Graduate Council Curriculum Report

The Graduate Council Curriculum Report (GCCR), which includes all graduate curricular proposals approved through the Graduate Council curricular review process, is published 12 times each calendar year.

Questions/comments regarding the GCCR or its contents may be directed to the Director of Graduate Council Administration.

December 5, 2018

Graduate Degree Programs

CHANGE

Additive Manufacturing and Design – change degree requirements (College of Engineering), page 7

Art History – adopt dual-title Ph.D. in Visual Studies (College of Arts and Architecture), page 44

Biochemistry, Microbiology, and Molecular Biology – change admission requirements (Eberly College of Science), page 63

Energy and Mineral Engineering – change options and degree requirements (College of Earth and Mineral Sciences), page 80

Kinesiology – adopt dual-title Ph.D. in Bioethics (College of Health and Human Development), page 103

Leadership Development – change M.L.D. admission and degree requirements (Penn State Great Valley), page 123

DROP

Applied Psychological Research – drop graduate program (Penn State Harrisburg), page 144
Graduate Courses

ADD

BMS 550
Fundamentals of Cancer Biology
FUNDAMENTALS OF CANCER BIOLOGY (1)
Tumorigenesis is a multistep process driven by genetic and molecular changes that occur over time. Although cancer is a heterogeneous disease, many human tumors exhibit similar acquired physiological features. This course employs an integrated approach to teach the fundamentals of cancer biology with focus on the role of growth factors, oncogenes, tumor suppressor genes, and signal transduction mechanisms in tumor formation. Building on this foundational knowledge, subsequent sessions address the multistep nature of tumorigenesis as well as the role played by the tumor microenvironment as tumors progress and spread. Current topics on bioinformatics and therapeutic management are covered in the last week of the course.
PREREQUISITES: BMS 502, BMS 503
RECOMMENDED PREPERATION: General knowledge of cell biology, biochemistry, and genetics.
PROPOSED START: SU2019

CAS 551
Persuasive Communication
PERSUASIVE COMMUNICATION (3)
CAS 551 (Persuasive Communication) is a graduate level survey of classic and contemporary thinking on persuasive communication. The overarching goal of the course is to impart an understanding of the major issues and concerns in one of the oldest and most extensive literatures in social science. Students should leave the course with a broad understanding of the content and contours of the field as well as a set of strong empirical generalizations. Because of the enormous role that persuasion plays in shaping contemporary society as well as the day-to-day lives of individuals, an understanding of it is essential for scholars, consumers, and citizens.
PROPOSED START: SU2019

CE 522
Traffic Flow Theory and Simulation
TRAFFIC FLOW THEORY (3)
This course will cover advanced topics related to traffic operations and traffic flow theory. Students will be exposed to a variety of theories, methodologies, and principles that are used to assess traffic operations on surface transportation systems, as well as their applications. The course will be divided into two major subject areas: 1) operations on uninterrupted facilities, such as freeways; and, 2) operations on interrupted facilities, such as urban streets and large urban networks. Topics in the former area include kinematic wave theory, cell and link transmission models, variational theory, moving-bottlenecks, bottleneck identification and incident management. Topics in the latter include signal coordination, macroscopic fundamental diagrams, multimodal conflicts and their impacts. The course also includes an overview of traffic microsimulation software and its applications to both areas.
CONCURRENTS: CE 423
PROPOSED START: SU2019
**CRIM 559**  
Communities and Crime  
COMMUNITIES & CRIME (3)  
Crime has been shown to differ significantly across neighborhoods of different racial composition and of different socioeconomic characteristics. Specifically, neighborhoods characterized by high poverty and high segregation are more likely to exhibit higher violence, higher homicide rates, and higher disorder. Moreover, growing up in a highly disadvantaged neighborhood predicts whether youth will be involved in delinquency, risky behavior, and violent crime. In this course, students will learn about the major debates and arguments in the field on how such differences can come about and what may be their consequences. Students will learn to recognize, identify, and apply criminological and sociological theories and thinking on the effects of neighborhoods' social structures on crime. In particular, we will focus on classic and contemporary cutting edge thinking on poverty, social isolation, disorder, collective efficacy, institutional (dis)trust, demographic v. cultural heterogeneity, segregation, immigration, and the physical environment. We will address the theories, methods, and policies related to understanding key features of places such as social (dis)organization, social capital, spatial embeddeness, opportunity infrastructure, and cultural capital.  
CROSS-LISTED COURSES: SOC 559  
PROPOSED START: SU2019

**EE 578**  
Radar Systems  
RADAR SYSTEMS (3)  
This course provides a general understanding of radar systems at the graduate level, building upon material covered in undergraduate courses in electromagnetics, signals and systems, and antenna theory. In particular, it investigates the theory of radar systems and subsystems, and continues with the analysis of the radar equation, target detection in noise, and clutter phenomena. It includes radar techniques to enhance high range resolution of targets such as pulse compression. It also considers radar tracking, synthetic aperture radar, radar polarimetry, target recognition, scattering process, radar signal processing, electronic counter-measure techniques, and laser radar. Building on these concepts, students will understand the usage and applications of various types of radar system designs. Students will understand propagation, multi-path, and clutter phenomena and their effects on radar system performance. Students will recognize, identify, and apply proper radar techniques and apply these techniques to a variety of remote sensing radar applications.  
PREREQUISITES: EE 430 AND ( EE 432; EE 438; EE 439 ) AND ( EE 453; EE 460 )  
PROPOSED START: SU2019

**EMCH 501**  
Mechanics in Emerging Electronics for Biomedicine  
MECHANICS EMERGING ELECTRONICS (3)  
Recent advances in electronics enable powerful biomedical devices that have greatly reduced therapeutic risks by monitoring vital signals and providing means of treatment. Conventional electronics today are formed on the planar surfaces of brittle wafer substrates and are not compatible with the complex topology of body tissues. Therefore, stretchable and absorbable electronics are the two missing links in the design process of implantable monitors and in-vivo therapeutics. Mechanics design strategies present unique opportunities to address the challenges in such a potential medical device that (a) integrates with human physiology, and (b) dissolves completely after its effective operation. In this course, we will apply mechanics strategies to address challenging issues in emerging electronics, with examples ranging from sensors for temperature/ strain/ hydration/ electrophysiological monitoring to
integrated systems that can serve as human-machine interfaces. This course covers a broad range of topics related to the mechanics strategies for the emerging electronics in biomedicine, including manufacturing techniques for biomedical devices, mechanics of thin films for flexible electronics, perturbation method for stretchable electronics, bending and buckling analysis in the design of flexible and stretchable electronics, energy method for stretchable electronics, and introduction to fracture mechanics for transfer printing.

EME 526
Solar Utility and Portfolio Management

SOLAR UTILITY PORTFOLIO MGMT (3)

A succinct stand-alone course description (up to 400 words) to be made available to students through the on-line Bulletin and Schedule of Courses. This single description must encompass all course sections at all locations over a period of time and, therefore, must focus on the common and durable aspects of the course.

EME 526 covers the theoretical frameworks and quantitative methods for evaluating and designing solar resource projects. Methods will include quantitative solar resource measurement, forecasting, uncertainty quantification, dynamical systems modeling, and game theoretic models. Students will compare and assess alternative theoretical and quantitative approaches in terms of their ability to address a range of important objectives, including economic, technical constraints, robustness to uncertainty, varying risk preferences of stakeholders, and other ethical and cultural considerations. The course utilizes data sets and modeling resources drawn from actual case studies to provide students context in which to apply and evaluate the methods.

PROPOSED START: SU2019

HDFS 512
Developmental Cognitive Neuroscience of Adolescence

DEV NEUROSCI ADOL (3)

In this course students will evaluate a mix of foundational and cutting-edge research and theory investigating various changes during adolescence principally from a developmental cognitive neuroscience perspective. Particular emphasis will be placed on understanding the application of non-invasive neuroimaging techniques (e.g., functional magnetic resonance imaging, EEG) and the critical role these tools have played in our understanding of adolescent development. Topics to be discussed include (but will not be limited to) structural brain development, maturation in cognitive control functions (e.g., working memory, inhibitory control), as well as affective (e.g., emotion and reward processing), and social information processing. We will also examine factors contributing to adolescent decision-making and risk-taking behaviors.

CROSS-LISTED COURSES: PSY 512

PROPOSED START: SU2019

NEURO 524
Neuroscience Bootcamp

NEUROSCIENCE BOOTCAMP (2)

This is a laboratory course that meets twice weekly. The goal of this course is to engage incoming graduate students in the Neuroscience Program to a didactic/hands-on methods-based primer and overview of modern neuroscience laboratory methodology.

After successful completion of this course, students will be able to:
• Demonstrate an understanding of basic laboratory safety and standard laboratory practices.
• Demonstrate an understanding of how to keep data and records in a proper laboratory notebook.
• Demonstrate an understanding of basic laboratory approaches used in a modern neuroscience research lab to address questions in neuroscience.
• Demonstrate an understanding of how to perform and interpret laboratory experiments and analyze data acquired from those experiments.

RISE 500L
Responsible Conduct of Research in Life and Health Sciences
RCR – LIFE AND HEALTH (1/Repeatable Max: 2)
Responsible conduct of research (RCR) is the foundation upon which science depends for rapid progress and appropriate allocation of credit for research accomplishments. In the life and health sciences there have been dramatic changes in the research environment over time that have led to high-stakes professional outcomes for research scientists: multi-million dollar research grants, high-visibility international awards, institutional prestige. Personal accomplishments are intricately tied up with these professional outcomes: career consequences (tenure, expanded research group, etc.), significant personal financial rewards (royalties, start-up companies, etc.), and personal prestige and recognition, among others.
These increasing professional and personal pressures on research scientists can have very real impacts on the day-to-day decisions of scientists: appropriate data acquisition and management, proper allocation of credit, responsible use of animals, responsible work with human subjects, appropriate advising and mentoring of students, respect of intellectual property, and the avoidance of conflicts of interest and commitment.
This course explores the ethical basis for the responsible conduct of research, and highlights the challenges faced by today’s scientists. Students will learn about past failures in the responsible conduct of research that inform the current regulatory environment, understand the current expectations of biomedical scientists beyond the regulations, and, through the use of case studies, explore real ethical dilemmas for which there are not always easy answers. At the conclusion of this course, students will have both intellectual and practical resources to deal with ethical challenges they might face in their careers by making appropriate, ethical decisions.

CHANGE

OLD
BMS 568
Current Topics in Translational Cancer Research
TRANS CANCER RES (3)
The course covers current topics in cancer research, with a focus on translation to the clinic.
PREREQUISITES: BMS 501, BMS 502, and BMS 503

NEW
BMS 568
Current Topics in Translational Cancer Research
TRANSLATIONAL CANCER RESEARCH (2)
Current Topics in Translational Cancer Research is designed to prepare students to be the next generation of translational cancer researchers. The students are expected to have a basic knowledge of cancer biology and research techniques. The content will include cancer research that is currently being conducted as well as recently completed and will introduce both new technologies as well as new theories on cancer research. The course will offer students an opportunity to acquire skills in developing
and implementing hypothesis-based research studies that can lead to clinical therapeutics. The students will learn how to identify potential targets for therapy of cancer at all stages of development, from tumor initiation through progression and metastasis. The development of drugs from design and testing to investigational new drug status and FDA approval for clinical use will be discussed.

PREREQUISITES: BMS 550

OLD
HIST 570
Modern Latin American and Caribbean History
MOD LATIN AMERICA (3)
This course provides students with an overview of the historiography of modern Latin America and the Caribbean. HIST 570 Modern Latin American and Caribbean History (3) This course provides a broad exploration of the history of modern Latin America and the Caribbean. It examines the shared histories, as well as alternative experiences, of national case studies, such as Brazil, Mexico, and Cuba. The course surveys the historical cycles of the nineteenth and twentieth centuries, including independence in Latin America and the Atlantic world, nineteenth-century nation-building, turn-of-the-century neocolonial challenges, and twentieth-century nationalist and revolutionary movements. In addition to political and economic histories, the course highlights the social and cultural negotiations on behalf of women and people of color of all classes with the nation and state. While it acknowledges the traditional narratives that shape modern Latin American history, it offers competing perspectives and engages students in critical analysis of historical theories, methods, and sources. For example, the course considers the contribution of non-elite actors to national independence movements, examines how women and people of color challenged traditional social hierarchies and definitions of citizenship in the nineteenth century, and assesses the development of twentieth-century national narratives, such as racial democracy. In particular, the seminar will engage how historians have engaged theories, methods, and sources in the production of historiography.

NEW
HIST 570
Latin American History, 1800-Present
LATIN AMERICA 1800-PRESENT (3)
This seminar gives students an overview of central literatures and debates in the historiography of Latin America (the writing of Latin American history) and the Americas more broadly, from approximately to 1800 to the present. Its framing reflects the chronology of mainland Spanish American Independence, but it reaches backwards and outwards as needed. It looks to prior Andean and Haitian bids for self-determination and subsequent exports and imports—of empire, capital, people commodities, science, and instruments of terror—to and from the United States and Africa. It connects those nodes by tracing continuities in political, social, and environmental relationships, and by identifying the ways that peoples in the region (in the Caribbean, Mexico and Central America, Colombia and the Andes, Brazil and the Southern Cone) have thought and acted their way out of colonialisms.

Chief among the seminar’s goals is the preparation of graduate students to teach post-1800 Latin American History to undergraduates. Students will develop a grasp of the field’s key historiographical developments, and think about new ways to teach a subject that many—but not all—North American undergraduates meet with stereotypes. Graduate students of other historical geographies and from other disciplines are welcome too, given that it is also designed to survey approaches to thinking historically after 1800, to question assumptions that those methodologies make, and to address the politics of researching and writing a post-colonial history of a place that has always been “modern,” where “Latin America” came into being as a means of anticipating questions crucial to past and present imperialisms, global histories, and politics.
Graduate Council
Program, Option, or Minor Proposal Form

Submit 1 original, signed Graduate Council proposal form and 2 hardcopies of the graduate program proposal document, with a copy of the signed proposal form attached to each proposal copy, to the Office of the Dean of the Graduate School, 211 Kern Building, University Park. For more information about the process, see the Overview of the Graduate Council Curricular Review Process.

The Program Proposal Procedures provide guidance for the development of a graduate program proposal. If you have questions regarding the preparation of a graduate program proposal or how to complete this Graduate Council proposal form, contact the Office of the Dean of the Graduate School.

College/School: College of Engineering
Department or Instructional Area: Mechanical and Nuclear Engineering

New Graduate Program, Option, or Minor: Add

Designation of new graduate program: Penn State Graduate School
Classification of Instructional Programs (CIP) Code: SEP 26 2018
Designation of new graduate option:
Designation of new graduate minor: Office of the Vice Provost and Dean of the Graduate School

Indicate effective semester:
First semester following approval
Second semester following approval

Existing Graduate Program Option, or Minor: Change Drop

Current designation of graduate program: Additive Manufacturing and Design (AMD)
Current designation of graduate option:
Current designation of graduate minor:

New designation of existing graduate program (if changing):
New designation of existing graduate option (if changing):
New designation of existing graduate minor (if changing):

Brief description of the change (if not noted above): Degree requirements update, addition of MS thesis option

Indicate effective semester:
First semester following approval
Second semester following approval

Submitted by Graduate Program Head
Timothy W. Simpson
Printed name
Signature: Date: 9/20/18

Noted by College/School Representative to Graduate Council Subcommittee on New and Revised Programs and Courses:
Matthew Parkinson
Printed name
Signature: Date: 9/20/18

Approved by College/School Dean/Chancellor (or Designee):
George A. Lesieur, George A. Lesieur
Printed name
Signature: Date: 9/25/2018
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Proposal Type: Change

Program Name: Additive Manufacturing and Design

Degree(s) Offered: M.S. and M.Eng.

Location Offered: University Park and World Campus

Delivery: Residential and Online

Proposed Effective Semester: Fall 2018

Proposer/Program Head: Dr. Timothy Simpson, Director of Additive Manufacturing & Design
    Email: tws8@psu.edu
    Phone: 814-863-7136

Department Head: Dr. Karen Thole, Mechanical and Nuclear Engineering
    Email: kthole@psu.edu
    Phone: 814-865-2519

Staff Contact: Jaclyn Stimely, Program Coordinator of Additive Manufacturing & Design
    Email: juc52@psu.edu
    Phone: 814-863-8069
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I. Justification for Proposed Changes

The Additive Manufacturing and Design (AMD) graduate program began in Fall semester 2017 offering a Master’s of Science in AMD (MSAMD) for in-resident students or a Master’s of Engineering in AMD (MEngAMD) for online students. The AMD program is an inter-departmental degree program in the College of Engineering with inclusion of the Material Science and Engineering Department in the College of Earth and Mineral Science.

Change 1: Removing department restrictions for program electives
The MSAMD and MEngAMD options are 30-credit degree programs, which includes the successful completion of eight credits of elective courses. Currently students in the program are limited to taking “400/500-level courses in the following designations: EDSGN, ESC, IE, MATSE, or ME”. In order to expand the available options for elective offerings to AMD students, we propose removing the required elective designation and replace it with maintaining “a list of approved elective course offerings relevant to AMD in the program office”. Each semester the approved elective course offerings list will be reviewed by the AMD Program Director and distributed to AMD students. If a student wishes to enroll in an elective course that is not on the list of approved offerings, then they can submit a request for an elective course review by the AMD Program Director who will determine whether the course is a relevant elective for the AMD program.

Change 2: Add and cross-list AMD 590 colloquium
Currently, AMD students are required to complete one credit of colloquium in either of the following departmental designations: EDSGN, ESC, IE, MATSE, or ME. Currently, all of the online MEngAMD students complete colloquium by enrolling in ME 590 because it is the only colloquium that offers an online section. Since ME 590 is also a requirement for students in the online MSME program, enrollments can be large and enrollment is limited to students in the MSME program. We propose to add AMD 590 as a new course, cross-listing it with ME 590 so that the AMD Program Office will be able to more accurately account for AMD student enrollments when generating reports and conducting degree audits.

Change 3: Add AMD 596 as an option for independent study
Currently, all MSAMD and MEngAMD students are required to complete a culminating experience resulting in a final paper. Students have the option to complete their culminating experience at their place of employment (online students) or through an industrial internship (resident students). As part of the degree requirements, students enroll in either of the following departmental designations for individual studies: EDSGN 596, ESC 596, IE 596, MATSE 596, or ME 596, making it hard to keep track of AMD students when they pursue this option. The program proposes removing the specific department designations and replacing them with a new individual study course, AMD 596, to fulfill the culminating experience. Enrolling all students in AMD 596 will allow the AMD Program Office a more efficient process for accurately registering students with the appropriate faculty adviser and improve program reporting.

Change 4: Add thesis option for resident MSAMD students
Finally, the program proposes the addition of a thesis option for the resident MSAMD students’ culminating experience. As the program continues to grow, we anticipate that a thesis option
will make our program more competitive and encourage AMD faculty to provide Graduate Research Assistantships for resident graduate students. Initially the program target was geared towards the existing engineering workforce; however, as interest in additive manufacturing and design expands, we aim to encompass those students coming directly from an engineering undergraduate program, who may not have extensive work experience and would seek a MSAMD thesis option degree program to make themselves a competitive candidate in the workforce. Students pursuing this option (instead of the paper) will write and defend a thesis at an oral examination based upon original research in the field. The thesis will be submitted following the procedures specified by the Graduate School and the students will register for at least six credits of thesis research (AMD 600).

II. Overview of Proposed Changes

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<td>MEng AMD</td>
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<td>Culminating Experience</td>
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AMS 590 or EDSGN 590 or ESC 514 or IE 590 or MATSE 590 or ME 590

AMS 600 (MS thesis option)
### ADDITIVE MANUFACTURING AND DESIGN

**Graduate Program Head**
Timothy Simpson

**Program Code**
AMD

**Campus(es)**
University Park (M.S.) World Campus (M.Eng.)

**Degrees Conferred**
Master of Science (M.S.)
Master of Engineering (M.Eng.)

**The Graduate Faculty**
View (https://secure.gradsch.psu.edu/gpms/index.cfm?searchType=fac&prog=AMD)

The overall goal of the Master of Science in Additive Manufacturing and Design and Master of Engineering in Additive Manufacturing and Design is to educate students and working engineers to become technically outstanding experts in additive manufacturing. Specifically, the objectives include:

1. Apply foundational knowledge, critical thinking, problem solving, and creativity in the uses of additive manufacturing and associated design tools and methods.
2. Grow as leaders in manufacturing while maintaining the highest ethical standards in applying additive manufacturing to industry relevant problems and design challenges.
3. Strive for the advancement of the state-of-art in additive manufacturing and design.
4. Develop innovative solutions through new design paradigms in their respective industries.

### Admission Requirements

Applicants apply for admission to the program via the Graduate School application for admission (http://gradschool.psu.edu/prospectivestudents/how-to-apply). Requirements listed here are in addition to Graduate Council policies listed under GCAC-300 General Admissions Standards (http://gradschool.psu.edu/graduate-education-policies).

The language of instruction at Penn State is English. English proficiency test scores (TOEFL/IELTS) may be required for international applicants. See GCAC-305 Admission Requirements for International Students (http://gradschool.psu.edu/graduate-education-policies/gcac/gcac-300/admission-requirements-international-students) for more information.

To maintain a high quality program, it is important that our students are of a caliber to succeed. As such, the admission requirements for the students enrolling in the M.S. and M.Eng. degree program will be based on: academic records, GRE scores, applicable work experience, their personal statement of interests in additive manufacturing design, and three letters of recommendation from a previous professor or supervisor who can attest to the applicant’s academic potential. Applicants will be expected to have a Bachelor of Science or four-year Associates degree in engineering, manufacturing, materials science, or related field from a U.S. regionally accredited institution or from an officially recognized degree-granting international institution. An undergraduate cumulative grade point average of 3.0 or better on a 4.0 scale in the final two years of undergraduate studies is required.

### Degree Requirements

#### Master of Engineering (M.Eng.)

Requirements listed here are in addition to Graduate Council policies listed under GCAC-700 Professional Degree Requirements (http://gradschool.psu.edu/graduate-education-policies).

A minimum of 30 credits at the 400, 500, or 800 level is required. At least 18 credits must be at the 500 or 800 level, with a minimum of 6 credits at the 500 level.

**Code** | **Title** | **Credits**
--- | --- | ---
EDSGN 562 | Design for Additive Manufacturing | 19
ESC 545 | Scientific and Engineering Foundations of Additive Manufacturing | 8
IE 527 | Additive Manufacturing Processes | 3
MATSE 567 | Additive Manufacturing of Metallic Materials | 3
ME 566 | Metal Additive Manufacturing Laboratory | 3

Complete a minimum of 8 credits of electives in 400 and/or 500 level courses. A listing of approved courses is maintained by the program, offered with the following designations: EDSGN, ESC, IE, MATSE or ME. Complete one credit of colloquium preferably in the first two semesters in the program. The following courses are offered to meet this requirement:

- AMD 590 — Colloquium
- EDSGN 590 — Colloquium
- ESC 514 — Engineering Science and Mechanics Seminar
- IE 590 — IE Colloquium
- MATSE 590 — Colloquium
- ME 590 — Colloquium

Complete SARI (Scholarship and Research Integrity) training.

### Culminating Experience

A scholarly paper must be completed to meet the specific requirement of the culminating experience. This paper will demonstrate depth of knowledge to his/her adviser, a second reader, and the Director of the AMD Graduate Program Associate Department Head of Graduate Studies in one of the five aforementioned Departments.

