course (see graduate coordinator for a list of approved courses)	3
Select graduate courses in EDF and EPY	6	Select graduate courses in EDF and EPY	6
Other engineering graduate courses	18	Other engineering graduate courses	18
Select graduate elective courses	6	Select graduate elective courses	6
ENE 9000 dissertation credit	20	ENE 9000 dissertation credit	20
Concentration 2. Courses		Concentration 2. Courses	
Total Hours (Engineering Education Concentration)		Total Hours (Engineering Education Concentration)	
Ph.D. (beyond baccalaureate)	68	Ph.D. (beyond baccalaureate)	68

3. JUSTIFICATION AND STUDENT LEARNING OUTCOMES

Three changes are proposed in this application, as detailed below. There are no changes in student learning outcomes.

Change 1. Committee composition

The requirements for committee composition are removed from the catalog and are communicated via the graduate program guide that is distributed to enrolled ENE students. This allows for the flexibility of committee assignments based upon a student's research area within engineering education. The following information will be in the ENE graduate program guide:

"The ENE PhD student's graduate committee must include at least two Engineering Education faculty members (one of which is major professor), one faculty member outside of engineering and ENE, and one faculty member from their engineering technical subject area."

Change 2. Qualifying exam

A preliminary exam has been added to the degree requirements. The preliminary exam is intended to assess the student's readiness to begin independent research prior to the writing of the dissertation proposal (comprehensive exam). Details about each exam are communicated via the graduate program guide that is distributed to enrolled ENE students. The following information will be in the graduate program guide:

"Students in the ENE PhD program must pass a qualifying exam prior to beginning dissertation research. The qualifying exam can be taken once the student completes their ENE and education coursework. To begin the qualifying exam process, a student should submit a research prospectus (i.e. concept paper, white paper) to their committee. Each committee member will provide a question for the student's qualifying exam based on the written prospectus. Students will typically have two weeks to write responses to each question (four weeks for distance students). After the written responses are submitted, an oral defense will be scheduled for the qualifying exam.

Students in the ENE PhD program are required to pass the comprehensive examination in accordance with the program requirements and all Graduate School policies. The student must have completed, or be within 6 hours of completing, their program of study coursework. The comprehensive exam consists of the student's dissertation proposal. A written proposal, followed by an oral presentation, must be completed. The proposal must include motivation for the research, research context with literature citations, research questions, detailed methods, and a timeline of activities that will be completed to finish the dissertation research. The student must demonstrate independent research capability in the comprehensive exam. Upon successful completion of the comprehensive exam and all coursework on the student's program of study, the student advances to PhD candidacy."

Change 3. Academic performance criteria

The GPA for unsatisfactory academic performance has been changed from 3.30 to 3.00.

4. SUPPORT

See letter of support from Engineering Education graduate committee.

5. PROPOSED ABBREVIATION

ENE

6. EFFECTIVE DATE

Spring 2023

October 11, 2022

To: Bagley College of Engineering Committee on Courses and Curricula
University Committee on Courses and Curricula

From: Graduate Committee
Engineering Education PhD Program

RE: Engineering Education (ENE) Degree Modification

The ENE graduate committee offers full support of the proposed degree modifications for the ENE PhD program regarding (1) committee composition, (2) qualifying exam, and (3) academic performance criteria.

Lesley Strawderman

Digitally signed by Lesley Strawderman
Date: 2022.10.11 13:45:51 -05'00'

Lesley Strawderman
Professor, ISE
ENE Graduate Coordinator

Seamus Freyne
Associate Professor, CEE

Alta Knizley
Assistant Clinical Professor, ME

Jean Mohammadi-Aragh
Associate Professor, ECE

Digitally signed by Rani Warsi Sullivan
Date: 2022.10.20 23:52:41 -05'00'

Rani Sullivan
Professor and Head, ASE