Complete 3 credits in AMD 596 one of the following offerings to complete the culminating project:

- EDSGN 596 — Individual Studies
- ESC 596 — Individual Studies
- IE 596 — Individual Studies
- MATSE 596 — Individual Studies
- ME 596 — Individual Studies

**Total Credits**
30

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Note that AMD 596, EDSGN 596, ESC 596, IE 596, MATSE 596, and ME 596 cannot be used to fulfill this requirement.
2 M.Eng. students can complete a three (3) credit course in one (1) semester.

Culminating Experience
Candidates must write a culminating project paper on a topic mutually agreed upon with the adviser. Students will be encouraged to utilize their industry internship (resident students) or current employer (online students) to identify a relevant or practical problem of importance that additive manufacturing and appropriate design methods could address. The quality of the required paper is such that it must be suitable for publication in a professional journal or proceedings at a national or international conference, which generally requires a peer-review process.

Master of Science (M.S.) — Paper Option
Requirements listed here are in addition to Graduate Council policies listed under GCAC-600 Research Degree Requirements. (http://gradschool.psu.edu/graduate-education-policies)

A minimum of 30 credits at the 400, 500, 600, or 800 level is required. At least 18 credits must be in 500-level courses.

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Complete one credit of colloquium preferably in the first two semesters in the program. The following courses are offered to meet this requirement:

- AMD 590 Colloquium
- EDSGN 590 Colloquium
- ESC 514 Engineering Science and Mechanics Seminar
- IE 590 I E Colloquium
- MATSE 590 Colloquium
- ME 590 Colloquium

Complete SARI (Scholarship and Research Integrity) training

Culminating Experience
A scholarly paper or thesis must be completed to meet the specific requirement of the culminating experience. The paper or thesis will demonstrate depth of knowledge to his/her adviser, a second reader, and the Director of the AMD Graduate Program. Candidates must submit a thesis following the procedures specified by the Graduate School and register for 6 credits of AMD 600. The thesis must be accepted by the adviser, the second reader, and the Graduate School, and the student must pass the thesis defense.

Candidates who choose the thesis option must write and defend, at an oral examination, a thesis based on original research in the field. The thesis will demonstrate depth of knowledge to his/her adviser, a second reader, and the Director of the AMD Graduate Program. Candidates must submit a thesis following the procedures specified by the Graduate School and register for 6 credits of AMD 600. The thesis must be accepted by the advisers and/or committee members, the head of the graduate program, and the Graduate School, and the student must pass the thesis defense.

EDSGN 596 Individual Studies
ESC 596 Individual Studies
IE 596 Individual Studies
MATSE 596 Individual Studies
ME 596 Individual Studies

Total Credits 30-33

Note that AMD 596 EDSGN 596, ESC 596, IE 596, MATSE 596, and ME 596 cannot be used to fulfill this requirement.

2 M.S. paper option students are required to complete one (1) credit in each of three (3) semesters.

3 The one-credit colloquium does not count toward the 30 graduate course credits required.

The M.S. degree scholarly paper option is designed to be completed in 3 semesters, or one calendar year (fall, spring, and summer). A research advisor will be assigned to students in their first semester. Students who need more time to complete the final paper will be allowed to complete the paper, and have it reviewed and approved after the third semester has ended. Students are not required to remain in residence while they complete the final paper. However, extensions granted to students in this program must comply with the Graduate Council policy on deferred grades (http://gradschool.psu.edu/graduate-education-policies/gcac/gcac-400/gradingsystem). Students who choose the thesis option for their culminating experience are expected to take two years to complete the degree.

Culminating Experience
Candidates may choose a scholarly paper or thesis option to fulfill their culminating experience. Students who choose the scholarly paper option must write a culminating project paper on a topic mutually agreed upon with the adviser and register for 3 credits of AMD 596 to complete the paper. Students will be encouraged to utilize an industry internship (resident students) or current employer (online students) to identify a relevant or practical problem of importance that additive manufacturing and appropriate design methods could address. The quality of the required paper is such that it must be suitable for publication in a professional journal or proceedings at a national or international conference, which generally requires a peer-review process.

Candidates who choose the thesis option must write and defend, at an oral examination, a thesis based on original research in the field. The thesis will demonstrate depth of knowledge to his/her adviser, a second reader, and the Director of the AMD Graduate Program. Candidates must submit a thesis following the procedures specified by the Graduate School and register for 6 credits of AMD 600. The thesis must be accepted by the advisers and/or committee members, the head of the graduate program, and the Graduate School, and the student must pass the thesis defense.

Master of Science (M.S.) — Thesis Option
Requirements listed here are in addition to Graduate Council policies listed under GCAC-600 Research Degree Requirements. (http://gradschool.psu.edu/graduate-education-policies)

A minimum of 30 credits at the 400, 500, or 800 level is required. At least 18 credits must be in 500-level courses.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDSGN 562</td>
<td>Design for Additive Manufacturing</td>
<td>19</td>
</tr>
<tr>
<td>EDSGN 596</td>
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<td>MATSE 596</td>
<td>Individual Studies</td>
<td></td>
</tr>
<tr>
<td>ME 596</td>
<td>Individual Studies</td>
<td></td>
</tr>
</tbody>
</table>

Complete the following 5 required courses that total 19 credits with a grade point average of 3.00 or higher:

Complete three credits in AMD 596 for the paper option or 6 credits in AMD 600 for the thesis option of the following offerings to complete the culminating project: 2
Complete a minimum of 8 credits of electives in 400 and/or 500 level courses. A listing of approved courses is maintained by the program.¹

Complete one credit of colloquium preferably in the first two semesters in the program. The following courses are offered to meet this requirement:³

- AMD 590 Colloquium
- EDSGN 590 Colloquium
- ESC 514 Engineering Science and Mechanics Seminar
- IE 590 IE Colloquium
- MATSE 590 Colloquium
- ME 590 Colloquium

Complete SARI (Scholarship and Research Integrity) training

Culminating Experience

A thesis must be completed to meet the specific requirement of the culminating experience. The thesis will demonstrate depth of knowledge to his/her adviser, a second reader, and the Director of the AMD Graduate Program.

Complete 6 credits in AMD 600 to complete the culminating project:⁶

Total Credits: 33

¹ Note that AMD 596 cannot be used to fulfill this requirement.
² The one-credit colloquium does not count toward the 30 graduate course credits required.

The M.S. degree is designed to be completed in 3 semesters, or one calendar year (fall, spring, and summer). A research adviser will be assigned to students in their first semester. Students who need more time to complete the final paper will be allowed to complete the paper, and have it reviewed and approved after the third semester has ended. Students are not required to remain in residence while they complete the final paper. However, extensions granted to students in this program must comply with the Graduate Council policy on deferred grades (http://gradschool.psu.edu/graduate-education-policies/gcac/gcac-400/gradingsystem).

Culminating Experience

Candidates must write and defend, at an oral examination, a thesis based upon original research in the field. Candidates must submit a thesis following the procedures specified by the Graduate School.

Student Aid

Graduate assistantships available to students in this program and other forms of student aid are described in the Tuition & Funding (http://gradschool.psu.edu/graduate-funding) section of The Graduate School’s website. Students on graduate assistantships must adhere to the course load limits (http://gradschool.psu.edu/graduate-education-policies/gsad/credit-loads-graduate-assistants) set by The Graduate School.

World Campus students in graduate degree programs may be eligible for financial aid. Refer to the Tuition and Financial Aid section (http://www.worldcampus.psu.edu/tuition-and-financial-aid) of the World Campus website for more information.

Courses

Graduate courses carry numbers from 500 to 699 and 800 to 899. Advanced undergraduate courses numbered between 400 and 499 may be used to meet some graduate degree requirements when taken by graduate students. Courses below the 400 level may not. A graduate student may register for or audit these courses in order to make up deficiencies or to fill in gaps in previous education but not to meet requirements for an advanced degree.
## Contact

<table>
<thead>
<tr>
<th>Campus</th>
<th>University Park</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Graduate Program Head</strong></td>
<td>Timothy William Simpson</td>
</tr>
<tr>
<td><strong>Director of Graduate Studies (DGS) or Professor-in-Charge (PIC)</strong></td>
<td>Timothy William Simpson</td>
</tr>
<tr>
<td><strong>Program Contact</strong></td>
<td>Jaclyn Stimely</td>
</tr>
<tr>
<td></td>
<td>314A Leonhard Building</td>
</tr>
<tr>
<td></td>
<td>Penn State University University</td>
</tr>
<tr>
<td></td>
<td>Park PA 16802</td>
</tr>
<tr>
<td></td>
<td><a href="mailto:jac52@psu.edu">jac52@psu.edu</a> (814)</td>
</tr>
<tr>
<td></td>
<td>863-8069</td>
</tr>
<tr>
<td><strong>Program Website</strong></td>
<td>View (<a href="http://AMDprogram.psu.edu">http://AMDprogram.psu.edu</a>)</td>
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<tr>
<td><strong>Campus</strong></td>
<td>World Campus</td>
</tr>
<tr>
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<tr>
<td></td>
<td>863-8069</td>
</tr>
<tr>
<td><strong>Program Website</strong></td>
<td>View (<a href="http://www.worldcampus.psu.edu/">http://www.worldcampus.psu.edu/</a> degrees-and-certificates/ penn-state-online-additivemanufacturing-and-design-mastersdegree/overview)</td>
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# Graduate Council Subcommittee On New And Revised Programs and Courses

## COURSE SUBMISSION AND CONSULTATION FORM

### Principal Faculty Member(s) Proposing Course

<table>
<thead>
<tr>
<th>Name</th>
<th>User ID</th>
<th>College</th>
<th>Department</th>
</tr>
</thead>
<tbody>
<tr>
<td>TIMOTHY SIMPSON</td>
<td>tws8</td>
<td>Engineering (EN)</td>
<td>Not Available</td>
</tr>
</tbody>
</table>

**Academic Home:** Engineering (EN)

**Type of Proposal:** [ ] Add [ ] Change [ ] Drop

**Course Designation**

(ME 590) Colloquium

**Justification of Course Number:**

n/a

### Course Information

**Cross-Listed Courses:**

AMD 590(EN)

**Prerequisites:**

**Corequisites:**

**Concurrents:**

**Recommended Preparations:**

**Abbreviated Title:** Colloquium

This course will be delivered:

[ ] in residence

[ ] off-site

[ ] online

### Bulletin Listing

- **Minimum Credits:** 1
- **Maximum Credits:** 1
- **Repeatable:** NO
- **Department with Curricular Responsibility:** Mechanical Engineering (UPEN_ME)
- **Effective Semester:** After approval, the Faculty Senate will notify proposers of the effective date for this course change. Please be aware that the course change may not be effective until between 12 to 18 months following approval.
- **Travel Component:** NO

### Campuses That Have Offered (ME 590) Over The Past 4 Years

| semester | AB | AL | BK | BR | BW | CR | DS | ER | FE | GA | GV | HB | HN | HY | LV | MA | NK | PC | SH | SL | UP | WB | WC | WS | XC | XP | XS | YK |
|----------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| Spring 2018 | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ |
| Fall 2017  | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ |
| Spring 2017 | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ |
| Fall 2016  | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ |
| Spring 2016 | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ |
Course Outline

A brief outline or overview of the course content:
N/A

A listing of the major topics to be covered with an approximate length of time allotted for their discussion:
N/A

Course Description:
Continuing seminars that consist of a series of individual lectures by faculty, students, or outside speakers.

The name(s) of the faculty member(s) responsible for the development of the course:

- Name: TIMOTHY SIMPSON (tws8)
- Title:
- Phone:
- Address:
- Campus: UP
- City:
- Fax:

Course Justification

Instructional, Educational, and Course Objectives:
This section should define what the student is expected to learn and what skills the student will develop.
N/A

Evaluation Methods:
Include a statement that explains how the achievement of the educational objective identified above will be assessed. The procedures for determining students' grades should be specifically identified.
N/A

Relationship/Linkage of Course to Other Courses:
This statement should relate the course to existing or proposed new courses. It should provide a rationale for the level of instruction, for any prerequisites that may be specified, or for the course's role as a prerequisite for other courses.
N/A

Relationship of Course to Major, Option, Minor, or General Education:
This statement should explain how the course will contribute to the major, option, or minor and indicate how it may function as a service course for other departments.
N/A

A description of any special facilities:
N/A

Frequency of Offering and Enrollment:
N/A

Justification for Changing The Proposal:
Include a justification for each change to the course. Particular attention should be paid to the effects of the course change within the discipline and in other disciplines where the course may be required within a major or used as a service course. When a unit submits several course changes, with or without new course proposals, a general statement covering the programmatic effects of the changes should be submitted.
N/A

Review History
This section represents all consultation history that has occurred on this proposal.

Legend

- Approve
- Rejected
- Waiting Review
- User Action Required
- Pending Action(s)
- Moved to Rejected Status
- Approved
- (#) - Review Order Sequence Number

Head of Department

Recipient Name: Karen Ann Thole
Position: Head of Department
Department: (Not Available)
Campus: UNIVERSITY PARK CAMPUS
Title:

Concur: [Not Yet Reviewed]
Comments: [Not Yet Reviewed]
Reviewed On: [Not Yet Reviewed]

Recipient Name: Karen Ann Thole
Position: Head of Department
Department: (Not Available)
Campus: UNIVERSITY PARK CAMPUS
Title:

Concur: [Not Yet Reviewed]
Comments: [Not Yet Reviewed]
Reviewed On: [Not Yet Reviewed]

College/School Representative to the Graduate Council Subcommittee on New and Revised Programs and Courses

Recipient Name: Matt Parkinson
Position: College/School Representative to the Graduate Council Subcommittee on New and Revised Programs and Courses
Department: (Not Available)
Campus: UNIVERSITY PARK CAMPUS
Title:

Concur: [Not Yet Reviewed]
Comments: [Not Yet Reviewed]
Reviewed On: [Not Yet Reviewed]

Dean of the College

Recipient Name: GEORGE LESIEUTRE
Position: Dean of the College
Department: (Not Available)
Campus: UNIVERSITY PARK CAMPUS
Title:
Review on Behalf of the Dean of the Graduate School

Recipient Name: VICKI HEWITT
Department: (Not Available)
Position: Review on Behalf of the Dean of the Graduate School
Campus: UNIVERSITY PARK CAMPUS
Title:

Concur: [Not Yet Reviewed]
Comments: [Not Yet Reviewed]
Reviewed On: [Not Yet Reviewed]

Feedback from the Graduate Council Joint Curricular Committee

Recipient Name: ROBERT BANNON
Department: (Not Available)
Position: Feedback from the Graduate Council Joint Curricular Committee
Campus: UNIVERSITY PARK CAMPUS
Title:

Concur: [Not Yet Reviewed]
Comments: [Not Yet Reviewed]
Reviewed On: [Not Yet Reviewed]

Final Confirmation

Recipient Name: ALLISON ALBINSKI
Department: (Not Available)
Position: Final Confirmation
Campus: UNIVERSITY PARK CAMPUS
Title:

Concur: [Not Yet Reviewed]
Comments: [Not Yet Reviewed]
Reviewed On: [Not Yet Reviewed]

Recipient Name: JOY ROBERTSON
Department: (Not Available)
Position: Final Confirmation
Campus: UNIVERSITY PARK CAMPUS
Title:

Concur: [Not Yet Reviewed]
Comments: [Not Yet Reviewed]
Reviewed On: [Not Yet Reviewed]

Recipient Name: KADI CORTER
Department: (Not Available)
Curricular Information
Blue Sheet Item #: 
Review Date: 

SCRID Numbers
(ME 590): 
(AMD 590): 
Proposal ID: 6389 created on 3/22/2018 11:19 AM

REMOVED
Graduate Council Subcommittee On New And Revised Programs and Courses

COURSE SUBMISSION AND CONSULTATION FORM

Principal Faculty Member(s) Proposing Course

<table>
<thead>
<tr>
<th>Name</th>
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<tbody>
<tr>
<td>TIMOTHY SIMPSON</td>
<td>tws8</td>
<td>Engineering (EN)</td>
<td>Not Available</td>
</tr>
</tbody>
</table>

Academic Home: Engineering (EN)

Type of Proposal: [X] Add  [ ] Change  [ ] Drop

Course Designation

(AMD 596) Individual Studies

Justification of Course Number:

Additive Manufacturing and Design Individual Study course credit for students to complete culminating experience project and paper.

Course Information

Cross-Listed Courses:

Prerequisites:

Corequisites:

Concurrents:

Recommended Preparations:

Abbreviated Title:

Individual Studies

This course will be delivered:

[X] in residence

[ ] off-site

[X] online

Bulletin Listing

Minimum Credits:  1
Maximum Credits:  9
Repeatable:  YES

Maximum Total Credits:  9

Department with Curricular Responsibility:

Mechanical Engineering (UPEN_ME)

Effective Semester:

SU1 2018

Travel Component:

NO

Campuses That Have Offered () Over The Past 4 Years

| semester | AB | AL | BK | BR | BW | CR | DS | ER | FE | GA | GV | HB | HN | HY | LV | MA | NK | PC | SH | SL | UP | WB | WC | WS | XC | XP | XS | YK |

Course Outline

A brief outline or overview of the course content:

N/A

A listing of the major topics to be covered with an approximate length of time allotted for their discussion:

N/A

Course Description:

Creative projects, including non-thesis research, which are supervised on an individual basis and which fall outside the scope of
formal courses.

The name(s) of the faculty member(s) responsible for the development of the course:

- Name: TIMOTHY SIMPSON (tws8)
- Title: 
- Phone: 
- Address: 
- Campus: UP
- City: 
- Fax: 

CIP Code: 149999

Course Justification

Instructional, Educational, and Course Objectives:
This section should define what the student is expected to learn and what skills the student will develop.
N/A

Evaluation Methods:
Include a statement that explains how the achievement of the educational objective identified above will be assessed. The procedures for determining students' grades should be specifically identified.
N/A

Relationship/Linkage of Course to Other Courses:
This statement should relate the course to existing or proposed new courses. It should provide a rationale for the level of instruction, for any prerequisites that may be specified, or for the course's role as a prerequisite for other courses.
N/A

Relationship of Course to Major, Option, Minor, or General Education:
This statement should explain how the course will contribute to the major, option, or minor and indicate how it may function as a service course for other departments.
N/A

A description of any special facilities:
N/A

Frequency of Offering and Enrollment:
N/A

Review History

This section represents all consultation history that has occurred on this proposal

Legend

풍\ Right Arrow

Approve
Rejected
Waiting Review
User Action Required

Pending Action(s)
Moved to Rejected Status
Approved
(#) - Review Order Sequence Number

College Administrator Review

Recipient Name: Graduate Studies and Research Program and EFC
Department: (Not Available)
Position: College Administrator Review
Campus: (Not Available)
Title:
Head of Department

Recipient Name: Karen Ann Thole  Department: (Not Available)
Position: Head of Department  Campus: UNIVERSITY PARK CAMPUS

Request sent: 3/22/2018 at 7:43 AM
Concur: [Not Yet Reviewed]
Comments: [Not Yet Reviewed]
Reviewed On: [Not Yet Reviewed]

College/School Representative to the Graduate Council Subcommittee on New and Revised Programs and Courses

Recipient Name: Matt Parkinson  Department: (Not Available)
Position: College/School Representative to the Graduate Council Subcommittee on New and Revised Programs and Courses  Campus: UNIVERSITY PARK CAMPUS

Title:

Concur: [Not Yet Reviewed]
Comments: [Not Yet Reviewed]
Reviewed On: [Not Yet Reviewed]

Dean of the College

Recipient Name: GEORGE LESIEUTRE  Department: (Not Available)
Position: Dean of the College  Campus: UNIVERSITY PARK CAMPUS

Title:

Concur: [Not Yet Reviewed]
Comments: [Not Yet Reviewed]
Reviewed On: [Not Yet Reviewed]

Review on Behalf of the Dean of the Graduate School

Recipient Name: VICKI HEWITT  Department: (Not Available)
Position: Review on Behalf of the Dean of the Graduate School  Campus: UNIVERSITY PARK CAMPUS

Title:

Concur: [Not Yet Reviewed]
Feedback from the Graduate Council Joint Curricular Committee

Recipient Name: ROBERT BANNON
Position: Feedback from the Graduate Council Joint Curricular Committee
Department: (Not Available)
Campus: UNIVERSITY PARK CAMPUS
Title:
Concur: [Not Yet Reviewed]
Comments: [Not Yet Reviewed]
Reviewed On: [Not Yet Reviewed]

Final Confirmation

Recipient Name: ALLISON ALBINSKI
Position: Final Confirmation
Department: (Not Available)
Campus: UNIVERSITY PARK CAMPUS
Title:
Concur: [Not Yet Reviewed]
Comments: [Not Yet Reviewed]
Reviewed On: [Not Yet Reviewed]

Recipient Name: JOY ROBERTSON
Position: Final Confirmation
Department: (Not Available)
Campus: UNIVERSITY PARK CAMPUS
Title:
Concur: [Not Yet Reviewed]
Comments: [Not Yet Reviewed]
Reviewed On: [Not Yet Reviewed]

Recipient Name: KADI CORTER
Position: Final Confirmation
Department: (Not Available)
Campus: UNIVERSITY PARK CAMPUS
Title:
Concur: [Not Yet Reviewed]
Comments: [Not Yet Reviewed]
Reviewed On: [Not Yet Reviewed]
Graduate Council Subcommittee On New And Revised Programs and Courses

COURSE SUBMISSION AND CONSULTATION FORM

Principal Faculty Member(s) Proposing Course

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<tr>
<td>TIMOTHY SIMPSON</td>
<td>tws8</td>
<td>Engineering (EN)</td>
<td>Not Available</td>
</tr>
</tbody>
</table>

Academic Home: Engineering (EN)

Type of Proposal: [x] Add  [ ] Change  [ ] Drop

Course Designation

(AMD 600) Thesis Research

Justification of Course Number:

Additive Manufacturing and Design Research Credit

Course Information

Cross-Listed Courses:

Prerequisites:

Corequisites:

Concurrents:

Recommended Preparations:

Abbreviated Title:  Thesis Research

This course will be delivered:

[x] in residence
[ ] off-site
[ ] online

Bulletin Listing

Minimum Credits:  1
Maximum Credits:  6
Repeatable:  YES
Maximum Total Credits:  6

Department with Curricular Responsibility: Mechanical Engineering (UPEN_ME)

Effective Semester:  FA 2018

Travel Component:  NO

Campuses That Have Offered ( ) Over The Past 4 Years

| semester | AB | AL | BK | BR | BW | CR | DS | ER | FE | GA | GV | HB | HN | HY | LV | MA | NK | PC | SH | SL | UP | WB | WC | WS | XC | XP | XS | YK |
|----------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|

Course Outline

A brief outline or overview of the course content:
N/A

A listing of the major topics to be covered with an approximate length of time allotted for their discussion:
N/A

Course Description:

Thesis research.
The name(s) of the faculty member(s) responsible for the development of the course:

Name: TIMOTHY SIMPSON (tws8)
Title:
Phone:
Address:
Campus: UP
City:
Fax:

CIP Code: 149999

Course Justification

Instructional, Educational, and Course Objectives:
This section should define what the student is expected to learn and what skills the student will develop.
N/A

Evaluation Methods:
Include a statement that explains how the achievement of the educational objective identified above will be assessed.
The procedures for determining students' grades should be specifically identified.
N/A

Relationship/Linkage of Course to Other Courses:
This statement should relate the course to existing or proposed new courses. It should provide a rationale for the level of instruction, for any prerequisites that may be specified, or for the course's role as a prerequisite for other courses.
N/A

Relationship of Course to Major, Option, Minor, or General Education:
This statement should explain how the course will contribute to the major, option, or minor and indicate how it may function as a service course for other departments.
N/A

A description of any special facilities:
N/A

Frequency of Offering and Enrollment:
N/A

Review History
This section represents all consultation history that has occurred on this proposal

Legend

Approve  Rejected  Waiting Review  User Action Required

Pending Action(s)  Moved to Rejected Status  Approved  (#) - Review Order Sequence Number

College Administrator Review

Recipient Name: Graduate Studies and Research Program and EFC
Department: (Not Available)
Position: College Administrator Review  Campus: (Not Available)
Title:
<table>
<thead>
<tr>
<th>Role</th>
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<th>Position</th>
<th>Campus</th>
<th>Concur</th>
<th>Comments</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Head of Department</td>
<td>Karen Ann Thole</td>
<td>(Not Available)</td>
<td>Head of Department</td>
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<td>[Not Yet Reviewed]</td>
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### Feedback from the Graduate Council Joint Curricular Committee

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### Curricular Information

**Blue Sheet Item #:**

**Review Date:**
Appendix D

Consultation summary followed by full consultation documentation.

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<td>Sonya Leitzell</td>
<td>Director of Academic Affairs, Program Planning and Management for World Campus</td>
<td>4/5/18</td>
<td>Favorable</td>
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<tr>
<td>Karen Pollack</td>
<td>Assistant Vice Provost for Online Undergraduate and Blended Programs for World Campus</td>
<td>4/5/18</td>
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<td>Susan Sinnott</td>
<td>Department Head Professor, Materials Science and Engineering and Chemistry</td>
<td>4/5/18</td>
<td>Favorable</td>
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<td>Peter and Angela Dal Pezzo Department Head of IME and Professor</td>
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<td>Favorable</td>
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<td>Karen Thole</td>
<td>Department Head of MNE and Distinguished Professor</td>
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<td>Judith Todd</td>
<td>Department Head of ESM, P.B. Breneman Chair, and Professor of Engineering Science and Mechanics</td>
<td>4/5/18</td>
<td>Favorable</td>
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Jaclyn and Tim,

In general, I approve of these. However, I am not sure why we don’t use the AMD 594 for paper research option. I would suggest we also add AMD 596, too, but that does not seem appropriate for the work that leads to the paper or culminating experience.

Sven

Sven G. Bilén, Ph.D., P.E.
Head, School of Engineering Design,
Technology, and Professional Programs

From: Jaclyn Stimely
Sent: Monday, April 16, 2018 2:34 PM
To: Janis P. Terpenny <jpt5311@engr.psu.edu>; Judith Todd <JTodd@engr.psu.edu>; kiw1@psu.edu;
Sven Bilen <SBilen@engr.psu.edu>; Cathy Holsing <cjh145@engr.psu.edu>; Sonya Leitzell <sns103@psu.edu>
Cc: Timothy Simpson <tws8@engr.psu.edu>
Subject: REMINDER: Request for Consultation: AMD Program Change Proposal

This is a reminder to please review the attached change proposal for the AMD Graduate Program by Thursday, April 19th. Please reply if you are in favor or not of the following proposed changes:

1. Removal of department restriction language for program electives
2. Addition and cross-listing of AMD 590 (colloquium) with ME 590
3. Addition of AMD 596
4. Addition of MS thesis option

Thank you,
Jaclyn
Administrator, on March 22, 2018 for review. Lori is requesting that we obtain consultation with all Department Heads, CoE Digital Learning, and World Campus.

Please review the attached proposal and reply to this email by Thursday, April 19, 2018 stating if you are favorable or not of the proposed changes.

Thank you,
Jaclyn

Jaclyn Stimely
Program Coordinator, Additive Manufacturing & Design Graduate Program
The Pennsylvania State University
College of Engineering
314A Leonhard Building
University Park, PA 16802
Phone: 814-863-8069

---

From: Cathy Holsing
Sent: Friday, April 20, 2018 4:14 PM
To: Jaclyn Stimely
Subject: Re: Please reply: AMD Program Change Proposal

Hi Jaclyn

My apologies if I was holding up the process. I thought I had replied to this earlier. I concur with these changes.

Cathy
All autocorrects sent by my iPhone

On Apr 20, 2018, at 12:54 PM, Jaclyn Stimely <juc52@engr.psu.edu> wrote:
Hi Cathy,
Can you please review the attached change proposal for the AMD Graduate Program and reply if you concur?
Thank you,
Jaclyn

---

From: Jaclyn Stimely
Sent: Monday, April 16, 2018 2:34 PM
Subject: REMINDER: Request for Consultation: AMD Program Change Proposal

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3. Addition of AMD 596
4. Addition of MS thesis option

Thank you,
Jaclyn

From: Jaclyn Stimely
Sent: Thursday, April 5, 2018 11:45 AM
Subject: Request for Consultation: AMD Program Change Proposal

All,
The AMD Graduate Program is submitting a change proposal. The proposal was submitted to Lori Long, College Administrator, on March 22, 2018 for review. Lori is requesting that we obtain consultation with all Department Heads, CoE Digital Learning, and World Campus.

Please review the attached proposal and reply to this email by Thursday, April 19, 2018 stating if you are favorable or not of the proposed changes.

Thank you,
Jaclyn

Jaclyn Stimely
Program Coordinator, Additive Manufacturing & Design Graduate Program
The Pennsylvania State University
College of Engineering
314A Leonhard Building
University Park, PA 16802
Phone: 814-863-8069

From: Sonya Leitzell <sns103@psu.edu>
Sent: Tuesday, April 17, 2018 9:30 AM
To: Jaclyn Stimely
Cc: Karen Pollack
Subject: Re: REMINDER: Request for Consultation: AMD Program Change Proposal

Hi Jaclyn,

The World Campus supports the AMD program change proposal.

Best,
Sonya
On Apr 16, 2018, at 2:34 PM, Jaclyn Stimely <juc52@engr.psu.edu> wrote:

This is a reminder to please review the attached change proposal for the AMD Graduate Program by **Thursday, April 19th**. Please reply if you are in favor or not of the following proposed changes:

1. Removal of department restriction language for program electives
2. Addition and cross-listing of AMD 590 (colloquium) with ME 590
3. Addition of AMD 596
4. Addition of MS thesis option

Thank you,

Jaclyn

---

**From:** Jaclyn Stimely  
**Sent:** Thursday, April 5, 2018 11:45 AM  
**Subject:** Request for Consultation: AMD Program Change Proposal

All,

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Thank you,

Jaclyn

Jaclyn Stimely  
Program Coordinator, Additive Manufacturing & Design Graduate Program  
The Pennsylvania State University  
College of Engineering  
314A Leonhard Building  
University Park, PA 16802  
Phone: 814-863-8069
Hi Jaclyn,

The World Campus supports the AMD program change proposal.

Best,
Sonya

__________________________
Sonya Leitzell, M.Ed.
Director of Academic Affairs
Program Planning and Management
Penn State World Campus

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Thank you,
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Thank you,

Jaclyn

Jaclyn Stimely
Program Coordinator, Additive Manufacturing & Design Graduate Program
The Pennsylvania State University

---

From: SUSAN B SINNOTT <sbs5563@psu.edu>
Sent: Monday, April 9, 2018 7:35 PM
To: Jaclyn Stimely
Subject: Re: Request for Consultation: AMD Program Change Proposal

Dear Jaclyn,
I am fine with the proposed changes.

Susan

Susan B. Sinnott, PhD
Head and Professor, Department of Materials Science & Engineering
Professor, Department of Chemistry
Editor in Chief, Computational Materials Science
The Pennsylvania State University

---

From: "Jaclyn Stimely" <juc52@engr.psu.edu>
To: "Karen Thole" <kthole@engr.psu.edu>, "Janis P. Terpenny" <jpt5311@engr.psu.edu>, "Judith Todd" <JTodd@engr.psu.edu>, kiw1@psu.edu, "SUSAN B SINNOTT" <sbs5563@psu.edu>, "Sven Bilen" <SBilen@engr.psu.edu>, "Cathy Holsing" <cjh145@engr.psu.edu>
Cc: "Timothy Simpson" <tws8@engr.psu.edu>
Sent: Thursday, April 5, 2018 11:44:52 AM
Subject: Request for Consultation: AMD Program Change Proposal

All,
The AMD Graduate Program is submitting a change proposal. The proposal was submitted to Lori Long, College Administrator, on March 22, 2018 for review. Lori is requesting that we obtain consultation with all Department Heads, CoE Digital Learning, and World Campus.

Please review the attached proposal and reply to this email by Thursday, April 19, 2018 stating if you are favorable or not of the proposed changes.

Thank you,
Jaclyn

Jaclyn Stimely
Program Coordinator, Additive Manufacturing & Design Graduate Program
The Pennsylvania State University
Yes, I support the changes. Thanks - Janis

Janis Terpenny
Peter & Angela Dal Pezzo Chair & Department Head
Harold & Inge Marcus Department of Industrial & Manufacturing Engineering

Hi Janis,
Can you please review the attached change proposal for the AMD Graduate Program and reply if you concur? Thank you,
Jaclyn

This is a reminder to please review the attached change proposal for the AMD Graduate Program by Thursday, April 19th. Please reply if you are in favor or not of the following proposed changes:

1. Removal of department restriction language for program electives
2. Addition and cross-listing of AMD 590 (colloquium) with ME 590
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Thank you,
Jaclyn
All,
The AMD Graduate Program is submitting a change proposal. The proposal was submitted to Lori Long, College Administrator, on March 22, 2018 for review. Lori is requesting that we obtain consultation with all Department Heads, CoE Digital Learning, and World Campus.

Please review the attached proposal and reply to this email by Thursday, April 19, 2018 stating if you are favorable or not of the proposed changes.

Thank you,
Jaclyn

Jaclyn Stimely
Program Coordinator, Additive Manufacturing & Design Graduate Program
The Pennsylvania State University
College of Engineering
314A Leonhard Building
University Park, PA 16802
Phone: 814-863-8069

From: Karen Thole
Sent: Thursday, April 5, 2018 12:49 PM
To: Jaclyn Stimely
Subject: RE: Request for Consultation: AMD Program Change Proposal

Jaclyn,
Thank you and I approve!
Karen

From: Jaclyn Stimely
Sent: Thursday, April 5, 2018 12:48 PM
To: Karen Thole <kthole@engr.psu.edu>
Subject: RE: Request for Consultation: AMD Program Change Proposal

Karen,
The following items were changed:

1. Removal of department restriction language for program electives
2. Addition and cross-listing of AMD 590 (colloquium) with ME 590
3. Addition of AMD 596
4. Addition of MS thesis option

Please let me know if you have any additional questions.
Thank you,
From: Jaclyn Stimely
Sent: Thursday, April 5, 2018 11:45 AM
To: Karen Thole <kthole@engr.psu.edu>; Janis P. Terpenny <jpt5311@engr.psu.edu>; Judith Todd <jtodd@engr.psu.edu>; kiw1@psu.edu; Susan Sinnott <sbs5563@psu.edu>; Sven Bilen <sxbilen@engr.psu.edu>; Cathy Holsing <cjh145@engr.psu.edu>
Cc: Timothy Simpson <tws8@engr.psu.edu>
Subject: Request for Consultation: AMD Program Change Proposal

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Please review the attached proposal and reply to this email by Thursday, April 19, 2018 stating if you are favorable or not of the proposed changes.

Thank you,
Jaclyn

From: Judith Todd
Sent: Friday, April 20, 2018 1:59 PM
To: Jaclyn Stimely
Subject: RE: Please reply: AMD Program Change Proposal

Jaclyn,

Sorry for the delay, I was traveling. I support the changes.

Judy

Professor Judith A. Todd, Department Head
P. B. Breneman Chair and Professor of Engineering Science and Mechanics
Department of Engineering Science and Mechanics
The Pennsylvania State University
Hi Judy,
Can you please review the attached change proposal for the AMD Graduate Program and reply if you concur? Thank you,
Jaclyn

From: Jaclyn Stimely  
Sent: Monday, April 16, 2018 2:34 PM  
Subject: REMINDER: Request for Consultation: AMD Program Change Proposal

This is a reminder to please review the attached change proposal for the AMD Graduate Program by **Thursday, April 19**. Please reply if you are in favor or not of the following proposed changes:

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4. Addition of MS thesis option

Thank you,
Jaclyn

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Please review the attached proposal and reply to this email by **Thursday, April 19, 2018** stating if you are favorable or not of the proposed changes.

Thank you,
Jaclyn
Jaclyn Stimely
Program Coordinator, Additive Manufacturing & Design Graduate Program
The Pennsylvania State University
College of Engineering
314A Leonhard Building
University Park, PA 16802
Phone: 814-863-8069
Graduate Council
Program, Option, or Minor Proposal Form

Submit 1 original, signed Graduate Council proposal form and 2 hardcopies of the graduate program proposal document, with a copy of the signed proposal form attached to each proposal copy, to the Office of the Dean of the Graduate School, 211 Kern Building, University Park. For more information about the process, see the Overview of the Graduate Council Curricular Review Process.

The Program Proposal Procedures provide guidance for the development of a graduate program proposal. If you have questions regarding the preparation of a graduate program proposal or how to complete this Graduate Council proposal form, contact the Office of the Dean of the Graduate School.

College/School: College of Arts and Architecture
Department or Instructional Area: Art History Department

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- First semester following approval
- Second semester following approval

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Brief description of the change (if not noted above): ADOPT DUAL-TITLE IN VISUAL STUDIES

Indicate effective semester:
- First semester following approval
- Second semester following approval

Submitted by Graduate Program Head:
Andrew Schulz
Printed name: Andrew Schulz
Signature: Andrew Schulz
Date: 7/26/18

Noted by College/School Representative to Graduate Council Subcommittee on New and Revised Programs and Courses:
Printed name: Andrew Cole
Signature: Andrew Cole
Date: 8/20/18

Approved by College/School Dean/Chancellor (or designee):
Printed name: Scott Wing
Signature: Scott Wing
Date: 8/20/18
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<td><strong>Noted by Dean of the Graduate School:</strong></td>
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<td>On Behalf of Regina Vasilatos-Younken</td>
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A proposal to the Graduate Council by the Graduate Program in Art History to Adopt the Dual-Title Graduate Degree Program in Visual Studies

Submitted by the Department of Art History
Elizabeth C. Mansfield, Head of the Department of Art History
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I. Program Justification and Objectives

A. The departmental and interdepartmental context
The Pennsylvania State University Art History department is characterized by a dynamic and highly productive faculty teaching and producing scholarship across a wide spectrum of fields in the histories of painting, sculpture, architecture, design, the graphic arts, photography, and occasionally film. Our faculty is actively engaged with cross-disciplinary study of objects in relation to such contextual issues as religion, politics, society, gender, economics, philosophy, and culture. Areas of specialization range from study of ancient to contemporary art and architecture in Europe, the Americas, Asia, Africa, and Oceania. The primary objective of Penn State’s doctoral (Ph.D.) program in Art History is to prepare graduates for academic positions at colleges and universities. Our program also allows students to gain experience in museum studies, and three affiliate faculty members are curators in the Palmer Museum of Art. The proposed dual-title Ph.D. program in Art History and Visual Studies builds on existing strengths in the department and extends our collaboration with faculty in other Ph.D.-granting units at Penn State, the library, and the Center for Humanities and Information, in order to offer our doctoral students a broader and truly multidisciplinary perspective on their studies, and to provide a credential that will impress on a job market that is moving increasingly toward the visual. ¹

¹ For the period October 2013-February 2014, the search terms “film,” “digital,” “media,” and “visual” in the Modern Language Association job database yielded the following results: “film” 230; “digital” 175; “media” 160; “visual” 73. The same search for the period October 2014 to March 2015 produced the following results: “film” 212; “digital” 186; “media” 175; “visual” 84.
B. Program justification

1. The College context

This proposal for a dual-title Ph.D. program in Visual Studies contributes to the vision outlined in the College of Arts and Architecture 2014-19 strategic plan: “to create a rich and dynamic intellectual ecosystem that fosters excellence in teaching and learning, research and creative practice, and exhibition and presentation across the arts and design disciplines within the college and the university.” The proposed dual-title Ph.D. program will raise the profile and improve the quality of graduate education in the College of Arts and Architecture in straightforward ways. It will improve the quality of graduate education by enhancing or supplementing the various approaches to the graduate-level work in visual studies that have emerged at Penn State over the last several years. The university offers many resources for this work, but they currently exist in a loose array spread across various departments and other units, such as the library. The proposed collaboration will systematize these resources in the college and organize them into a coherent field of study in which students can receive training and credentialing.

This dual-title Ph.D. proposal aligns with the Art History Department’s 2014-19 Strategic Plan to “build bridges between praxis, theory, and history through interdisciplinary linkages with the Palmer Museum of Art, School of Visual Art, School of Architecture and Landscape Architecture, College of the Liberal Arts, and beyond.” The proposed dual-title Ph.D. program in Art History and Visual Studies will attract new and highly qualified graduate students to our doctoral
program, and create a new platform for grant writing and other forms of fund raising. It will allow our graduate students to plan a rigorous course of study drawing from a full range of multidisciplinary resources and it will create a structure through which to make more efficient use of those resources as departments and faculty coordinate their work in visual studies. And it will help recruit and retain top faculty in our department and other units.

2. Justification for the degree title

The degree title “Visual Studies” was chosen in consultation with representatives from the College of Arts and Architecture, College of Communications, and the College of Liberal Arts to signify the distinctive breadth of this course of study, which is both distinct from existing programs at the university and open to a wide range of collaborating units now and in the future. This degree will raise the visibility of our existing graduate programs with a credential that will work to recruit strong doctoral students and confer a crucial edge in the job market for our graduates.

C. Program objectives

The principal aim of the proposed dual-title Ph.D. in Art History and Visual Studies is to provide graduate students in Art History the opportunity to formalize interdisciplinary components to their graduate training that will enhance their scholarly work and increase their competitiveness on the job market. It will do this by combining the resources of faculty, departments, and facilities across colleges into a formal structure for training graduate students in the knowledge and analysis evaluation of a wide range of visual culture, and production of
forms of scholarship and pedagogy in visual formats. This training will cultivate breadth by pushing students to think across conventional disciplines and domains of practice, and will ensure rigor derived from exposure to a variety of top-notch scholars working in closely related historical and methodological fields informed by a rich mixture of disciplinary and institutional perspectives and resources. The quality and visibility of this program will attract ambitious graduate students and credential them in a way that will contribute to our success in placement. Because top scholars prize the opportunities for dynamic intellectual exchange associated with thriving graduate programs and strong students, this proposed dual-title Ph.D. program will also help Penn State recruit and retain top faculty across a variety of departments in the humanities.

The dual-title Ph.D. in Visual Studies comprises two core components: 1) historical and theoretical analysis of various forms of visual culture, their diverse sources, and their current manifestations; 2) historical and theoretical analysis of visual media in the information age, including the visual aspects of the digital humanities and the presentation of scholarship and teaching in visual media. A program-specific required course in each of these areas (described below) will ensure breadth of training for participating students. Together these components will offer students a sophisticated understanding of and ability to intervene in debates about visual culture and visuality in the world today.
**D. Size of program and impact on course offerings and faculty load**

The proposed dual-title Ph.D. in Art History and Visual Studies expects to enroll up to three students each year, drawn from the ranks of existing graduate students in Art History who have not yet passed their qualifying exams or from newly admitted students.

The two required seminars for the dual-title Ph.D. program (VSTUD 501 AND 502) will be taught by a core of graduate faculty as part of each faculty member’s commitment to teach graduate seminars on a rotating basis. English Department faculty Christopher Reed and Stuart Selber have already offered versions of these courses. There are also faculty in the Department of German and Slavic Languages and Literatures, the Department of Art History, and other departments that intend to participate in the Visual Studies dual-title Ph.D., who are interested in offering these classes. Elective courses contributing to the dual-title program in Visual Studies will be drawn from the many existing offerings across a range of departments as detailed in the proposal to the Graduate Council by the Graduate Program to establish a Dual-Title Ph.D. Program in Visual Studies.

**E. Student recruitment and employment prospects**

Every year, individual Penn State faculty members in Art History and the department as whole receive inquiries from prospective students asking about how our course offerings in Visual Studies can be applied toward a degree in that field. The dual-title Ph.D. in Visual Studies will
improve our ability to recruit and retain graduate students with a program that coordinates and credentials their work in this field.

Students will enter the proposed program either from the ranks of existing graduate students in Art History who have not yet passed their qualifying exams or from students newly admitted to the department. Students of either type will have to declare their intention and secure permission to complete the dual-title program in accordance with the requirements detailed below. The program will be advertised on the Art History department web pages, as well as on the web pages of other units, including the Center for the Humanities and Information, and in the Graduate Degree Programs Bulletin. Professional meetings, conferences, and undergraduate programs in Art History and in Visual Studies will also be mined for recruitment opportunities.

Giving our graduates an edge on a job market in the humanities that is increasingly oriented toward visual media and issues of visuality is a fundamental rationale for this dual-title Ph.D. proposal. As detailed in the opening paragraphs, hundreds of job advertisements for scholars in the humanities call for expertise in visual culture. The training and credentialing proposed here will offer our graduate students real advantages when they apply for jobs in academia and beyond. Successful graduate placement will make our graduate program more attractive, improving our ability to recruit highly qualified graduate students in a cycle that will continue to strengthen the graduate program in Art History.
F. Costs and funding

Because the two required core seminars for the dual-title Ph.D. program will be taught as part of each faculty member’s commitment to teach graduate seminars on a rotating basis, these courses will not require new faculty lines. In addition to helping to staff these new core seminars, the English Department is supporting the Visual Studies program with four new graduate seminars that regularize courses that had been taught on an ad hoc basis. These are ENGL 555 Visualizing Gender, ENGL 556 Reading Film (cross-listed as COMM 556), ENGL 557 Authors and Artists, and ENGL/VSTUD 580 Comics and Graphic Novels. Other additional courses for the Visual Studies dual-title come from other departments. The Visual Studies dual-title program will encourage faculty with interest and expertise in visual studies to foreground visual material and approaches in their classes, and to continue to develop new course offerings with a significant visual component.

Ph.D. students in Art History should not require extra time or incur additional costs by participating in the Visual Studies dual-title program. Graduate students carrying a full-time course load typically accumulate more than the required number of courses for Ph.D. in Art History; with a minimum of planning, these extra courses can be devoted to the Visual Studies degree. The Department of Art History will continue to distribute its funding awards in accordance with its standing practices for duly admitted graduate students. Graduate assistantships available to students in this program and other forms of student aid are described in the Student Aid section of the Graduate Bulletin. Students supported by funds from the Art History program will perform teaching and other academic duties determined by
the Art History Department graduate officer. Advisers will help students select their courses in order to ensure that all degree requirements are satisfied in a timely manner.

Students will receive every available support from the graduate faculty to write grants to support their field research and other academic endeavors. Students will also be given every opportunity to participate in Art History faculty efforts to secure extramural funding. Such external funding secured by graduate faculty also may provide additional graduate financial support.

II. List of New Courses

A. Core seminars

The program will consist of two required courses – “Visual Culture Theory and History” and “Visual Studies in Digitality” -- and three elective courses.

VSTUD 501 (3 crs) Visual Culture Theory and History. The course examines foundational theoretical texts that have come to define Visual Culture as a historically delineated academic discipline. The goal is to examine the inter-disciplinary relationships that emerged with modern technologies, media, aesthetic agendas, and social relationships to produce Visual Culture as a field of study. This course will review the structuralist, semiotic, rhetorical, and technological approaches to understanding the relationship between word and image in modern media. These methods are applied to museum exhibitions, photography, film, fashion, and book arts as they developed in the twentieth century. These media will be examined in their specifically modern context first as a specific outgrowth of industrial urban environments and then within post-industrial media networks. This course is a required seminar for the dual-title degree in
Visual Studies. One core faculty member will be assigned to teach the seminar, but s/he may invite guest lecturers.

**VSTUD 502 (3 crs) Visual Studies in Digitality.** This course explores the theoretical, historical, and operational aspects of visual culture as they relate to production and consumption of information using digital technologies. Students will gain familiarity with theories of the visual nature of digital technology and the history of these technologies as they relate to humanistic disciplines and ideals of public pedagogy. This background will inform engagement with the tools of rhetorical analysis and critical media theory as students hone skills in critical literacy for digital media, including organizing scholarship and pedagogy for digital presentation and assessing such presentations with regard to both technical issues concerning the integration of the visual and the textual, and broader questions concerning the ideological, economic, and institutional effects of the digitization of learning. This course is a required seminar for the dual-title degree in Visual Studies. One core faculty member will be assigned to teach the seminar, but s/he may invite guest lecturers.

**III. Proposed Graduate Bulletin Copy**

**Art History (ARTH)**

Elizabeth C. Mansfield, *Head of the Department of Art History*
240 Borland Building
814-865-5486
ecm289@psu.edu

Madhuri Desai, *Director of Graduate Studies, Department of Art History*
237 Borland Building
814-865-4885
Degrees Conferred

Ph.D., M.A.

The Graduate Faculty

A graduate degree in art history prepares students for careers as scholars and educators, as museum curators, as public advocates of cultural heritage, and as arts administrators, to name just a few of the professions that recent program alumni have entered. Breadth of knowledge is as essential for museum professionals as it is for academic researchers. For this reason, advanced study of the visual arts and material culture from diverse periods and geographies is required of all graduate students, with Ph.D. candidates attaining deep expertise in at least one field of art historical research. The department’s faculty includes specialists in African, Asian, and European art and the arts of the Americas.

Admission Requirements

Applicants apply for admission to the program via the Graduate School application for admission. Requirements listed here are in addition to Graduate Council policies listed under GCAC-300 General Admissions Standards.

Scores from the Graduate Record Examinations (GRE) Aptitude Test (verbal, quantitative, and analytical) are required for admission to the Department of Art History. Special emphasis will be given to the verbal part of the GRE scores.

Applicants with a 3.00 junior/senior grade-point average and a minimum of 21 credits in art history will be considered for admission to the master's program. Lacking these, a promising applicant may be accepted on condition that deficiencies be remedied, but without graduate degree credit. Applicants to the Ph.D. program must have an M.A. in art history or a closely related field. The best-qualified applicants will be accepted up to the number of spaces that are available for new students.

Master's Degree Requirements

Requirements listed here are in addition to Graduate Council policies listed under GCAC-600 Research Degree Requirements.

Students in the M.A. degree program are required to complete a minimum total of 36 credits at the 400, 500, 600, or 800 level is required, with least 18 credits at the 500 and 600 level, combined (including a master's thesis or paper), divided as follows:

- Required Courses
**ARTH 551** Historiography of Art History (taken during one's first fall semester) 3
9 credits at the 400-level, of which 3 credits must be taken in each of the following three areas:
(1) African/Asian/Oceania/Pre-Columbian Americas
(2) Ancient, Byzantine/Medieval
(3) Renaissance/Baroque/Modern/Contemporary
9 credits of 500-level seminars in art history. 1 9
9 additional credits in art history at the 400- or 500-level. 2 9
Culminating Experience
6 credits of **ARTH 600** for a master's thesis or 6 credits of **ARTH 596** for a master's paper 3 6
Total Credits 36

1 ARTH 551 and ARTH 596 may not be used to fulfill this requirement. Each seminar in this 9-credit requirement must be taken with a different faculty member.

2 With the approval of one's adviser and the graduate officer, 3 credits of this requirement may be a course at the 400- or 500-level outside the Department of Art History.

3 ARTH 596 may be used only by a master's candidate for a master's paper; all other individual studies should use ARTH 496. The thesis must be accepted by the advisers and/or committee members, the head of the graduate program, and the Graduate School.

In addition, students must demonstrate a reading proficiency in one foreign language. A reading competency in one foreign language must be demonstrated before the end of one year of study. The foreign language must be relevant to the student's areas of study and will be determined through consultation with the student's faculty adviser, subject to the approval of the Graduate Officer. A master's examination must also be passed before completing the M.A. degree.

**Doctoral Degree Requirements**

Requirements listed here are in addition to Graduate Council policies listed under GCAC-600 Research Degree Requirements.

Thirty additional credits, not including doctoral dissertation research, are required for the Ph.D. At least 24 of these credits must be in art history and 3 to 6 must be in a related area outside art history. At least 9 of the art history credits must be at the 500 level, exclusive of Art History 510 and Art History 596. At the discretion of the student’s doctoral committee, the student may be required to take additional specialized courses pertaining to his or her major area of study. A reading competency in two foreign languages must be demonstrated before the end of one year of study. The two foreign languages must be relevant to the student's areas of study and will be determined through consultation with the student's faculty adviser, subject to the approval of the Graduate Officer. For the Ph.D., a qualifying examination, a comprehensive examination, and a final oral examination must be successfully completed in addition to the student's
doctoral dissertation. The dissertation must be accepted by the dissertation committee, the head of the graduate program, and the Graduate School.

Dual-Title Ph.D. in Art History and Asian Studies

Requirements listed here are in addition to requirements listed in GCAC-208 Dual-Title Graduate Degree Programs.

Graduate students with research and educational interests in Asian Studies may apply to the Art History/Asian Studies dual-title program. The goal of the dual-title degree in Art History and Asian Studies is to enable graduate students from Art History to acquire the knowledge and skills of their major area of specialization in Art History while at the same time gaining the interdisciplinary perspective of Asian Studies.

In order to prepare graduate students for the competitive job market, this program provides them with a solid disciplinary foundation that will allow them to compete for the best jobs in their field. For such students the dual-title Ph.D. in Asian Studies will add value to their degree and their status as candidates. It will produce excellent historians who are experts in Asian Studies as well. The dual-title degree Art History and Asian Studies will build curricular bridges beyond the student’s major field so as to provide a unique training regime for the global scholar.

Admission Requirements

For admission to the dual-title Ph.D. degree under this program, a student must first apply and be admitted to the Art History graduate program. Once accepted into the Art History program, the student can apply to the Admissions Committee of the Asian Studies during the first two semesters of study and before the qualifying examination. The Asian Studies admissions committee reviews applications and recommends students for admission to the Asian Studies program to the Graduate School. Refer to the Admission Requirements section of the Asian Studies Bulletin page. Applicants interested in the program should make that known clearly on their applications and include remarks in their essays that explain their training, interests, and career goals in an area of Asian Studies. Doctoral students must be admitted into the dual-title degree program in Asian Studies prior to taking the qualifying examination in their primary graduate program.

Degree Requirements

To qualify for an Asian Studies degree, students must satisfy the requirements of the Art History program in which they are primarily enrolled. In addition, students must complete the degree requirements for the dual-title in Asian Studies, listed on the Asian Studies Bulletin page. Within this framework, final course selection is determined by the student, their Asian Studies adviser, and their Art History program adviser.
Upon a student’s acceptance by the Asian Studies admissions committee, the student will be assigned an Asian Studies academic adviser in consultation with the Asian Studies chair. As students develop specific scholarly interests, they may request that a different Asian Studies Graduate Faculty member serve as their adviser. The student and advisor will discuss a program of study that is appropriate for the student’s professional objectives and that is in accord with the policies of The Graduate School, the Art History department and the Asian Studies program.

The qualifying examination committee for the dual-title Ph.D. degree will be composed of Graduate Faculty from Art History and must include at least one Graduate Faculty member from the Asian Studies program. Faculty members who hold appointments in both programs’ Graduate Faculty may serve in a combined role. There will be a single qualifying examination, containing elements of both Art History and Asian Studies. Dual-title graduate degree students may require an additional semester to fulfill requirements for both areas of study and, therefore, the qualifying examination may be delayed one semester beyond the normal period allowable.

In addition to the general Graduate Council requirements for dissertation committees, the dissertation committee of an Art History and Asian Studies dual-title Ph.D. student must include at least one member of the Asian Studies Graduate Faculty. Faculty members who hold appointments in both programs’ Graduate Faculty may serve in a combined role. If the chair of the dissertation committee is not also a member of the Graduate Faculty in Asian Studies, the member of the committee representing Asian Studies must be appointed as co-chair. The Asian Studies representative on the student’s dissertation committee will develop questions for and participate in the evaluation of the comprehensive examination.

Students in the dual-title program are required to write and orally defend a dissertation on a topic that is approved in advance by their dissertation committee and reflects their original research and education in Art History and Asian Studies. Upon completion of the doctoral dissertation, the candidate must pass a final oral examination (the dissertation defense) to earn the Ph.D. degree. The dissertation must be accepted by the dissertation committee, the head of the graduate program, and the Graduate School.

**Dual-Title Ph.D. in Art History and Visual Studies**

**Admission Requirements**

Students must apply and be admitted to the graduate program in Art History and the Graduate School before they can apply for admission to the dual-title degree program. After admission to their primary program, students must apply for admission to and meet the admissions requirements of the Visual Studies dual-title program. Refer to the Admission Requirements section of the Visual Studies Bulletin page. Doctoral students must be admitted into the dual-title degree program in Visual Studies prior to taking the qualifying examination in their primary graduate program.

**Degree Requirements**

To qualify for the dual-title degree, students must satisfy the degree requirements for the Ph.D. in Art History. In addition, students must complete the degree requirements for the dual-title in

**Qualifying Examination**
The dual-title field will be fully integrated into the qualifying exam for the doctoral program. The qualifying examination committee for the dual-title Ph.D. degree will be composed of Graduate Faculty from Art History and must include at least one Graduate Faculty member from the Visual Studies program. Faculty members who hold appointments in both programs’ Graduate Faculty may serve in a combined role. In addition, students in the dual-title Ph.D. in Visual Studies will be required to present to their committee a portfolio of work in Visual Studies, including a statement of the student’s interdisciplinary research interests, a program plan, and samples of writing that indicate the student’s interest in questions related to the Visual Studies.

Because students must first be admitted to a graduate major program of study before they may apply to and be considered for admission into a dual-title graduate degree program, dual-title graduate degree students may require an additional semester to fulfill requirements for both areas of study and, therefore, the qualifying examination may be delayed one semester beyond the normal period allowable.

**Doctoral Committee Composition**
In addition to the general Graduate Council requirements for doctoral committees, the doctoral committee of an Art History and Visual Studies dual-title Ph.D. student must include at least one member of the Visual Studies Graduate Faculty. Faculty members who hold appointments in both programs’ Graduate Faculty may serve in a combined role. If the committee chair does not represent Visual Studies, the committee member representing Visual Studies must be appointed as co-chair.

**Comprehensive Exam**
The Visual Studies Graduate Faculty member on the student's committee is responsible for developing and administering the Visual Studies portion of the student's comprehensive exam. The exam must incorporate components addressing Visual Studies based on the student’s areas of interest and specialization in the Visual Studies.

**Dissertation**
The candidate must complete a dissertation on a topic that reflects his or her original research and education in both Art History and in Visual Studies in order to earn the dual-title Ph.D. degree. The dissertation must be accepted by the doctoral committee, the head of the graduate program, and the Graduate School, and the student must pass a final oral examination.
**Student Aid**

Graduate assistantships available to students in this program and other forms of student aid are described in the [Tuition & Funding](#) section of The Graduate School’s website. Students on graduate assistantships must adhere to the [course load limits](#) set by The Graduate School.

**Courses**

Graduate courses carry numbers from 500 to 699 and 800 to 899. Advanced undergraduate courses numbered between 400 and 499 may be used to meet some graduate degree requirements when taken by graduate students. Courses below the 400 level may not. A graduate student may register for or audit these courses in order to make up deficiencies or to fill in gaps in previous education but not to meet requirements for an advanced degree.

**Contact**

<table>
<thead>
<tr>
<th>Campus</th>
<th>University Park</th>
</tr>
</thead>
<tbody>
<tr>
<td>Graduate Program Head</td>
<td>Elizabeth C. Mansfield</td>
</tr>
<tr>
<td>Director of Graduate Studies (DGS) or Professor-in-Charge (PIC)</td>
<td>Madhuri Shrikant Desai</td>
</tr>
<tr>
<td>Program Contact</td>
<td>C Christine Cooper</td>
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<tr>
<td></td>
<td>Art History</td>
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<tr>
<td></td>
<td>240 Borland Building</td>
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<tr>
<td></td>
<td>University Park PA</td>
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<td></td>
<td>16802</td>
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<tr>
<td></td>
<td><a href="mailto:ccw2@psu.edu">ccw2@psu.edu</a></td>
</tr>
<tr>
<td></td>
<td>(814) 865-4873</td>
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</tbody>
</table>

**Program Website**

View

**IV. Affected Departments and Programs**

In the process of creating the proposal to establish a Dual-Title Ph.D. Program in Visual Studies, five graduate programs in the College of the Liberal Arts -- Comparative Literature; English; French and Francophone Studies; German and Slavic Languages; and Spanish, Italian, and Portuguese, English – and in the College of Arts and Architecture the Department of Art History submitted letters assuring their participation as partners with the Visual Studies dual-title degree. The Ph.D. program in Art Education is also considering a partnership. That proposal was the outcome of over two years of consultation, and the Art History Department stands ready to cooperate with these and any other interested units to maximize the rigor and breadth of this dual-title program.
Submit 1 original, signed Graduate Council proposal form and 2 hardcopies of the graduate program proposal document, with a copy of the signed proposal form attached to each proposal copy, to the Office of the Dean of the Graduate School, 211 Kern Building, University Park. For more information about the process, see the Overview of the Graduate Council Curricular Review Process.

The Program Proposal Procedures provide guidance for the development of a graduate program proposal. If you have questions regarding the preparation of a graduate program proposal or how to complete this Graduate Council proposal form, contact the Office of the Dean of the Graduate School.

College/School: Eberly College of Science
Department or Instructional Area: Biochemistry and Molecular Biology

New Graduate Program, Option, or Minor: Add
Designation of new graduate program:
Classification of Instructional Programs (CIP) Code: 
Designation of new graduate option:
Designation of new graduate minor:

Indicate effective semester:
First semester following approval
Second semester following approval

Existing Graduate Program Option, or Minor: Change
Current designation of graduate program: Biochemistry, Microbiology, and Molecular Biology (BMMB)
Current designation of graduate option:
Current designation of graduate minor:

New designation of existing graduate program (if changing):
New designation of existing graduate option (if changing):
New designation of existing graduate minor (if changing):

Brief description of the change (if not noted above): Removing GRE from admissions requirements

Indicate effective semester:
First semester following approval
Second semester following approval

Submitted by Graduate Program Head
Wendy Hanna Rose
Printed name
Signature
Date: 10-3-18

Noted by College/School Representative to Graduate Council Subcommittee on New and Revised Programs and Courses:
Steve Heppelmann
Printed name
Signature
Date: 10-3-18

Approved by College/School Dean/Chancellor (or Designee):
Alexandra Slavovic
Printed name
Signature
Date: 10-3-18
Recommended by Chair, Graduate Council Subcommittee on New and Revised Programs and Courses:

<table>
<thead>
<tr>
<th>On Behalf of David Babb</th>
<th>Signature</th>
<th>Date: 12/5/2018</th>
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Recommended by Chair, Graduate Council Committee on Programs and Courses:

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<th>On Behalf of C. Andrew Cole</th>
<th>Signature</th>
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Noted by Dean of the Graduate School:

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<tr>
<th>On Behalf of Regina Vasilatos-Younken</th>
<th>Signature</th>
<th>Date: 12/5/2018</th>
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</table>
PROGRAM CHANGE PROPOSAL FOR
Biochemistry, Microbiology, and Molecular Biology (BMMB)

SUBMITTED BY
Ken Keiler kck11@psu.edu
Heather Giebink hug14@psu.edu
Table of Contents

Program Learning Objectives  Page 1
Justification for the Proposed Changes  Page 2
Comparison of Changes  Page 3
Existing Graduate Bulletin Copy  Pages 4-7
Consultation  Page 8-10
## Program Learning Objectives

<table>
<thead>
<tr>
<th>Program Learning Objectives (PLO)</th>
<th>Addresses Graduate Council Goal #</th>
</tr>
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<tbody>
<tr>
<td><strong>1. Know:</strong> demonstrate knowledge of core principles and primary literature in their specialty area including comprehension of methods, results, and data analysis in the specialty area.</td>
<td>1</td>
</tr>
<tr>
<td><strong>2. Apply/Create:</strong> demonstrate ability to design and carry out a major research project in the field, including a description of previous work in the field and assemble new findings into a written work that advances understanding in the field.</td>
<td>2</td>
</tr>
<tr>
<td><strong>3. Communicate:</strong> demonstrate ability to convey scientific ideas and results in clear, concise and original writing as well as in formal oral presentations.</td>
<td>3</td>
</tr>
<tr>
<td><strong>4. Think:</strong> demonstrate ability to critically analyze work by others in the fields of biochemistry, microbiology, and molecular biology. Demonstrate ability to integrate their own findings into existing knowledge.</td>
<td>4</td>
</tr>
<tr>
<td><strong>5. Professional Practice:</strong> demonstrate comprehension of and commitment to ethical standards in the discipline. Demonstrate the ability to teach key concepts.</td>
<td>5</td>
</tr>
<tr>
<td><strong>6. Teach:</strong> demonstrate the ability to teach key concepts of the discipline of biochemistry, microbiology, and molecular biology to undergraduate students.</td>
<td>5</td>
</tr>
</tbody>
</table>
Justification for the Proposed Changes

State why the change is being proposed, and any expected outcomes as a result.

BMMB is dropping the GRE test as an admission requirement. Abundant evidence suggests that GRE scores are not an indicator of student success, particularly in life sciences, but selects against under-represented students and socioeconomically disadvantaged populations (Miller & Stassun 2014, Wolf 2014, Cahn 2015, Hall et al., 2017, Moneta-Koehler et al., 2017). In addition, many of our competing programs have dropped their requirement for the GRE and advertise that fact to prospective applicants, which puts BMMB at a recruiting disadvantage. We are confident that we can identify exceptional candidates using holistic review of applications in the absence of GRE scores.
Comparison of Changes

A description of the proposed changes as compared to the existing program requirements, so the reviewers can determine what specifically is being changed. A table is recommended.

<table>
<thead>
<tr>
<th>Proposed Change</th>
<th>Original</th>
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<tr>
<td>&quot;Entering students should have taken courses in biology, biochemistry, chemistry, physics, genetics, and/or microbiology. Admission to the program is based on prior research experience, answers to program specific questions, course records and grades, letters of recommendation, and interviews.&quot;</td>
<td>&quot;Scores on the Graduate Record Examination (GRE) Test (verbal, quantitative, and analytical) are required for admission. Entering students should have taken courses in biology, biochemistry, chemistry, physics, genetics, and/or microbiology. Admission to the program is based on prior research experience, personal statement of interests and objectives, course records and grades, GRE scores, letters of recommendation, and interviews.&quot;</td>
</tr>
</tbody>
</table>
Existing Graduate Bulletin Copy

A complete and current copy of the existing Bulletin page for the program, with any changes that need to be made marked by using Track Change

See next page.
BIOCHEMISTRY, MICROBIOLOGY, AND MOLECULAR BIOLOGY

Graduate Program Head
Wendy Hanna-Rose

Program Code
BMMB

Campus(es)
University Park (Ph.D., M.S.)

Doctor of Philosophy (Ph.D.)
Master of Science (M.S.)
Dual-Title Ph.D. in Biochemistry, Microbiology, and Molecular Biology and Astrobiology

Dual-Title Ph.D. in Biochemistry, Microbiology, and Molecular Biology and Biogeochemistry

The Graduate Faculty

The major goal of the program in Biochemistry, Microbiology, and Molecular Biology is to train students for independent research and teaching in the principal areas of those scientific disciplines. Students may enter the program from a variety of backgrounds such as biochemistry, biology, biophysics, cell biology, chemistry, genetics, microbiology, molecular biology, physics, and other related disciplines. The student’s research may begin during the first year.

Research areas of faculty include:

- antibiotic discovery
- cell and developmental biology
- cell cycle control
- chromatin structure
- cryo-electron microscopy
- DNA binding proteins
- electron paramagnetic resonance spectroscopy
- enzymology
- genomics
- iron, lipid, cellulose and xenobiotic metabolism
- neurobiology
- metabolomics
- metalloproteins
- microbiology
- nuclear magnetic resonance spectroscopy
- parasitology
- pathogenesis
- photosynthesis
- plant biology
- proteomics
- regulation of gene expression
- RNA binding proteins
- RNA structure
- signal transduction

• transcriptomics
• virology
• X-ray crystallography

Admission Requirements

Applicants apply for admission to the program via the Graduate School application for admission (http://gradschool.psu.edu/prospective-students/how-to-apply). Requirements listed here are in addition to Graduate Council policies listed under GCAC-300 General Admission Standards (http://gradschool.psu.edu/graduate-education-policies).

"Entering students should have taken courses in biology, biochemistry, chemistry, physics, genetics, and/or microbiology. Admission to the program is based on prior research experience, answers to program specific questions, course records and grades, letters of recommendation, and interviews. Scores on the Graduate Record Examination (GRE) Test (verbal, quantitative, and analytical) are required for admission. Entering students should have taken courses in biology, biochemistry, chemistry, physics, genetics, and/or microbiology. Admission to the program is based on prior research experience, personal statement of interests and objectives, course records and grades, GRE scores, letters of recommendation, and interviews. All students are admitted with the intent of obtaining a Ph.D. degree, although a master's degree is obtained in some cases. The program does not admit for the terminal master's degree.

Degree Requirements

Master of Science (M.S.)

Requirements listed here are in addition to Graduate Council policies listed under GCAC-800 Research Degree Requirements (http://gradschool.psu.edu/graduate-education-policies).

A minimum of 30 credits at the 400, 500, 600, or 800 level is required, with at least 18 credits at the 500 and 600 level, combined. Master’s students must complete the following core courses in BMMB:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMMB 501</td>
<td>Core Concepts in Biomolecular Science</td>
<td>5</td>
</tr>
<tr>
<td>BMMB 502</td>
<td>Critical Analysis of the Biochemical, Microbial, and Molecular Biology Scientific Literature</td>
<td>1</td>
</tr>
<tr>
<td>BMMB 507</td>
<td>Seminar in Biochemistry, Microbiology, and Molecular Biology</td>
<td>2</td>
</tr>
<tr>
<td>BMMB 509</td>
<td>Ethics in Biomedical Science</td>
<td>1</td>
</tr>
</tbody>
</table>

Culminating Experience

BMMB 600 | Thesis Research                                          | 6       |

or BMMB 610 | Thesis Research Off Campus                              |

Students are required to write a thesis, and at least 6 credits in thesis research (BMMB 600 or BMMB 610) must be taken in conjunction with completing the thesis. The thesis must be accepted by the advisers and/or committee members, the head of the graduate program, and the Graduate School, and the student must pass a thesis defense.

Doctor of Philosophy (Ph.D.)

Requirements listed here are in addition to Graduate Council policies listed under GCAC-600 Research Degree Requirements (http://gradschool.psu.edu/graduate-education-policies).

Each student must take a total of 19 credits in 400-, 500- and 800-level courses, required and elective, from a list approved by the program faculty. Doctoral students must complete the core courses in BMMB:
Dual-Titles

Dual-Title Ph.D. Program in BIOCHEMISTRY, MICROBIOLOGY, AND MOLECULAR BIOLOGY and Astrobiology

Requirements listed here are in addition to requirements listed in GCAC-208 Dual-Title Graduate Degree Programs (http://gradschool.psu.edu/graduate-education-policies/gcac/gcac-600/phd-dissertation-committee-formation) once the student has passed the qualifying examination. Doctoral students must pass a qualifying examination, a comprehensive oral examination, and a final oral examination (the dissertation defense). Continuation in the Ph.D. program is decided on the basis of the student's performance in courses, research and teaching. In addition, an oral qualifying examination is taken during the fall semester of the second year. This examination tests the student's ability to utilize what they have learned in solving problems based on the scientific method. A comprehensive oral examination is taken before the student's Ph.D. dissertation committee within approximately three semesters after the student has passed the qualifying examination. The student is expected to present a written dissertation proposal including data that has been gathered, future research directions, and experimental approaches. Questioning may involve, but is not limited to, that dissertation proposal. The faculty requires that each student demonstrate the ability to collect, organize, and present the results of their research in a professional manner before graduation. This is accomplished by preparing a manuscript based on the Ph.D. dissertation research. The manuscript must be written by the student and submitted for publication in a refereed journal prior to the final oral examination (the dissertation defense). The dissertation defense is taken before the student's dissertation committee at the end of the program. The student must also present a public seminar on the dissertation research within the two-week period preceding the dissertation defense. To earn the Ph.D. degree, the student's dissertation must be accepted by the dissertation committee, the head of the graduate program, and the Graduate School.

Other Relevant Information

The director of graduate studies is in charge of advising students about academic and related matters until they have chosen a dissertation adviser. Beginning students carry out a series of rotation projects in at least three different faculty laboratories before deciding on a research area. Students generally decide on their dissertation research adviser at the end of their first fall semester. All students are required to participate as teaching assistants in undergraduate laboratory courses as part of their training. Students are required to register for BMMB 602 (Supervised Experience in College Teaching) for two semesters; however, these credits cannot be counted towards the minimum credits required for the degree.
Dual-Title Ph.D. Program in BIOCHEMISTRY, MICROBIOLOGY, AND MOLECULAR BIOLOGY and Biogeochemistry

Requirements listed here are in addition to requirements listed in GCAC-208 Dual-Title Graduate Degree Programs (http://gradschool.psu.edu/graduate-education-policies/gcac/gcac-208/dual-title-graduate-degree-programs).

Graduate students with research and educational interests in biogeochemistry may apply to the Biogeochemistry Dual-Title Ph.D. Program. Students must apply and be admitted to the graduate program in BMMB and The Graduate School before they can apply for admission to the dual-title degree program. After admission to their primary program, students must apply for admission to and meet the admissions requirements of the Biogeochemistry dual-title program. Refer to the Admission Requirements section of the Biogeochemistry Bulletin page (http://bulletins.psu.edu/graduate/programs/majors/biogeochemistry). Doctoral students must be admitted into the dual-title degree program in Biogeochemistry prior to taking the qualifying examination in their primary graduate program.

Students in the Biogeochemistry Dual Title program are required to have two advisers from separate disciplines: one individual serving as a primary adviser in their major degree program and a secondary adviser in an area within a field covered by the dual-title program and a member of the Biogeochemistry faculty. To qualify for the dual-title degree, students must satisfy the degree requirements for the Ph.D. degree in BMMB, listed on the Degree Requirements tab. In addition, students must complete the degree requirements for the dual-title Biogeochemistry, listed on the Biogeochemistry Bulletin page (http://bulletins.psu.edu/graduate/programs/majors/biogeochemistry).

The qualifying examination committee for the dual-title Ph.D. degree will be composed of Graduate Faculty from BMMB and must include at least one Graduate Faculty member from the Biogeochemistry program. Faculty members who hold appointments in both programs’ Graduate Faculty may serve in a combined role. There will be a single qualifying examination, containing elements of both BMMB and Biogeochemistry. Dual-title graduate degree students may require an additional semester to fulfill requirements for both areas of study and, therefore, the qualifying examination may be delayed one semester beyond the normal period allowable.

In addition to the general Graduate Council requirements for dissertation committees (http://gradschool.psu.edu/graduate-education-policies/gcac/gcac-600/phd-dissertation-committee-formation), the dissertation committee of a BMMB and Biogeochemistry dual-title Ph.D. student must include at least one member of the Biogeochemistry Graduate Faculty. Faculty members who hold appointments in both programs’ Graduate Faculty may serve in a combined role. If the chair of the dissertation committee is not a member of the Graduate Faculty in Biogeochemistry, the member of the committee representing Biogeochemistry must be appointed as co-chair. The Biogeochemistry representative on the student’s dissertation committee will develop questions for and participate in the evaluation of the comprehensive examination.

Students in the dual-title program are required to write and orally defend a dissertation on a topic that is approved in advance by their dissertation committee and reflects their original research and education in BMMB and Biogeochemistry. Upon completion of the doctoral dissertation, the candidate must pass a final oral examination (the dissertation defense) to earn the Ph.D. degree. The dissertation must be accepted by the dissertation committee, the head of the graduate program, and the Graduate School.

Student Aid
Graduate assistantships available to students in this program and other forms of student aid are described in the Tuition & Funding (http://gradschool.psu.edu/graduate-funding) section of The Graduate School’s website. Students on graduate assistantships must adhere to the course loads limits (http://gradschool.psu.edu/graduate-education-policies/gsad/credit-loads-graduate-assistants) set by The Graduate School.

Courses
Graduate courses carry numbers from 500 to 699 and 800 to 899. Advancement undergraduate courses numbered between 400 and 499 may be used to meet some graduate degree requirements when taken by graduate students. Courses below the 400 level may not. A graduate student may register for or audit these courses in order to make up deficiencies or to fill in gaps in previous education but not to meet requirements for an advanced degree.

Learning Outcomes
1. Know: demonstrate knowledge of core principles and primary literature in their specialty area including comprehension of methods, results, and data analysis in the specialty area.
2. Apply/Create: demonstrate ability to design and carry out a major research project in the field, including a description of previous work in the field and assemble new findings into a written work that advances understanding in the field.
3. Communicate: demonstrate ability to convey scientific ideas and results in clear, concise and original writing as well as in formal oral presentations.
4. Think: demonstrate ability to critically analyze work by others in the field of biochemistry, microbiology, and molecular biology. Demonstrate ability to integrate their own findings into existing knowledge.
5. Professional Practice: demonstrate comprehension of and commitment to ethical standards in the discipline. Demonstrate the ability to teach key concepts.
6. Teach: demonstrate the ability to teach key concepts of the discipline of biochemistry, microbiology, and molecular biology to undergraduate students.

Contact
Graduate Program Head: Wendy Hanna-Rose
Director of Graduate Studies/Professor-in-Charge: Ken Keller
Primary Program Contact: Linda Kunis
Email: ljk4@psu.edu
Mailing Address: 107 Atlee House Laboratory, University Park, PA 16802
Telephone: (814) 865-2538
Program Website: Biochemistry, Microbiology, and Molecular Biology (http://bmb.psu.edu/graduate)
Consultation

Written evidence of consultation with any departments affected by the proposed change. Consultation must include the original query and the full reply by the consultant. Consultations submitted as part of the proposal will be available to the public when the proposal is published, so private exchanges should be edited out and any references to current students should be removed.
September 24, 2018

Memo To: The Graduate School

From: James Kasting, Astrobiology Dual Title Grad Program Head

Re: Change in BMMB admission requirements

We have received word from the BMMB Department of a proposed change in their admission requirements. Specifically, they will do the following:

“BMMB is changing our admissions requirements. We are no longer requiring submission of the general GREs. We expect no changes to our program as a result of this change. We are hopeful to see increased applications, especially from underrepresented populations in STEM.”

BMMB is one of the participating departments in our Astrobiology Dual-Title Ph.D. program. We see no problem with this proposed change to their program.

Sincerely,

James F. Kasting

James Kasting
Re: Biogeochemistry Consultation on BMBB Program Change Proposal

From: Mary Ann Bruns <mvb10@psu.edu>  
Subject: Re: Biogeochemistry Consultation on BMBB Program Change Proposal  
To: Heather Giebink <hug14@psu.edu>

Hi Heather, sorry for the delay. I sent the proposal to the executive committee and to all Biogeochemistry faculty and asked them to get back to me by last Friday if they had concerns. I received 8 responses, all indicating there were no concerns. One respondent thought it was a very positive change.

Mary Ann Bruns, Ph. D.  
Associate Professor of Soil Microbiology  
Dept. of Ecosystem Science & Management  
116 Ag Sciences & Industries Bldg  
The Pennsylvania State University  
University Park, PA 16802  
Phone: (814) 863-0779  
FAX: (814) 865-3725  
Website: http://ecosystems.psu.edu/directory/mvb10  
Faculty Coordinator, Biogeochemistry Dual Title PhD Program http://sites.psu.edu/dual title Biogeochemistry

Sent from my iPhone

On Oct 2, 2018, at 9:07 PM, Heather Giebink <hug14@psu.edu> wrote:
October 5, 2018

TO:  Dr. Regina Vasilatos-Younken, Vice Provost for Graduate Education and Dean of the Graduate School

FROM:  Dr. Aleksandra Slavkovic, Associate Dean for Graduate Studies

RE:  Change in BMMB Admission Requirements to Drop the GRE Scores

The Biochemistry, Microbiology, and Molecular Biology (BMMB) Graduate Program in Eberly College of Science (ECoS) is dropping the GRE test as an admission requirement. Abundant evidence suggests that GRE scores are not an indicator of student success, particularly in life sciences, but selects against under-represented students and socioeconomically disadvantaged populations (Miller & Stassun 2014, Wolf 2014, Cahn 2015, Hall et al., 2017, Moneta-Koehler et al., 2017). In addition, many of BMMB's competing programs across the nation have dropped their requirement for the GRE and advertise that fact to prospective applicants, which puts BMMB at a recruiting disadvantage. An up to date list of such programs is included with this memo, listing 86 programs that include some of the top programs in the Big Ten Alliance as well as those at Cornell, Harvard, and Johns Hopkins, to name a few.

The Astrobiology Dual-Title Ph.D. Program and Biogeochemistry Dual-Title Ph.D. program welcome and support this action (memos attached). Furthermore, Biology, another top-ranked and large ECoS graduate program, is currently considering dropping the GRE requirements for the same reasons outlined above.

BMMB and ECoS are confident that they can identify exceptional candidates using a holistic review of applications in the absence of GRE scores. We plan to consider and nominate such students for the top university and college fellowships, such as UGFs and DGFs. We recognize that the current UGF eligibility requirements include verbal and quantitative GREs. However, as stated in the guidelines, since the primary criterion is the “academic quality of prospective students,” as evidenced by their applications for admission and supporting documentation,” we urge the Graduate School and the Office of Graduate Fellowships and Awards Administration to review such students for the top awards.

cc:  M. Verderame
    J. Hoffman
<table>
<thead>
<tr>
<th>Washington University in St. Louis</th>
<th>DBBS - Molecular Genetics &amp; Genomics</th>
<th>X</th>
<th><a href="http://www.dbbs.wustl.edu/programs/genetica/Pages/default.aspx">http://www.dbbs.wustl.edu/programs/genetica/Pages/default.aspx</a></th>
</tr>
</thead>
<tbody>
<tr>
<td>Washington University in St. Louis</td>
<td>DBBS - Molecular Microbiology &amp; Microbial Pathogenesis</td>
<td>X</td>
<td><a href="http://www.dbbs.wustl.edu/programs/micro/Pages/default.aspx">http://www.dbbs.wustl.edu/programs/micro/Pages/default.aspx</a></td>
</tr>
<tr>
<td>Washington University in St. Louis</td>
<td>DBBS - Neuroscience</td>
<td>X</td>
<td><a href="http://www.dbbs.wustl.edu/programs/neuro/Pages/default.aspx">http://www.dbbs.wustl.edu/programs/neuro/Pages/default.aspx</a></td>
</tr>
<tr>
<td>Washington University in St. Louis</td>
<td>DBBS - Plant &amp; Microbial Biosciences</td>
<td>X</td>
<td><a href="http://www.dbbs.wustl.edu/programs/PlantMicroBioSci/Pages/default.aspx">http://www.dbbs.wustl.edu/programs/PlantMicroBioSci/Pages/default.aspx</a></td>
</tr>
</tbody>
</table>
Graduate Council
Program, Option, or Minor Proposal Form

Submit 1 original, signed Graduate Council proposal form and 2 hardcopies of the graduate program proposal document, with a copy of the signed proposal form attached to each proposal copy, to the Office of the Dean of the Graduate School, 211 Kern Building, University Park. For more information about the process, see the Overview of the Graduate Council Curricular Review Process.

The Program Proposal Procedures provide guidance for the development of a graduate program proposal. If you have questions regarding the preparation of a graduate program proposal or how to complete this Graduate Council proposal form, contact the Office of the Dean of the Graduate School.

College/School: College of Earth and Mineral Sciences
Department or Instructional Area: Energy and Mineral Engineering

New Graduate Program, Option, or Minor: Add
Designation of new graduate program:
Classification of Instructional Programs (CIP) Code:
Designation of new graduate option:
Designation of new graduate minor:

Indicate effective semester:
First semester following approval
Second semester following approval

Existing Graduate Program Option, or Minor: **Change Drop
Office of the Vice Provost and
Dean of the Graduate School

Current designation of graduate program: Energy and Mineral Engineering
Current designation of graduate option:
Current designation of graduate minor:

New designation of existing graduate program (if changing):
New designation of existing graduate option (if changing):
New designation of existing graduate minor (if changing):

Brief description of the change (if not noted above): Revise EME core course offerings and credit requirements, revise EME graduate options, revise MS culminating experiences and credit requirements, and revise PhD Candidacy Examination protocols.

Indicate effective semester:
** First semester following approval
Second semester following approval

Submitted by Graduate Program Head

Dr. Luis F. Ayala H.                        Date: 4/10/2018
Printed name
Signature

Noted by College/School Representative to Graduate Council Subcommittee on New and Revised Programs and Courses:

Dr. David Babb                           Date: 4/11/2018
Printed name
Signature

Approved by College/School Dean/Chancellor (or Designee):

Dr. John Hellmann                      Date: 4/12/2018
Printed name
Signature
Recommended by Chair, Graduate Council Subcommittee on New and Revised Programs and Courses:

<table>
<thead>
<tr>
<th>On Behalf of David Babb</th>
<th>[Signature]</th>
<th>Date: 12/15/2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Printed name</td>
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</table>

Recommended by Chair, Graduate Council Committee on Programs and Courses:

<table>
<thead>
<tr>
<th>On Behalf of C. Andrew Cole</th>
<th>[Signature]</th>
<th>Date: 12/15/2018</th>
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<tbody>
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<td>Printed name</td>
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</table>

Noted by Dean of the Graduate School:

<table>
<thead>
<tr>
<th>On Behalf of Regina Vasilatos-Younken</th>
<th>[Signature]</th>
<th>Date: 12/15/2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Printed name</td>
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</tbody>
</table>
PROPOSAL TO REVISE THE GRADUATE PROGRAM IN ENERGY AND MINERAL ENGINEERING (EME)

EME Graduate Program Office:

103A Hosler Building
University Park, PA,
16802-5000 USA
http://www.eme.psu.edu/emegrad/

COLLEGE OF EARTH AND MINERAL SCIENCES
THE PENNSYLVANIA STATE UNIVERSITY

April 2018
Proposal to Revise the Graduate Program in
Energy and Mineral Engineering (EME)
College of Earth and Mineral Sciences

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2. Comparison of Proposed Changes 4

3. Revised Graduate Degree Bulletin Listing 9

4. Consultation with Other Units Affected by Revised Program 17
Proposal to Revise the Graduate Program in  
Energy and Mineral Engineering (EME)  
College of Earth and Mineral Sciences

1. Justification Statement

The Department of Energy and Mineral Engineering (EME) in the College of Earth and Mineral Sciences is proposing a comprehensive review of our existing graduate degree offerings at the M.S. and Ph.D. degree levels. Changes are proposed to the graduate program in response to the stated goals of the Department’s strategic plan to:
- Realign the EME graduate course curriculum with EME’s research goals
- Align our graduate offerings with student and prospective employer’s needs
- Align our graduate offerings towards the development of professional and research skills

The Energy and Mineral Engineering graduate program provides flexible education of students in energy and mineral sciences and engineering. The program is designed to resolve the sometimes competing goals of flexible education of requisite breadth while still providing in-depth study; students are required to follow a flexible curriculum of quantitative courses in the applied physical sciences, with an integrative learning experience. The curriculum balances requisite rigor with flexibility in a rapidly changing field of endeavor.

Our current EME graduate program was approved by the Board of Trustees to officially start in Summer 2008. In Summer 2012, Integrated Undergraduate-Graduate (IUG) degrees were established within the EME graduate program. With our focus in continuous improvement, our Department’s Strategic 2015-2019 Plan mandated the review, update, and reassessment of our current EME graduate program requirements, policies, and protocols. A 3-year internal review of the program was conducted which identified the following four (4) significant areas for improvement in our graduate program:

A. Revised EME core course offerings and credit requirements,
B. Revised EME graduate options,
C. Revised M.S. culminating experiences and credit requirements,
D. Revised Ph.D. Qualifying Examination protocols.

These proposed changes in our graduate program in EME are reflective of our diversity as a department: a unique department with world-class faculty experts in science, engineering, economics, and statistics as applied to the energy and mineral resources sector. The revised program provides a more flexible platform for M.S. and Ph.D. degrees that facilitates specialization in one area while at the same time developing breadth across scientific and engineering technologies necessary to become a next generation leader in academia or industry. Details about these proposed revisions are presented in a tabular form in Section 2: Comparison of Changes. Revisions have been discussed and approved by EME faculty at large in Departmental meetings. Expected outcomes of this strategic realignment of graduate offerings include: enhancing current students and faculty satisfaction with the program, making the graduate program even more attractive to prospective students, better embracing the Department’s interdisciplinary
nature, increasing overall efficiency of the graduate program operation, and strengthening graduate specializations.

2. Comparison of Proposed Changes

<table>
<thead>
<tr>
<th>Current Program</th>
<th>Revised Program</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A. Current EME core course offerings and credit requirement</strong></td>
<td><strong>A. Revised EME core course offerings and credit requirement</strong></td>
</tr>
<tr>
<td>Students pursuing an M.S. degree in EME are required to complete 24 course credits and submit a thesis (6 credits). At least 18 of the total course credits must be at the 500 level or above.</td>
<td></td>
</tr>
<tr>
<td>The Ph.D. program in Energy and Mineral Engineering is quite flexible, with minimum formal requirements. A minimum of 12 post M.S. course credits and 12 research credits are required. For students without a M.S. degree, 24 additional course credits need to be taken for a total course credits of 36. At least 18 course credits for the graduate program must be at the 500 level or above.</td>
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<tr>
<td>Currently, prescribed (core) courses are different for the M.S. and Ph.D. degrees. Prescribed courses for the M.S. degree are EME 500(3), EME 580(3), and EME 590(1); while prescribed courses for the Ph.D. degree are EME 581(3), EME and EME 590(1).</td>
<td></td>
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<tr>
<td><strong>M.S. Degree (7 credits of core courses)</strong></td>
<td><strong>Required minimum number of total credits for the EME M.S. degree will remain the same for the thesis-based culminating experience (30 including 6 credits of research). New culminating experiences will now be added (see bullet C below). For the thesis-based track, students are required to complete 24 course credits and submit a thesis (6 credits). At least 18 of the total M.S. course credits must be at the 500 level or above.</strong></td>
</tr>
<tr>
<td>EME 500 (3) Energy and Mineral Project Investment Evaluation</td>
<td></td>
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<tr>
<td>EME 580 (3) Interdisciplinary Team Project</td>
<td></td>
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<tr>
<td>EME 590 (1) Colloquium</td>
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<tr>
<td><strong>Ph.D. Degree (4 credits of core courses)</strong></td>
<td><strong>Required minimum number of credits beyond the M.S. degree for the EME Ph.D. degree remains the same (24 total credits beyond M.S., including 12 course credits and 12 credits of research). For students without a M.S. degree, 24 additional course credits must be taken to complete a total of 36 course credits, and a total 48 credits overall. At least 18 course credits of these must be at the 500 or 600 level.</strong></td>
</tr>
<tr>
<td>EME 581(3) Research and Geostatistics Methods</td>
<td></td>
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<tr>
<td>EME 590 (1) Colloquium</td>
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</tr>
<tr>
<td>New EME common core courses (M.S. and Ph.D.) (*)</td>
<td></td>
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<tr>
<td>EME 501(3): Design Under Uncertainty in EME Systems</td>
<td></td>
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<tr>
<td>EME 511(3): Interfacial Phenomena in EME Systems</td>
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<tr>
<td>EME 521(3): Mathematical Modeling of EME Systems</td>
<td></td>
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<tr>
<td>EME 531(3): Thermodynamics in EME Systems</td>
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<tr>
<td>EME 551(3): Safety, Health, and Environmental Risks in EME Production</td>
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</table>

(*) Graduate course proposals for these five (5) courses have been already submitted and approved by Graduate Council.
### B. Current EME graduate options

EME graduate students are currently able to select among the following five (5) graduate options in addition to base EME graduate program requirements:

- **Energy management and policy (EMP).**
- **Environmental health and safety engineering (EHSE).**
- **Fuel science (FSc).**
- **Mining and mineral process engineering (MMPE).**
- **Petroleum and natural gas engineering (PNGE).**

12-credits of option-specific courses must be taken, in addition to EME core courses, in order to pursue an option regardless of the graduate path (M.S. or Ph.D.) from the list provided below. The 12 credits is 1/3 of the higher of the two degree requirements (24 for MS and 36 for the PhD) regardless of whether the student is applying the option to the M.S. or Ph.D. degree.

#### Energy Management and Policy (EMP) Option
- EME 525 (3) Policy Analysis for Engineers
- AEREC 519(3) Resource and Environmental Economics
- AEREC 510 (3) Econometrics I
- ENNEC 540 (3) Economics Analysis of Energy Markets
- ENNEC 560 (3) Economics of Technology

#### Environmental Health and Safety Engineering (EHSE) Option
- EME 510(3) Health and Safety Engineering
- STAT 501(3) Regression Methods or STAT 502(3) Analysis of Variance and Design of Experiments
- BB H 503(3) Bio-behavioral Systems in Health and Development or IE 553(3) Engineering of human work.
- STAT 502 (3) Analysis of Variance and Design of Experiments or One of the above not taken

#### Fuel Science (FSc) Option
- FSC 504 (3) Problems in Fuels Engineering
- EME 570 (3) Catalytic Materials
- FSC 506 (3) Carbon Reactions
- FSC 503 (3) Analytical Methods in Fuel Science

### B. Revised EME graduate options

In the revised EME graduate program, students can select among the following options to be taken in addition to base EME graduate program requirements:

- **Energy systems engineering (E SysE)**
- **Fuel science (FSc)**
- **Mining and mineral process engineering (MMPE)**
- **Petroleum and natural gas engineering (PNGE).**

The proposed course requirements for each of these options are 12 credits (4 courses) from the list of option-specific courses provided below. The 12 credits is 1/3 of the higher of the two degree requirements (24 for MS and 36 for the PhD) regardless of whether the student is applying the option to the M.S. or Ph.D. degree. Student may apply the option to either the M.S. or Ph.D. degrees, or both provided that new substitute courses are taken as approved by the EME graduate program officer.

#### Energy Systems Engineering (E SysE) Option
Student selects twelve (12) credits from the following list:
- ENNEC 540(3): Economic Analysis of Energy Markets
- EME 522(3): Computational Methods for Electric Power Systems Analysis (**)
- EME 526(3): Solar Utility and Portfolio Manag. (**)
- EME 527(3): Stochastic Modeling of Spatial Variability in Energy and Environmental System (**)
- IE 505(3): Linear Programming (***)
- IE 516(3): Applied Stochastic Processes (***)

#### Fuel Science (FSc) Option
Student completes twelve (12) credits from the following list:
- FSC 503(3): Analytic Methods in Fuel Science
- or CHE 510 Surface Characterization of Materials (***)
- FSC 504(3): Problems in Fuels Engineering
- FSC 506(3): Carbon Reactions
- EME 570 (MATSE 570) (3): Catalytic Materials
- or CHE 536 Heterogeneous Catalysis (***)
- CHE 544(3): General Transport Phenomena
- or CHE 546 Transport Phenomena II (***)

#### Mining and Mineral Process Engineering (MMPE) Option
Student selects twelve (12) credits from the following list:
- MNG 554(3): Rock Mechanics Design
- MNG 512(3): Mineral Property Evaluation (**)
- MN PR 505(3): Particle Separation (***)
### Mining and Mineral Process Engineering (MMPE) Option

- MNG 515(3) Mine System Simulation
- or MNG 541(3) Surface Mine Equipment
- or MNG 554(3) Rock Mechanics Design
- MNPR 501(3) Interfacial Phenomena
- or MNPR 505(3) Physical Separation
- or MNPR 506(3) Mineral Process Plant Design

Two of the above not taken

### Petroleum and Natural Gas Engineering (PNGE) Option

- PNG 501(3) Steady State Flow in Porous Media
- or PNG 502(3) Unsteady State Flow in Porous Media
- PNG 511(3) Numerical Solutions of PDEs
- or PNG 512(3) Numerical Reservoir Simulation
- PNG 520(3) Phase Relations in Reservoir Engineering
- PNG 530(3) Natural Gas Engineering

### MN PR 507(3): Hydrometallurgical Processing

### Petroleum and Natural Gas Engineering (PNGE) Option

Student selects twelve (12) credits from the following list:

- PNG 501(3): Flow in Porous Media
- PNG 502(3): Coupled Flow and Deformation in Porous Media (**)
- PNG 512(3): Numerical Reservoir Simulation
- PNG 518(3): Design of Miscible Recovery Projects
- PNG 520(3): Thermodynamics Hydrocarbon Fluids (**)
- PNG 526(3): Well Stimulation
- PNG 530(3): Natural Gas Engineering
- PNG 555(3): Unconventional Resources Analysis (**)
- PNG 566(3): Reservoir Characterization (**)
- PNG 577(3): Production and Completions Eng. (**)

*Note for the PNGE Option: PNG 597 (Special Topics), when taught, may be used to partially satisfy the PNGE option minimum credit requirement. However, PNG 596 (Individual Studies) credits may not be used within this option course credit count.*

### Dropped Options

Additional EME options may be added at a later time via separate proposal submitted to Graduate Council. For the purposes of this revised proposal, the following former EME options are being dropped:

- Energy Management and Policy (EMP) Option
- Environmental Health and Safety Engineering (EHSE) Option

(**) New or revised permanent courses -- Course proposals concurrently submitted; either as a new course, revision of an existing course, or as a permanent course based on an existing class already taught as part of special topics.

(***) Support statements from involved Departments are included in the Consultation section.

### Revised MS culminating experiences and credit requirements

The new EME graduate program will allow M.S. students to select among any of the three culminating experiences available to M.S. students at Penn State. These include the completion of either:

- a thesis based upon original research in the field;
- a scholarly paper or essay that is research-oriented;
- or a capstone course that includes a work product which demonstrates evidence of analytical thinking and synthesis of knowledge in the field of study.

The EME graduate program recognizes that our M.S. degree attracts a diverse community of students interested in developing cutting-edge, advanced technical skills available in our 500-level graduate courses. However, not all prospective M.S. students are ready to commit to a research-intensive endeavor early in their graduate career. Some would not want to compromise the possibility of going forward with a Ph.D. in the future. In order to address these seemingly competing goals, the EME graduate program proposes to provide a flexible platform where the number of required 500-level,
The expected time-commitment of the research culminating experience changes. We thus propose the following credit model that provides maximum flexibility to graduate students on the thesis-based research track in order to facilitate their research discovery process, without compromising proper exposure to 500-level research-based tools for non-thesis based M.S. students:

**THESIS-BASED (30 credits total)**

Students are required to complete a minimum of 30 credits in total (at least 18 at the 500 and 600 level) including: 24 credits in course work, 6 thesis credits (EME 600, Thesis Research), and a thesis accepted by M.S. thesis defense committee members, the head of the graduate program, and the Graduate School.

**NON-THESIS BASED (36 credits total)**

Students are required to complete a minimum of 36 credits in total (at least 24 at the 500 level) including: 33 credits in course work and 3 credits for the completion of a culminating research experience. Within the 33 credits of coursework, M.S. students must take at least two extra courses (6 credits) from either the EME core course list (beyond the six credit core requirement) or their chosen graduate option list (beyond the option’s minimum requirement). The non-thesis culminating research experiences are:

- **Paper-based M.S.:** Students take three (3) credits of non-thesis research (EME 596, Individual Studies) and complete a satisfactory scholarly paper evaluated by adviser(s) and a reader.

- **Course-based M.S.:** Students take EME’s capstone research course: EME 580 (3): Methodology of Research in EME. This is an EME graduate course designed to create a research work product that demonstrates evidence of analytical thinking and synthesis of knowledge in the Energy and Mineral Engineering field. The course is a revision of an existing class, and a concurrent proposal to this effect has been concurrently submitted. In this capstone research course, students will plan, conduct, and report research results. As detailed in our EME 580 proposal, students will be required to integrate the knowledge and experiences gained in the process of investigating their own topics and will be made aware that (i) their research is based on a common quantitative approach that includes mechanistic, thermodynamic and kinetic principles, together with a preliminary economic assessment of an engineering process, product or system; and (ii) this process is governed by a set of common ethics and integrity principles. Students will learn how to efficiently understand and explain the results available in the published literature, and apply this methodology to organize, present and discuss their own results by applying the essential principles of research ethics and integrity.

We recognize that Graduate Council has made non-thesis tracks available to all M.S. graduate programs at Penn State. Our intention is to extend such flexibility to our M.S. students, while at the same time encouraging thesis-based research. A decreased credit requirement (Penn State’s 30-credit minimum) is offered to our thesis-track M.S. students in order to enable more flexibility for thesis research discovery, and an increased course credit requirements is designed for non-thesis M.S. students in order to expose them to additional 500-level research-based tools. All these proposed M.S. tracks in EME are in full compliance with existing Graduate Council policies (i.e., minimum of 30 credits for any M.S. degree granted at Penn State). The proposed variability in credit structure is hardly unique, and students at Penn State currently receive their M.S. degree regardless of excess credits as long as the 30-credit minimum is satisfied. In addition, some engineering degrees at Penn State do require different minimum credit requirement beyond the 30-credit University minimum (e.g., M.S. Electrical Engineering at University Park, which used to also have
different credit requirements of thesis and non-thesis tracks in the past, and M.S. in Engineering Design require a minimum of 32 total credits) and other peer institutions in the U.S. currently offer M.S. degrees in Engineering with varying credit requirements based on culminating experience (e.g., University of Texas at Austin: http://pge.utexas.edu/images/MS_Degree_Requirements_2016.pdf)

D. Current Ph.D. Candidacy Examination

Acceptance into the Ph.D. degree program in Energy and Mineral Engineering is based on the student's performance on the Ph.D. candidacy examination administered by the Graduate Faculty of the EME graduate program.

Students meet the general communication requirement for all Ph.D. candidates through the candidacy examination where a candidate is required to submit a written research paper or proposal of less than 15 double-spaced pages and make a formal public presentation and defense of the research proposal. The candidate is assessed by the exam committee on both technical and communication proficiency. Although encouraged, competency in a foreign language is not required for the Ph.D. degree. However, each Ph.D. candidate is expected to demonstrate competency in communication and language by successfully completing EME 581(3) (Research and Geostatistics Methods) which teaches students methods for the conduct, analysis and effective communication of scientific research and spatial characterization.

The first part of the current PhD Candidacy Exam involves the writing of a detailed research proposal. The student chooses their topic to reflect the interest area(s) of each individual candidate. Proposal is prepared and written by the candidate alone and should include, hypotheses, objectives and relevance of the research or problem, critical survey and analysis of pertinent literature, discussion of theoretical aspects, proposed approach, timetable for completion of research, and expected new and original body of knowledge the research will add to the literature. Written research proposal is typically less than 15 double-spaced, printed pages and should represent entirely the original work of the student in concept, background literature research and in writing.

D. Revised Ph.D. Qualifying Examination

Acceptance into the Ph.D. degree program in Energy and Mineral Engineering will be based on the student's performance on the Ph.D. qualifying examination administered by the Graduate Faculty of the EME graduate program.

The new Ph.D. Qualifying Examination will be based on a written examination only which will measure the student’s fundamental knowledge of subjects covered in the program and interest area(s) of the individual candidate. It is intended to determine whether a student has the preparation, intellectual capacity, and professional attitude to complete a Ph.D. program successfully. This written Ph.D. Qualifying exam will be scheduled twice a year (once in Fall and once in Spring) and will be overseen by a 9-member qualifying examination committee of EME Graduate Faculty which is chaired by the EME graduate officer. The EME graduate office appoints the rest of the eight (8) members of the qualifying examination committee. EME Graduate Faculty will rotate in and out of the qualifying examination committee, and some degree of membership overlap with previous committees will be maintained.

Upon consultation with the qualifying examination committee, the EME graduate office will send a notification, at least one and a half (1 1/2) months in advance, with the time, date, and place of the Ph.D. qualifying examination to all eligible students in the Ph.D. track. Upon receiving the exam notification, and at least three (3) weeks prior to the exam, Ph.D. students will declare their intent to take the written examination by submitting a research proposal document emphasizing a critical review of relevant literature and a short research plan that reflects the interest area(s) of the individual candidate. Details of the recommended format for this document (max. 5 pages) will be circulated by EME graduate officer with the exam notification.

Upon receiving all research proposals, the Ph.D. qualifying examination committee meets to design content, duration, and metrics to pass or fail the exam. The exam may cover materials from EME core courses taken by the student, questions specific to option areas (if any is pursued by the student), and particularly questions specific to the research proposal, which can include critical peer reviews of relevant journal papers. Exam application will be supervised by the EME graduate office with the support of members of the committee.

Within the week following the conclusion of the exam, each
The second part of the Ph.D. Candidacy Exam involves a formal oral presentation and defense of the research proposal before the Candidacy Examination Committee, scheduled at least two weeks after the submission of the written thesis proposal. The candidacy examination committee is made up of at least three (3) Graduate Faculty in the program selected by the EME graduate program officer. The thesis advisor only serves in an ex-officio role. In addition to its technical content, the oral presentation is also judged for its clarity, adaptation to the audience, organization, appropriate use of visual aids and effectiveness of delivery. For students in the EME M.S. program, the M.S. thesis defense may serve as the Candidacy Examination. At the conclusion of the oral exam, the Committee votes on accepting the student as a Ph.D. candidate. If the exam is not passed on the first attempt, it may be taken once more.

Students are required to take the candidacy exam within three (3) semesters of being admitted to the Ph.D. program. Failure to schedule the exam before the start of the fourth semester of the doctoral program (summer sessions not counted) will be treated equivalently to the student having taken the candidacy exam and failed. Candidates will be allowed a maximum of two (2) attempts to pass the candidacy exam. Students will be permitted to re-take the candidacy exam within the following two semesters of a failure verdict. If the student does not pass the Ph.D. Candidacy Examination at that time, or does not take the exam within this window, the student will be automatically removed from the Ph.D. program.

Students are required to take the qualifying exam within three (3) semesters of being admitted to the Ph.D. program. Failure to schedule the exam before the start of the fourth semester of the doctoral program (summer sessions not counted) will be treated equivalently to the student having taken the qualifying exam and failed. Candidates will be allowed a maximum of two (2) attempts to pass the qualifying exam. Students will be permitted to re-take the qualifying exam within the following two semesters of a failure verdict. If the student does not pass the Ph.D. Qualifying Examination at that time, or does not take the exam within this window, the student will be automatically removed from the Ph.D. program.

3. Revised Graduate Degree Bulletin Listing

Energy and Mineral Engineering (EME)

Program Home Page

SANJAY SRINIVASAN, Department Head for the John and Willie Leone Family Department of Energy and Mineral Engineering
118 Hosler Building
814-865-6082
Email: sanjays@psu.edu
Degrees Conferred:

Ph.D., M.S. (with or without options in Petroleum and Natural Gas Engineering; Mining and Mineral Process Engineering; Fuel Science; and Energy Systems Engineering)

Dual-title M.S. and Ph.D. in Energy and Mineral Engineering and Operations Research

Dual-title M.S. and Ph.D. in Energy and Mineral Engineering and Human Dimensions of Natural Resources and the Environment (HDNRE)

The Graduate Faculty

The Department

The John and Willie Leone Family Department of Energy and Mineral Engineering provides a vertically integrated approach to research and education in all aspects of the energy and mineral industries, including scientific and engineering issues, health and safety, and maintenance of high environmental standards. The department's mission is to forge an intellectual and scientific cohesiveness in energy and mineral resource technology. This objective is achieved by exploiting the natural synergy between the exploration, extraction, processing, and utilization of energy and mineral resources so as to cater to the emerging needs of society.

Energy and Mineral Engineering Program

The Energy and Mineral Engineering (EME) program is a single graduate program with a focus on the production of energy and minerals in an economic, safe and efficient manner. The program provides flexible education of students in energy and mineral engineering, with focus on both non-renewable and renewable resource and energy industries. The program is designed to resolve the sometimes competing goals of flexible education of requisite breadth while still providing in-depth study; students are required to follow a focused curriculum that combines the requisite rigor with flexibility in a rapidly changing field of endeavor. Participating students take select from a broad array of courses to meet the total credit requirements. Students are not required to choose an option and may complete the base program in EME. However, a student who desires disciplinary identity may choose from among the following available graduate options:

- Petroleum and natural gas engineering,
- Mining and mineral process engineering,
- Fuel science, and
- Energy systems engineering.

The EME graduate program offers advanced degrees in Energy and Mineral Engineering (M.S. and Ph.D.). The graduate program has overall requirements for the M.S. and Ph.D. degrees with specific requirements associated with each program. The EME graduate program also offers integrated undergraduate-graduate (IUG) degree programs that combine the M.S. in
Energy and Mineral Engineering with each of the five B.S. degree programs: Energy Business and Finance; Energy Engineering; Environmental Systems Engineering; Mining Engineering; and Petroleum and Natural Gas Engineering.

Admission Requirements

Admission requirements listed here are in addition to requirements stated in the GENERAL INFORMATION section of the Graduate Bulletin. Applicants apply for admission to the program via the Graduate School application for admission.

Scores for the Graduate Record Examinations (GRE) are required for admission. The best-qualified applicants will be accepted by the Energy and Mineral Engineering graduate program up to the number of spaces available for new students.

Admission to the Energy and Mineral Engineering graduate program is competitive. Entering students must hold a bachelor’s degree in a science or engineering discipline, unless they are admitted to the Integrated Undergraduate-Graduate (IUG) program. Students with 3.00 or better (out of 4.00) junior/senior cumulative grade-point averages and appropriate course backgrounds will be considered for admission. Exceptions to the minimum 3.00 grade-point average may be made for students with special backgrounds, abilities, and interests, at the program’s discretion. Letters of recommendation and an applicant’s statement of purpose are also required.

The language of instruction at Penn State is English. English proficiency test scores (TOEFL/IELTS) may be required for international applicants. Consult the English Proficiency section of the Graduate Bulletin Application and Admission Procedures page for more information.

Degree Requirements

Two graduate degrees are offered: Master of Science (M.S.) with thesis and non-thesis tracks, and the Doctor of Philosophy (Ph.D.). Prescribed (core) courses in both graduate degrees are selected from the following list of five (5) core EME courses.

EME 501 (3 cred); EME 511 (3 cred); EME 521 (3 cred); EME 531 (3 cred); EME 551 (3 cred)

M.S. students must take at least two (2) courses (6 credits of core courses) from this list and Ph.D. students must take at least one (1) course (3 credits of core courses) from this list. Ph.D. students without an M.S. are required to take three (3) courses (9 credits of core courses) from this list. An additional set of prescribed twelve (12) option credits (as a minimum) must be taken if the student chooses to pursue an EME disciplinary option (petroleum and natural gas engineering, mining and mineral process engineering, fuel science, or energy systems engineering). Students are not required to choose an option and may complete the base program in EME.

Master of Science Degree Requirements

Requirements listed here are in addition to requirements stated in the DEGREE REQUIREMENTS section of the Graduate Bulletin.

The M.S. degree program in Energy and Mineral Engineering is designed for students to gain advanced knowledge for research, analysis, and design in Energy and Mineral Engineering. Students pursuing an M.S. degree in EME will be required to complete a prescribed culminating research experience and the minimum amount of credits associated with each experience, which include the completion of minimum core and option (if any) course requirements. The thesis and non-thesis M.S. culminating experience tracks are:

**THESIS-BASED M.S. in EME** (30 credits total)
Students are required to complete a minimum of 30 credits total (at least 18 at the 500 or 600 level) including: 24 credits in course work, 6 thesis credits (EME 600, Thesis Research), and a thesis accepted by the adviser(s) and committee members, the head of the graduate program, and the Graduate School. The student must pass a thesis defense.

**NON-THESIS BASED M.S. in EME** (36 credits total)
Students are required to complete a minimum of 36 credits in total (at least 24 at the 500 level) including: 33 credits in course work and 3 credits for the completion of a culminating research experience. Within the 33 credits of coursework, M.S. students must take at least two extra courses (6 credits) from the EME core course list (beyond the six credit M.S. core requirement) or
chosen graduate option (beyond the option's 12-credit minimum option requirement). The non-thesis culminating research experiences are:

- **Paper-based M.S.**: Students take three (3) credits of non-thesis research (EME 596, Individual Studies) and complete a satisfactory scholarly paper evaluated by adviser(s) and a reader.
- **Course-based M.S.**: Students take a capstone research course (EME 580 (3): Research Methods in EME) where they will create a work product demonstrating evidence of analytical thinking and synthesis of knowledge in the Energy and Mineral Engineering field.

## Doctoral Degree Requirements

Requirements listed here are in addition to requirements stated in the [DEGREE REQUIREMENTS](#) section of the [Graduate Bulletin](#).

The Ph.D. program in Energy and Mineral Engineering emphasizes scholarly research and helps students prepare for research and related careers in industry, government and academia. The Ph.D. program in Energy and Mineral Engineering requires completing a minimum of twelve (12) post-M.S. course credits, which must include the completion of all minimum core and option (if any) course requirements, and twelve (12) research credits. For students without an M.S. degree, 24 additional course credits must be taken to complete a total of 36 course credits and 48 credits total overall. At least 18 credits of these must be at the 500 or 600 level. A student’s doctoral committee can require additional course work based on the student’s background and research plans.

Acceptance into the Ph.D. degree program in Energy and Mineral Engineering is based on the student’s performance on the Ph.D. examination administered by the Graduate Faculty of the EME graduate program. The Ph.D. Qualifying Examination in EME is a written examination which will measure the student’s fundamental knowledge of subjects covered in the program and interest area(s) of the individual candidate. It is intended to determine whether a student has the preparation, intellectual capacity, and professional attitude to complete a Ph.D. program successfully.

A Ph.D. comprehensive examination is required of all Ph.D. candidates and should be taken after substantial completion of all Ph.D. course work requirements. To earn the Ph.D. degree, doctoral students must also write a dissertation that is accepted by the doctoral committee, the head of the graduate program, and the Graduate School. In addition, the student must pass a final oral examination (the dissertation defense).

## Graduate Option Requirements

EME students are not required to choose a graduate option and may complete the base program in EME. However, M.S. and Ph.D. students of the EME graduate program who desire disciplinary identity may choose from among the following available graduate options:

* **Energy systems engineering (ESysE)**
* **Fuel science (FSc)**
* **Mining and mineral process engineering (MMPE)**
* **Petroleum and natural gas engineering (PNGE)**

The mandatory minimum course requirement for each of these options is 12 credits (4 courses) selected from the list of option-specific courses provided below. Student may apply the option to either the M.S. or Ph.D. degrees, or both, provided that new and appropriate substitute courses are taken as approved by the EME graduate program officer.

### Energy Systems Engineering (ESysE) Option

Student selects twelve (12) credits from the following list:

- ENNEC 540(3): Economic Analysis of Energy Markets
- EME 522(3): Computational Methods for Electric Power Systems Analysis
- EME 526(3): Solar Utility and Portfolio Management
- EME 527(3): Stochastic Modeling of Spatial Variability in Energy and Environmental System
- IE 505(3): Linear Programming
- IE 516(3): Applied Stochastic Processes

### Fuel Science (FSc) Option

Student completes twelve (12) credits from the following list:
Mining and Mineral Process Engineering (MMPE) Option
Student selects twelve (12) credits from the following list:
MNG 541(3): Surface Mine Equipment Selection Analysis
MNG 554(3): Rock Mechanics Design
MNG 512(3): Mineral Property Evaluation
MN PR 505(3): Particle Separation
MN PR 507(3): Hydrometallurgical Processing

Petroleum and Natural Gas Engineering (PNGE) Option
Student selects twelve (12) credits from the following list:
PNG 501(3): Flow in Porous Media
PNG 502(3): Coupled Flow and Deformation in Porous Media
PNG 512(3): Numerical Reservoir Simulation
PNG 518(3): Design of Miscible Recovery Projects
PNG 520(3): Thermodynamics of Hydrocarbon Fluids
PNG 526(3): Well Stimulation
PNG 530(3): Natural Gas Engineering
PNG 555(3): Unconventional Resources Analysis
PNG 566(3): Reservoir Characterization
PNG 577(3): Production and Completions Engineering

Note for the PNGE Option: PNG 597 (Special Topics), when taught, may be used to partially satisfy the PNGE option minimum credit requirement. However, PNG 596 (Individual Studies) credits may not be used within this option course credit count.

Dual-title M.S. and Ph.D. in Energy and Mineral Engineering and Operations Research

Admissions Requirements
Students must apply and be admitted to the graduate program in EME and The Graduate School before they can apply for admission to the dual-title degree program. After admission to their primary program, students must apply for admission to and meet the admissions requirements of the Operations Research dual-title program. Refer to the Admission Requirements section of the Operations Research Bulletin page. Doctoral students must be admitted into the dual-title degree program in DUAL-TITLE prior to taking the qualifying examination in their primary graduate program.

Degree Requirements
To qualify for the dual-title degree, students must satisfy the degree requirements for the degree they are enrolled in EME, listed above. In addition, students must complete the degree requirements for the dual-title in Operations Research, listed on the Operations Research Bulletin page.

The qualifying examination committee for the dual-title Ph.D. degree will be composed of Graduate Faculty from EME and must include at least one Graduate Faculty member from the Operations Research program. Faculty members who hold appointments in both programs’ Graduate Faculty may serve in a combined role. There will be a single qualifying examination, containing elements of both EME and Operations Research. Dual-title graduate degree students may require an additional semester to fulfill requirements for both areas of study and, therefore, the qualifying examination may be delayed one semester beyond the normal period allowable.

In addition to the general Graduate Council requirements for doctoral committees, the doctoral committee of an EME and Operations Research dual-title Ph.D. student must include at least one member of the Operations Research Graduate Faculty. Faculty members who hold appointments in both programs’ Graduate Faculty may serve in a combined role. If the chair of the doctoral committee is not also a member of the Graduate Faculty in Operations Research, the member of the committee representing Operations Research must be appointed as co-chair. The Operations Research representative on the student’s doctoral committee will develop questions for and participate in the evaluation of the comprehensive examination.

Students in the dual-title program are required to write and orally defend a dissertation on a topic that is approved in advance by their doctoral committee and reflects their original research and education in EME and Operations Research. Upon completion of the doctoral dissertation, the candidate must pass a final oral examination (the dissertation defense) to
earn the Ph.D. degree. The dissertation must be accepted by the doctoral committee, the head of the graduate program, and the Graduate School.

Dual-title M.S. and Ph.D. in Energy and Mineral Engineering and Human Dimensions of Natural Resources and the Environment (HDNRE)

Admissions Requirements

Students must apply and be admitted to the graduate program in EME and The Graduate School before they can apply for admission to the dual-title degree program. After admission to their primary program, students must apply for admission to and meet the admissions requirements of the HDNRE dual-title program. Refer to the Admission Requirements section of the HDNRE Bulletin page. Doctoral students must be admitted into the dual-title degree program in EME prior to taking the qualifying examination in their primary graduate program.

Degree Requirements

To qualify for the dual-title degree, students must satisfy the degree requirements for the degree they are enrolled in EME, listed above. In addition, students must complete the degree requirements for the dual-title in HDNRE, listed on the HDNRE Bulletin page.

The qualifying examination committee for the dual-title Ph.D. degree will be composed of Graduate Faculty from EME and must include at least one Graduate Faculty member from the HDNRE program. Faculty members who hold appointments in both programs’ Graduate Faculty may serve in a combined role. There will be a single qualifying examination, containing elements of both EME and HDNRE. Dual-title graduate degree students may require an additional semester to fulfill requirements for both areas of study and, therefore, the qualifying examination may be delayed one semester beyond the normal period allowable.

In addition to the general Graduate Council requirements for doctoral committees, the doctoral committee of an EME and HDNRE dual-title Ph.D. student must include at least one member of the HDNRE Graduate Faculty. Faculty members who hold appointments in both programs’ Graduate Faculty may serve in a combined role. If the chair of the doctoral committee is not also a member of the Graduate Faculty in HDNRE, the member of the committee representing HDNRE must be appointed as co-chair. The HDNRE representative on the student’s doctoral committee will develop questions for and participate in the evaluation of the comprehensive examination.

Students in the dual-title program are required to write and orally defend a dissertation on a topic that is approved in advance by their doctoral committee and reflects their original research and education in EME and HDNRE. Upon completion of the doctoral dissertation, the candidate must pass a final oral examination (the dissertation defense) to earn the Ph.D. degree. The dissertation must be accepted by the doctoral committee, the head of the graduate program, and the Graduate School.

Integrated Undergraduate-Graduate (IUG) Degree Programs

Integrated B.S. in Energy Business and Finance and M.S. in Energy and Mineral Engineering
Integrated B.S. in Energy Engineering and M.S. in Energy and Mineral Engineering
Integrated B.S. in Environmental Systems Engineering and M.S. in Energy and Mineral Engineering
Integrated B.S. in Mining Engineering and M.S. in Energy and Mineral Engineering
Integrated B.S. in Petroleum and Natural Gas Engineering and M.S. in Energy and Mineral Engineering

The EME graduate program offers integrated B.S./M.S. programs designed to allow academically superior and research-focused undergraduate students in five B.S. degree programs—Energy Business and Finance (EBF); Energy Engineering (ENENG); Environmental Systems Engineering (ENVSE); Mining Engineering (MNG E); and Petroleum and Natural Gas Engineering (PNG E)—also to obtain an M.S. degree in Energy and Mineral Engineering (EME) within five years of study.

IUG Admission Requirements
Students must apply to the program via the Graduate School application for admission, and must meet all the admission requirements of the Graduate School and the EME graduate program for the Master of Science degree, listed above. Undergraduate students with sixth semester standing and minimum grade-point average of 3.5 who wish to complete the Integrated B.S./M.S. program should apply to the Graduate School and the EME IUG program before the end of their junior year. Students shall be admitted to an IUG program no earlier than the beginning of the third semester of undergraduate study at Penn State (regardless of transfer or AP credits accumulated prior to enrollment) and no later than the end of the second week of the semester preceding the semester of expected conferral of the undergraduate degree, as specified in the proposed IUG plan of study.

Three faculty letters of recommendation are required. A statement of purpose and a plan of study covering the five year period, prepared in consultation with an adviser, and approved by the program officers of the B.S. major and the EME graduate program must accompany the application. The plan should be presented in person to the undergraduate and graduate program officers prior to being admitted into the program. The plan should cover the entire time period of the integrated program, and it should be reviewed periodically with an adviser as the student advances through the program. Graduate Record Examination (GRE) scores may be submitted by IUG applicants but are not required. The application will be reviewed by the Admissions Committee of the EME Graduate program and acted upon by the EME Graduate Program Officer.

**IUG Degree Requirements**

Students must fulfill all degree requirements for each degree in order to be awarded that degree, subject to the double-counting of credits as outlined below. Degree requirements for the Bachelor of Science degrees are listed in the Undergraduate Bulletin. Degree requirements for the Master of Science in EME are listed in the Master of Science Degree Requirements section above. Students must sequence their courses so all undergraduate degree requirements are fulfilled before taking courses to count solely towards the graduate degree. If students accepted into the IUG program are unable to complete the M.S. degree, they are still eligible to receive their undergraduate degree if all the undergraduate degree requirements have been satisfied.

Up to 12 credits may be double-counted towards the degree requirements for both the graduate and undergraduate degrees; a minimum of 50% of the double-counted courses must be at the 500 or 800 level. Credits associated with the culminating experience for the graduate degree cannot be double-counted.

The courses that will double count are: six (6) credits of the two 500-level EME core courses taken to satisfy M.S. core requirement and an additional six (6) credits of 400-level courses taken to satisfy 7th and 8th semester core courses from the undergraduate degree:

- Energy Business and Finance: EBF 401 or 473
- Energy Engineering: EME 460, EGEE 441, 451, 464W or F SC432
- Environmental Systems Engineering: ENVSE 404W, 427, 450, 457, 470 or 480
- Mining Engineering: MNG 410, 441, 451, or GEOSC 470W
- Petroleum and Natural Gas Engineering: PNG 420, 425, 430, 440W or 480

**Other Relevant Information**

All graduate students are expected to attend general Department seminars. Graduate students may be asked to contribute to the instructional programs of the Department by assisting with undergraduate laboratory and lecture courses.

**Student Aid**

Graduate students are supported by a variety of government and industry fellowships, and research and teaching assistantships. Stipends vary depending on the source. Please see the STUDENT AID section of the Graduate Bulletin to learn other forms of the student aid. Students on graduate assistantships must adhere to the course load limits set forth in the Graduate Bulletin.

**Courses**

Graduate courses carry numbers from 500 to 699 and 800 to 899. Advanced undergraduate courses numbered between 400 and 499 may be used to meet some graduate degree requirements when taken by graduate students. Courses below the 400 level may not. A graduate student may register for or audit these courses in order to make up deficiencies or to fill in gaps in previous education but not to meet requirements for an advanced degree.
4. Consultation with Other Units Affected by Revised Program

(Consultation – written evidence of consultation with any departments affected by the proposed change. For a change in degree requirements that doesn’t affect any other program, no Consultation is typically necessary; however, if the new requirements include courses from other graduate programs, those programs should provide Consultation stating that they are aware of and approve of the change.)

This proposal involves a revision of an existing program and consultation for changes in our degree requirements is not necessary. Consultation with other Departments is included below for the cases when their courses are part of our proposed revised options.

Consultation with the IE Department (ESysE Option Courses)

(Robert C. Voight, Graduate Program Chair)
March 23, 2018

Mort Webster
Department of Energy and Mineral Engineering

Dear Mort:

Thank you for your inquiry about including two of our Industrial Engineering courses (IE 505 and IE 516) as ‘menu options’ in the proposed new Energy and Energy Systems PhD option in your program. We have no concerns about any enrollment increases that may occur with more of your students enrolled in these IE courses.

This may also increase the number of students from your program who choose to enroll in the Intercollege Operations Research Dual Degree Program, which would be a good thing as well.

Sincerely,

Robert C. Voigt
Professor & Graduate Program Coordinator
Consultation with CHE Department (FSc Option Courses)
(Phillip Savage, Department Head of CHE)

From: Sarma V. Pisupati
Sent: Tuesday, March 27, 2018 8:41 AM
To: Phillip Savage <psavage@engr.psu.edu>
Cc: Luis F. Ayala H. <ayala@psu.edu>
Subject: RE: FSc Option

Thanks a lot Phil for your quick response! I sure think that this would be a great option for students in this area in both departments.

Sarma

From: Phillip Savage [mailto:psavage@engr.psu.edu]
Sent: Tuesday, March 27, 2018 8:38 AM
To: Sarma V. Pisupati <sxp17@psu.edu>
Cc: Luis F. Ayala H. <ayala@psu.edu>
Subject: Re: FSc Option

Sarma

Sure. From a ChE perspective, we have no objections to the courses listed in the option. Looks like a good program to me.

Phil

From: "Sarma V. Pisupati" <sxp17@psu.edu>
Date: Tuesday, March 27, 2018 at 8:29 AM
To: Phillip Savage <psavage@engr.psu.edu>
Cc: "Luis F. Ayala H." <ayala@psu.edu>
Subject: FSc Option

Hi Phil,

Based on your suggestions and our faculty input, the following is being proposed for FSc Option. I would appreciate if you can just send me a quick line that you are in agreement?

Fuel Science (FSc) Option
Student completes the twelve (12) credits from the following list:

F SC 503(3): Analytic Methods in Fuel Science or CH E 510 Surface Characterization of Materials
F SC 504(3): Problems in Fuels Engineering
F SC 506(3): Carbon Reactions
EME 570 (MATSE 570) (3): Catalytic Materials or Ch E 536 Heterogeneous Catalysis
CHE 544(3): General Transport Phenomena or ChE 546 Transport Phenomenon 2
**M E 523(3):** Numerical Solutions Applied to Heat Transfer and Fluid Mechanics Problems

Thanks,

Sarma

******************************************************************************

**Sarma V. Pisupati**
Professor and Chair of Energy Engineering Program
Director of Online Education
John and Willie Leone Family Department of Energy and
Mineral Engineering
Co-Director, Coal Science and Technology Program
EMS Energy Institute
126B Hosler Building
The Pennsylvania State University
University Park  PA 16802
Tel: 814-865-0874
Email: sxp17@psu.edu
******************************************************************************

**Consultation with the MNE Department (FSc Option Courses)**
(Karen Thole, Department Head of MNE)
Dear Sarma,

We are supportive of this change. Thanks for asking and good luck with the option change.

Karen

---

Hi Karen,

We are attempting to restructure our Fuel Science graduate option in Energy and Mineral Engineering by expanding our selections of required courses for the option. Previously, our option needed 9 credits from:

- **EME 570** - Catalytic Materials (3 credits)
- **F SC 503** - Analytic Methods in Fuel Science (3 credits)
- **F SC 504** - Problems in Fuels Engineering (3 credits)
- **F SC 506** - Carbon Reactions (3 credits)

We are proposing the following courses from Ch.E. to be added to the list:

- **CH E 510** (MATSE 510) **Surface Characterization of Materials** (3 credits) or **F SC 503** - Analytic Methods in Fuel Science (3 credits)
- **Ch E 536** **Heterogeneous Catalysis** (3 credits)
- **CH E 546** Transport Phenomena II (3)
- **F SC 504** - Problems in Fuels Engineering (3 credits)
- **F SC 506** - Carbon Reactions (3 credits)
- **M E 523** Numerical Solutions Applied to Heat Transfer and Fluid Mechanics Problems (3 credits)

I expect about 4-5 students at the most per year taking these classes. We need your department’s approval allowing our students to take this ME class. Hence, I am requesting your approval if our students choose your course. I would also need some information as to when this course is typically offered (fall or spring) and how frequently it is offered (once a year or once in two years).
We also welcome any ME students to take our courses.

Please let me know your thoughts/concerns/approval.

Thanks.
Sarma
Graduate Council
Program, Option, or Minor Proposal Form

Submit 1 original, signed Graduate Council proposal form and 2 hardcopies of the graduate program proposal document, with a copy of the signed proposal form attached to each proposal copy, to the Office of the Dean of the Graduate School, 211 Kern Building, University Park. For more information about the process, see the Overview of the Graduate Council Curricular Review Process.

The Program Proposal Procedures provide guidance for the development of a graduate program proposal. If you have questions regarding the preparation of a graduate program proposal or how to complete this Graduate Council proposal form, contact the Office of the Dean of the Graduate School.

College/School: Health & Human Development
Department or Instructional Area: Kinesiology

New Graduate Program, Option, or Minor: Add

Designation of new graduate program:
Classification of Instructional Programs (CIP) Code: ____________
Designation of new graduate option:
Designation of new graduate minor:

Indicate effective semester:
First semester following approval
Second semester following approval

Existing Graduate Program Option, or Minor: Change Drop

Current designation of graduate program:
Current designation of graduate option:
Current designation of graduate minor:

New designation of existing graduate program (if changing): Dual-Title Ph.D. Program in Kinesiology and Bioethics
New designation of existing graduate option (if changing):
New designation of existing graduate minor (if changing):

Brief description of the change (if not noted above): Proposal is to adopt an existing dual-title program

Indicate effective semester:
First semester following approval
Second semester following approval

Submitted by Graduate Program Head

Printed name: Stephen Pizza
Signature: __________________________
Date: 5/3/18

Noted by College/School Representative to Graduate Council Subcommittee on New and Revised Programs and Courses:

Printed name: Braxton Name
Signature: __________________________
Date: 5/17/18

Approved by College/School Dean/Chancellor (or Designee):

Printed name: Kathryn Drager
Signature: __________________________
Date: 5/16/18
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Proposal to Adopt a Dual-Title Ph.D. Degree Program in Kinesiology and Bioethics

Kinesiology Contact:

Stephen J. Piazza
Professor-in-Charge of the Graduate Program in Kinesiology
Professor of Kinesiology
29 Recreation Building
814-865-3413
piazza@psu.edu

Bioethics Contact:

Jonathan H. Marks
Director, Bioethics Program
Associate Professor of Bioethics, Humanities, Philosophy and Law
205 Sparks Building
814-865-5938
jhm20@psu.edu

Joint Contact:

Francisco Javier Lopez Frias
Assistant Professor of Kinesiology and Research Associate in the Rock Ethics Institute
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University Park, PA 16802
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I. Program Proposal

The Department of Kinesiology in the College of Health and Human Development, with the collaboration and support of the Bioethics Program, proposes a Dual-Title Ph.D. Degree Program in Kinesiology and Bioethics.

The program will duplicate no other graduate program at this University. This proposed dual-title degree program will not impact other departments and programs except the two units concerned (Kinesiology and Bioethics).

The purpose of this dual-title degree is to provide Kinesiology Ph.D. students with the skills and knowledge necessary to conduct research and the perspective necessary to fully engage ethical issues within the field of kinesiology, to conduct original bioethics research, and to produce bioethics-related scholarship. Students earning this dual-title degree will graduate with better academic employment opportunities. Rigorous training in bioethics will distinguish dual-title degree graduates from the pool of applicants within the field of kinesiology. It will provide them with the opportunity to apply for academic positions within the growing interdisciplinary field of bioethics. Given economic constraints in the academy and the increasing attractiveness of jointly-funded academic positions (including formal joint appointments), a dual-title degree is likely to be an especially attractive asset in the years ahead. Kinesiology and Bioethics graduates from Penn State could be hired by a variety of academic departments with potential joint appointments in a bioethics center or program. These graduates will also be more attractive and more valuable to potential academic employers because of their enhanced experiences in the grant writing process. Bioethics training will make them better equipped to address the broader social and ethical implications of their work—a task that government funding agencies (such as the National Institutes of Health and the National Science Foundation) increasingly require. In addition, bioethics training will qualify graduates for work in many non-academic positions within governmental and non-governmental organizations, and within the private sector (especially companies that focus on wellness initiatives or the development of health and fitness-related products).

As stipulated by Graduate Council Policy, this document will address in various places:

1. A listing of typical courses available which are appropriate for the dual-title area of study.
2. A statement of the requirements for 400, 500, 600 and 800 level courses in support of the dual-title area of study.
3. Requirements for the qualifying exam and any potential for delay of same.
4. Composition of qualifying examination committee.
6. The administrative process by which students will be admitted to the dual-title Program.
II. Objectives and Justification

A. Objectives of the Dual-Title Ph.D. Program Kinesiology and Bioethics

1. Produce graduates who have the breadth of knowledge, skills, and experience necessary to engage fully with scholarship from the full range of disciplines related to the interdisciplinary fields of kinesiology and bioethics.

2. Enhance employment opportunities for dual-title degree graduates with bioethics training that will prepare them to contribute research and analysis to a broad range of academic and policy programs.

3. Enhance interdisciplinary research and education in bioethics at Penn State.

B. Justification for the Dual-Title Ph.D. Program in Kinesiology and Bioethics

The dual-title Ph.D. degree program in Kinesiology and Bioethics will be unique to Penn State. There are approximately 20 stand-alone Master's programs in bioethics in the U.S. and, in many cases, these degrees may be taken jointly with a medical degree or a law degree. There are also a number of Ph.D. programs (usually in philosophy or health policy) that offer concentrations in bioethics. But there is currently no precedent for a dual-title graduate degree program in bioethics and kinesiology.

Researchers in kinesiology confront a number of ethical issues intrinsic to their research, as well as a number of significant extrinsic bioethical issues related to public health and health policy. The bioethics curriculum will train students in essential theoretical and methodological approaches to bioethics, and explore pressing ethical and policy issues related to physical activity, health, the environment, food and drugs, biotechnology, and global health. Students in the program will also integrate their bioethical inquiries directly into their kinesiology dissertation research, thus leading to research projects that cross disciplinary boundaries.

Graduates of the Kinesiology and Bioethics program will be able to contribute to scholarly discourse on research ethics within their field and to the broader scholarly and public discourses on issues related to public health, global health, and the environment. Through their training in a genuinely interdisciplinary program, involving interaction with students and faculty from diverse disciplines across the life sciences, liberal arts, law, and health and human development, graduates of the Kinesiology and Bioethics program will be uniquely qualified to compete for jobs on the cutting edge of science, ethics and policy.

Such training is of great and growing value to students in Kinesiology as society strives to address the epidemic of obesity and associated non-communicable diseases, and the roles that sedentary lifestyles and work environments play in this public health challenge. This training will also help society grapple with a variety of other questions, including ethical issues related to the application of rehabilitation for patients with neuromuscular disorders.
C. Recruitment, Research, and Employment Opportunities

*Enhanced Graduate Student Recruitment.* Because the proposed Kinesiology and Bioethics dual-title Ph.D. program will be unique, we cannot provide data from other institutions regarding how it would enhance graduate student recruitment. However, it seems very likely that the establishment of this innovative program will help attract talented and highly-motivated graduate students into Kinesiology because of the greater intellectual opportunities it will provide and the enhanced employment prospects it will create. Graduate students who are able to identify bioethical issues within the field of kinesiology are likely to have a better grasp of the significance of the field and how it can address some of the world's most challenging problems. Such an understanding should translate into greater success in graduate school and beyond.

*Enhanced Graduate Research.* Graduate students in the proposed Kinesiology and Bioethics dual-title Ph.D. program will develop the skills to conduct research within their primary field and within the field of bioethics. By participating in the challenging environment of interdisciplinary course work and interacting with faculty across disciplinary divides, students will be encouraged to ask cutting-edge questions and conduct high quality research.

Students with a background in bioethics will be better prepared to write proposals for external funding (particularly NIH and the NSF grants that require applicants to discuss the social and ethical implications of their work), and they will also have the opportunity to publish their work in a wider array of journals. The scholarship of dual-title degree students will enhance kinesiology and contribute to the expansion and enrichment of bioethics at Penn State.

*Enhanced Graduate Student Placement.* Since no precedent exists for the proposed dual-title degree program, it is impossible to provide data illustrating the way in which it is likely to enhance the career prospects of its graduates. However, there is very good reason to believe that students with a dual-title Ph.D. in Kinesiology and Bioethics will graduate with better academic employment opportunities. Rigorous training in bioethics will distinguish dual-title degree graduates from their competitors in the job market. It will also allow them to consider applying for academic positions within the growing interdisciplinary field of bioethics.

Given budgetary constraints in the academy and the increasing attractiveness of jointly-funded academic positions (including formal joint appointments), a dual-title degree is likely to be an especially attractive asset in the years ahead. Graduates with a Ph.D. in Kinesiology and Bioethics from Penn State could be hired by departments that typically hire graduates from Kinesiology, but their hires could also be co-funded by a bioethics program or center.

These graduates will also be more attractive and more valuable to potential academic
employers because of their enhanced grant-writing skills. Their bioethics training will make them better equipped to address the broader social and ethical implications of their work, a task that government funding agencies (such as the National Institutes of Health and the National Science Foundation) increasingly require grant applicants to perform. In addition, bioethics training will increase the ability of graduates to find work in many non-academic positions within governmental and non-governmental organizations, and within the private sector.

D. Enhanced Faculty Research and Grant Opportunities

The proposed Kinesiology and Bioethics dual-title Ph.D. program will enhance the research and grant-earning potential of faculty affiliated with the bioethics program and other faculty in Kinesiology. Faculty will have the opportunity to work with Bioethics graduate students to explore ethical issues relating to their research, enhancing their ability to compete for grants because funding agencies (in particular, the National Institutes of Health and the National Science Foundation) increasingly demand that the social and ethical implications of scientific research be addressed in a substantive way. The program will also enhance the ability of Penn State faculty to apply successfully for grants with a bioethics focus, such as the NIH's Research on Ethical Issues in Human Subjects Research and the NSF's Ethics Education in Science and Engineering. The potential to work with graduate students on cutting-edge research on ethics issues will help recruit excellent researchers to the Penn State faculty in Kinesiology and will help retain existing faculty who have an interest in bioethics.

III. Projected Size of Program

Given the additional course requirements for the dual-title, and the Bioethics Program’s experience with other departments collaborating in the dual title, we do not anticipate a large initial enrollment in the program, probably no more than one or two students per year. Both the Department of Kinesiology and the Bioethics program will advertise the availability of this dual-title degree as part of their graduate recruitment activities and new student orientation, as well as in the Kinesiology Ph.D. Student Handbook, the Kinesiology Prospective Student Handbook, and on the Kinesiology and Bioethics program web sites.

IV. Outcomes of the Kinesiology and Bioethics Dual-Title Ph.D. Degree Program

1. Graduates will have the breadth of knowledge, skills, and experience necessary to engage fully with scholarship from the full range of disciplines related to the interdisciplinary fields of kinesiology and bioethics.

2. Graduates will have a competitive advantage in the job market, being qualified not only for jobs in kinesiology departments but also at bioethics programs and centers.

3. Graduates will have a competitive advantage in grant applications, with the expertise necessary to address the ethical and social implications of biomedicine that are increasingly being demanded by major funding agencies such as NIH and NSF.

4. The dual-title Ph.D. program in Kinesiology and Bioethics will make a significant
contribution to the goal of interdisciplinary research, teaching, and public engagement at Penn State. It is also consistent with the emphasis on health and well-being in Penn State’s 2016-2020 Strategic Plan (“Enhancing Health”).

5. The dual-title Ph.D. program in Kinesiology and Bioethics will foster innovative, interdisciplinary and policy-relevant research related to bioethics issues that have largely been neglected by the field.

V. Program Change

A. Admission Requirements
To pursue a dual-title degree under this program, the student must first apply to be admitted to the Graduate Program in Kinesiology and the Graduate School. They will then be admitted to the dual-title program in Bioethics by an admissions committee consisting of Graduate Faculty affiliated with the Bioethics Program. Applicants should have a junior/senior cumulative undergraduate GPA of at least 3.0 (on a 4.0 scale) and an appropriate background in undergraduate coursework. Prospective dual-title students will write a statement of purpose that addresses the ways in which their research and professional goals reflect an interest in interdisciplinary bioethics research. Doctoral students must be admitted into the dual-title degree program in Bioethics prior to taking the qualifying examination in their primary graduate program.

B. Degree Requirements
To qualify for the dual-title degree, students must satisfy the requirements of the Kinesiology Ph.D. program in which they are primarily enrolled. In addition, they must satisfy the requirements described below, as established by the Bioethics Program. Some courses may satisfy both the Kinesiology and Bioethics course requirements. Within this framework, final course selection is determined by the student, their Kinesiology adviser, and their Bioethics adviser.

Current Course Requirements for the Ph.D. in Kinesiology
A program to meet the individual needs of each student is planned with the adviser in consultation with the Doctoral Committee members. Students should be aware that the requirements listed here can be broadened by the Committee within the spirit of maintaining a high quality individualized degree program. The number of formal courses specified is intentionally minimal. It is expected that the depth of knowledge in each area of study come from independent study and research experiences, in addition to the dissertation, which are under the direction of the faculty.

Regardless of the area of study, the following are required of all Kinesiology doctoral degree students,

- 15 credits selected from the Department of Kinesiology, for all of which the student must receive a quality letter grade
- 6 credits selected from classes offered outside of the Department of Kinesiology, for all of which the student must receive a quality letter grade.
- KINES 590 - Graduate Colloquium, all semesters until after the comprehensive exam has been passed
• Scholarship and Research Integrity (SARI) training (10 hours)

A maximum of six (6) credits only from Independent Studies may count toward the 15 departmental credits required for the degree. Credits need to be taken at the 400, 500, and 600 level in order to be counted toward the degree.

Once the student has passed their comprehensive examination, in the following semester they are not required to take Colloquium (KINES 590). The credits from Colloquium do not count towards the 15 departmental credits required for the degree. It is recommended that graduate students attend colloquia (KINES 590) regularly during all of the semesters that they are in residence (i.e. beyond the minimal requirements) because these talks are designed to be central elements in the Department's intellectual life.

Beyond this minimum of 21 credits, the student’s adviser, and dissertation committee in consultation with the student set the structure and content of the doctoral program.

C. Additional Coursework for the Dual-Title Ph.D. Program

The Bioethics Dual-Title Ph.D. requires 18 credits of coursework. Seven credits toward the dual-title program will come from the following required courses: BIOET 501 (3), BIOET 502 (3), and BIOET 590 (1). BIOET 501 and 502 will count toward the six credits Kinesiology students are required to take outside the department, reducing the total number of additional credits to no more than 12 credits. Students will be expected to attend the Bioethics Colloquium, BIOET 590, even when they are not taking it for credit, as part of professional development in bioethics. At least three additional BIOET credits must be taken at the 500 level. In addition, students must take eight additional credits from a list of approved electives at the 400 and 500 level, with at least two of these credits at the 500 level. Students will be encouraged to take the remaining credits at the 500 level when this is also possible. The list of elective courses includes (among others):

KINES 426 PHYSICAL ACTIVITY AND PUBLIC HEALTH (3)
KINES 439W ETHICS IN SPORT AND SPORT MANAGEMENT (3)
KINES 454 WOMEN'S HEALTH AND EXERCISE ACROSS THE LIFESPAN (3)
KINES 467 THE SCIENCE OF PERFORMANCE ENHANCEMENT (3)
KINES 531 ISSUES IN ATHLETIC TRAINING (3)
KINES 540 HISTORY OF SPORT: CULTURAL AND SOCIAL DYNAMICS (3)
KINES 5XX GENDER, SEXUALITY, & SPORTING BODIES (3) *
KINES 5XX PHILOSOPHY OF PLAY, GAMES, AND SPORT (3) *
KINES 5XX SEMINAR IN THE ETHICS OF SPORT (3) *

* PLEASE NOTE: These three courses labeled “5XX” have been taught as special topics but have since been approved by our Graduate Faculty. They will be added to the roster of elective course in Bioethics once they have been approved through the central curricular review process.

D. Qualifying Examination

In order to pass the qualifying examination in the dual-title degree program, students must meet
the requirements specified by the Kinesiology Department. There will be a single qualifying examination, containing elements of both the primary graduate degree program and Bioethics. The qualifying examination committee for the dual-title Ph.D. degree will be composed of Graduate Faculty from Kinesiology and must include at least one Graduate Faculty member from the Bioethics program. Unless this requirement is waived by the Bioethics Graduate Director, the committee must include one member of the Bioethics Program who is not also a member of Kinesiology faculty. Dual-title graduate degree students may require an additional semester to fulfill requirements for both areas of study and, therefore, the qualifying examination may be delayed one semester beyond the normal period allowable.

E. Committee Composition

In accordance with the Graduate Council's requirements, the doctoral committee shall contain at least four members. However, students will be strongly encouraged to add a fifth member to the committee. The doctoral committee of a Kinesiology and Bioethics dual-title Ph.D. student must include at least one member of the Bioethics Graduate Faculty. Unless this requirement is waived by the Bioethics Graduate Director, at least one of the committee members must be a faculty-member affiliated with the Bioethics Program who is not a member of the Kinesiology faculty. If the committee chair is not affiliated with the Bioethics Program, the faculty member representing the Bioethics Program must be designated as co-chair of the committee. The Bioethics Program representative(s) will be expected to participate in constructing and grading comprehensive examination questions that cover the secondary area of study.

F. Comprehensive Exam

The faculty member (or members) affiliated with the Bioethics Program will be responsible for administering a portion of the comprehensive exam that will require the student to demonstrate an understanding of various theoretical and methodological approaches to bioethics, and an ability to apply them to issues and problems (including, where appropriate, practical problems) in their primary field, kinesiology.

G. Dissertation Topic

A dissertation on a bioethics-related topic or with a substantial bioethics component is required of students in the dual-title Ph.D. program. The bioethics-related topic of the dissertation or the bioethics component will be approved by the student's committee. Upon completion of the doctoral dissertation, the candidate must pass a final oral examination (the dissertation defense) to earn the Ph.D. degree. The dissertation must be accepted by the dissertation committee, the head of the graduate program, and the Graduate School.

H. Courses Available to Fulfill Requirements

Bioethics Courses with the BIOET Prefix (All proposed in Spring 2010 along with the Bioethics program proposal)

BIOET 501 PERSPECTIVES AND METHODS IN BIOETHICS (3)
BIOET 502 PERSPECTIVES IN MACRO-BIOETHICS (3)
BIOET 504 RESEARCH AND INTEGRITY IN SCIENCE AND ENGINEERING (2)
BIOET 533 ETHICAL DIMENSIONS OF RENEWABLE ENERGY AND SUSTAINABLE SYSTEMS (2)
BIOET 540 BIOETICS, BIOPOWER, AND BIOPOLITICS (3)

Elective Courses
The list of elective courses will be maintained by the Director of the Bioethics Graduate Program in consultation with the Bioethics Program Committee. The list currently includes the following courses:

ANTH/BIOL 460 HUMAN GENETICS (3)
ANTH/BIOL 460H HUMAN GENETICS (4)
ANTH 471H BIOLOGY, EVOLUTION AND SOCIETY (3)
BBH 501 BIOBEHAVIORAL SYSTEMS IN HEALTH AND DEVELOPMENT: THEORY AND PROCESSES (3)
BBH 504 BEHAVIORAL HEALTH INTERVENTION STRATEGIES (3)
BBH 551 WORLD HEALTH PROMOTION (3)
BMH 490 BIOETHICS AND MEDICAL HUMANITIES CAPSTONE (3)
BMMB 509 ETHICS IN BIOMEDICAL SCIENCE (1)
CAS 453 HEALTH COMMUNICATION THEORY AND RESEARCH (3)
CAS 557 HEALTH COMMUNICATION (3)
CAS 562 QUALITATIVE RESEARCH METHODS (3)
FRNSC 561 ETHICS IN FORENSIC SCIENCE (1)
HADM 539 HEALTH SYSTEMS ORGANIZATION (3)
HADM 540 HEALTH ADMINISTRATIVE POLICY FORMULATION (3)
HADM 541 HEALTH ECONOMICS AND POLICY (3)
HADM 542 HEALTH CARE POLITICS AND POLICY (3)
HADM 543 LONG-TERM CARE ADMINISTRATION AND POLICY (3)
HADM 551 HEALTH CARE LAW (3)
HPA 401 COMPARATIVE HEALTH SYSTEMS (3)
HPA 510 HEALTH SERVICES FINANCING AND POLICY (3)
HPA 511 RESEARCH SEMINAR ON HEALTH SERVICES FINANCING AND POLICY (3)
HPA 520 INTRODUCTION TO HEALTH SERVICES ORGANIZATION AND DELIVERY (3)
HPA 521 RESEARCH SEMINAR ON HEALTH SERVICES ORGANIZATION AND DELIVERY (3)
HPA 540 EPIDEMIOLOGICAL APPLICATIONS IN HEALTH SERVICES RESEARCH (3)
HPA 541 POVERTY, RACE, ETHNICITY AND CHILD HEALTH (3)
HPA 545 INTRODUCTION TO HEALTH ECONOMICS (3)
HPA 822 CLINICAL ISSUES FOR HEALTH SERVICES MANAGEMENT (3)
HPA 836 HEALTH LAW (3)
HLHED 516 EVALUATION OF HEALTH EDUCATION AND PROMOTION PROGRAMS (3)
HLHED 552 CURRENT HEALTH EDUCATION ISSUES (3)
HLHED 553 MULTICULTURAL HEALTH ISSUES (3)
KINES 426 PHYSICAL ACTIVITY AND PUBLIC HEALTH (3)
KINES 439W ETHICS IN SPORT AND SPORT MANAGEMENT (3)
KINES 454 WOMEN'S HEALTH AND EXERCISE ACROSS THE LIFESPAN (3)
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KINES 540 HISTORY OF SPORT: CULTURAL AND SOCIAL DYNAMICS (3)
KINES 5XX GENDER, SEXUALITY, & SPORTING BODIES (3) *
KINES 5XX PHILOSOPHY OF PLAY, GAMES, AND SPORT (3) *
KINES 5XX SEMINAR IN THE ETHICS OF SPORT (3) *
MCIBS 591 ETHICS IN THE LIFE SCIENCES (1)
NURS 464 DYING AND DEATH (3)
NURS 501 ISSUES IN NURSING AND HEALTH CARE (3)
NURS 580 EPISTEMOLOGY OF NURSING SCIENCE (3)
NURS 587 ETHICS IN NURSING RESEARCH (1)
NUTR 430 GLOBAL FOOD STRATEGIES: PROBLEMS AND PROSPECTS FOR REDUCING WORLD HUNGER (3)
PHIL 403 ENVIRONMENTAL ETHICS (3)
PHIL 418 ETHICS (3)
PHIL 432 MEDICAL AND HEALTH CARE ETHICS (3)
PHS 570 HEALTH ECONOMICS AND ECONOMIC EVALUATION (3)
WMNST/BBH 458: CRITICAL ISSUES IN REPRODUCTION (3)

* These three KINES courses have been taught as special topics, KINES 597, but they have since been approved by our Graduate Faculty. They will be added to the roster of elective courses in Bioethics as soon as they have been approved through the central curricular review process.

I. Fiscal Resources and Extramural Support

It should be possible for dual-title Kinesiology and Bioethics Ph.D. students to obtain their dual-title degree with at most one additional year of course work. When additional support is needed and resources are available, the Kinesiology program will provide additional semesters of graduate assistantship support to dual-title degree students in Kinesiology and Bioethics. In addition to student assistantship scholarships, Kinesiology is at times able to provide stipend support to doctoral students who serve as instructors in Kinesiology Physical Activity Program (KPAP) courses when funds are available to cover tuition. The Bioethics Program will also offer, when possible, financial support through teaching and research assistantships for suitably qualified students. This teaching would help support the undergraduate bioethics curriculum. We will also explore potential external support for dual-title graduate students from government funding agencies and foundations. Bioethics graduate students will also be encouraged to apply for external funding and, given the novelty of the program at Penn State, they should be highly competitive applicants.
J. Accreditation
No accrediting body or board and no licensing procedure are relevant to this proposal.

K. Departments Affected
This program would not duplicate any other graduate program at the University and would only affect the Department of Kinesiology Ph.D. Program and the Bioethics Program.

L. Consultation
Faculty in both Kinesiology and Bioethics have been consulted and are supportive of this dual-title degree program. Letters of support from the Head of the Department of Kinesiology and the Bioethics Program Director are appended to this proposal.

VI. Proposed Changes to the Kinesiology Graduate Bulletin Listing

Kinesiology (KINES)

NANCY I. WILLIAMS, Head of the Department
275 Recreation Building
814-863-0847
kinesgrad@psu.edu

Degrees Conferred:

Ph.D.
M.S.

Dual Title Ph.D. in Kinesiology and Bioethics
Dual Title Ph.D. in Kinesiology and Clinical and Translational Sciences

The Graduate Faculty (link to list of current graduate faculty)

The Programs

The graduate programs in Kinesiology are research oriented and are designed to meet the specific goals and interests of the student. The primary goal of the overall program is to provide students the opportunity to study in depth one area of specialization and to develop necessary research skills to enhance their professional competence. The master's program is designed to prepare students for future graduate study, while the doctoral program is directed toward careers in research and in teaching at the advanced undergraduate and graduate levels in colleges and universities. Six areas of study are available at both the master's and doctoral levels: (1) athletic training and sports medicine, (2) biomechanics, (3) exercise physiology, (4) history and philosophy of sport, (5) motor control, and (6) psychology of physical activity. Several well-equipped research facilities are
available to support graduate study, including the Biomechanics Laboratory, Motor Behavior Laboratory, and Noll Physiological Research Center.

Admission Requirements

Requirements listed here are in addition to requirements stated in the GENERAL INFORMATION section of the Graduate Bulletin. Applicants must complete the online Graduate School application and pay a nonrefundable application fee.

Scores from the Graduate Record Examinations (GRE) are required for admission. The minimum requirements for admission to the master's program include a 3.00 junior/senior grade-point average (on a 4.00 scale), satisfactory recommendations, a total of 1000 or higher on the verbal and quantitative sections of the GRE, and appropriate background courses in physical, biological, behavioral, and/or social science, depending on the intended area of specialization. Applicants from majors other than exercise and sport science/physical education are welcome to apply. In addition, doctoral applicants are expected to meet more stringent admission standards, including documented research capabilities (e.g., from an M.S. degree). Experience is highly desirable. Admission is highly competitive and the best-qualified students will be admitted subject to space availability and compatibility of the student with the department's research mission.

Master's Degree Requirements

Requirements listed here are in addition to requirements stated in the DEGREE REQUIREMENTS section of the Graduate Bulletin.

The M.S. program of study in the Department of Kinesiology requires a minimum of 30 credits, including:

- 6 credits selected from the six Department of Kinesiology areas of graduate study, for all of which the student must receive a quality letter grade;
- 6 credits selected from classes offered outside of the Department of Kinesiology, for all of which the student must receive a quality letter grade;
- KINES 590 - Graduate Colloquium, for two semesters (2 credits);
- KINES 600 - Thesis Research: (6 credits);
- 10 credits of electives.

Each specialization may require additional, specific courses. At least 18 credits in the 500 and 600 series combined must be included in the program. A minimum of 12 credits in course work (400, 500, and 800 series), as contrasted with research, must be completed in the major.

M.S. degree students must complete Scholarship and Research Integrity (SARI) Training (10 hours) and demonstrate proficiency in the English language.

The M.S. degree also requires the formation of a master’s committee, the writing of a satisfactory thesis accepted by the master’s committee, the head of the graduate program, and the Graduate School, and the passing of a thesis defense. The final public oral examination, conducted by the
student's committee members, must be scheduled and passed after all other work, including the M.S. thesis, has been completed.

**Doctoral Degree Requirements**

Requirements listed here are in addition to requirements stated in the DEGREE REQUIREMENTS section of the Graduate Bulletin.

A program to meet the individual needs of each student is planned with the adviser in consultation with the doctoral committee members. Regardless of the area of study, the following are required of all Kinesiology doctoral degree candidates:

- 15 credits selected from the six Department of Kinesiology areas of graduate study, for all of which the student must receive a quality letter grade;
- 6 credits selected from classes offered outside of the Department of Kinesiology, for all of which the student must receive a quality letter grade;
- KINES 590 - Graduate Colloquium, all semesters until after the comprehensive exam has been passed; and
- Scholarship and Research Integrity (SARI) training (10 hours).

Beyond this minimum of 21 credits, the student’s adviser, and dissertation committee in consultation with the student set the structure and content of the doctoral program. A student’s doctoral committee can require additional course work depending on the student’s background and research plans. A maximum of six (6) credits only from Independent Studies may count toward the 15 departmental credits required for the degree.

All doctoral students must pass a qualifying examination, a comprehensive written and oral examination, and a final oral examination (the dissertation defense). To earn the Ph.D. degree, doctoral students must also write a dissertation that is accepted by the doctoral committee, the head of the graduate program, and the Graduate School.

**Dual-Title Ph.D. Degree in Kinesiology and Bioethics (BIOET)**

Kinesiology Ph.D. students may pursue additional training in bioethics through the dual-title Ph.D. program in Bioethics.

**Admissions Requirements**

Students must apply and be admitted to the graduate program in Kinesiology and The Graduate School before they can apply for admission to the dual-title degree program. After admission to their primary program, students must apply for admission to and meet the admissions requirements of the Bioethics dual-title program. Refer to the Admission Requirements section of the Bioethics Bulletin page. Doctoral students must be admitted into the dual-title degree program in Bioethics prior to taking the qualifying examination in their primary graduate program.
Degree Requirements
To qualify for the dual-title degree, students must satisfy the degree requirements for the Ph.D. degree in Kinesiology, listed in the Doctoral Degree Requirements section. In addition, students must complete the degree requirements for the dual-title in Bioethics, listed on the Bioethics Bulletin page.

The qualifying examination committee for the dual-title Ph.D. degree will be composed of Graduate Faculty from Kinesiology and must include at least one Graduate Faculty member from the Bioethics program. Unless this requirement is waived by the Bioethics Graduate Director, the committee must include one member of the Bioethics Program who is not also a member of Kinesiology faculty. There will be a single qualifying examination, containing elements of both Kinesiology and Bioethics. Dual-title graduate degree students may require an additional semester to fulfill requirements for both areas of study and, therefore, the qualifying examination may be delayed one semester beyond the normal period allowable.

In addition to the general Graduate Council requirements for doctoral committees, the doctoral committee of a Kinesiology and Bioethics dual-title Ph.D. student must include at least one member of the Bioethics Graduate Faculty. Unless this requirement is waived by the Bioethics Graduate Director, the committee must include one member of the Bioethics Program who is not also a member of Kinesiology faculty. If the chair of the doctoral committee is not also a member of the Graduate Faculty in Bioethics, the member of the committee representing Bioethics must be appointed as co-chair. The Bioethics representative on the student’s doctoral committee will develop questions for and participate in the evaluation of the comprehensive examination.

Students in the dual-title program are required to write and orally defend a dissertation on a topic that is approved in advance by their doctoral committee and reflects their original research and education in Kinesiology and Bioethics. Upon completion of the doctoral dissertation, the candidate must pass a final oral examination (the dissertation defense) to earn the Ph.D. degree. The dissertation must be accepted by the doctoral committee, the head of the graduate program, and the Graduate School.

Dual-Title Ph.D. Degree in Kinesiology and Clinical and Translational Sciences (CTS)

Doctoral students with research and educational interests in clinical and translational science may apply for the Dual-Title Ph.D. Degree in Kinesiology and Clinical and Translational Sciences following admission to the Graduate School and Kinesiology and prior to taking the qualifying examination in Kinesiology. An admissions committee comprised of faculty affiliated with the dual-title program will evaluate applicants. Applicants must have a graduate GPA of at least 3.5 in a research area related to human health. Prospective dual-title program students will write a statement of purpose that addresses the ways in which their research and professional goals will be enhanced by an interdisciplinary course of study in clinical and translational sciences.

This dual-title degree program emphasizes interdisciplinary scholarship at the interface of basic sciences, clinical sciences, and human health. Students in the dual-title program are required to have two advisers from separate disciplines: one individual serving as the primary mentor in the
Graduate Program in Kinesiology and another individual serving as the secondary mentor in an area covered by the dual-title program who is a member of the Clinical and Translational Sciences faculty.

To qualify for the dual-title degree in Kinesiology and Clinical and Translational Sciences, students must satisfy the Kinesiology Ph.D. degree requirements listed on the Degree Requirements tab. In addition, students must complete the degree requirements for the dual-title in Clinical and Translational Sciences, listed on the Clinical and Translational Sciences Bulletin page. At least half of the 18 elective credits required must be at the 500 or 800 level. Up to 12 credits of course work may overlap with required elective courses of the Graduate Program in Kinesiology.

For students in the dual-title program, the qualifying examination will include content from both Kinesiology and Clinical and Translational Sciences, and must be completed within four semesters (summer sessions do not count) of entry into the Kinesiology graduate program. The qualifying examination committee must include at least one member of the Clinical and Translational Sciences Graduate Faculty. Faculty members who hold appointments in both programs’ Graduate Faculty may serve in a combined role.

In addition to the general Graduate Council requirements for doctoral committees, the doctoral committee of a Kinesiology and Clinical and Translational Sciences dual-title Ph.D. student must include at least one member of the CTS Graduate Faculty. Faculty members who hold appointments in both programs’ Graduate Faculty may serve in a combined role. If the chair of the doctoral committee is not also a member of the Graduate Faculty in Clinical and Translational Sciences, the member of the committee representing Clinical and Translational Sciences must be appointed as co-chair. The fields of Kinesiology and CTS will be integrated in the student’s comprehensive exam, and the doctoral committee member representing CTS is responsible for constructing and grading the parts of the comprehensive exam that cover the CTS field of study.

Dual-title Ph.D. students must complete a dissertation on a topic that reflects their original research and education in both Kinesiology and Clinical and Translational Sciences. In order to earn the dual-title Ph.D. degree, the dissertation must be accepted by the doctoral committee, the head of the graduate program, and the Graduate School, and the student must pass a final oral examination (the dissertation defense).

**Student Aid**

Graduate assistantships that are available to students in this program and other forms of student aid are described in the STUDENT AID section of the Graduate Bulletin. Students on graduate assistantships must adhere to the course load limits set forth in the Graduate Bulletin.

**Courses**

Graduate courses carry numbers from 500 to 699 and 800 to 899. Advanced undergraduate courses numbered between 400 and 499 may be used to meet some graduate degree requirements when taken by graduate students. Courses below the 400 level may not. A graduate student may register
for or audit these courses in order to make up deficiencies or to fill in gaps in previous education but not to meet requirements for an advanced degree.
March 16, 2018

Dr. Stephen J. Piazza  
Professor-in-Charge of the Graduate Program in Kinesiology  
Professor of Kinesiology  
29 Recreation Building  
University Park, PA

Dear Dr. Piazza,

I am writing to express wholehearted support for the adoption of the dual-title Ph.D. in Kinesiology and Bioethics. I have shared a copy of the draft proposal with faculty affiliated in bioethics, and every response to the proposal that I received was enthusiastic.

We consider this dual-title a wonderful addition to the existing suite of collaborations. Your department’s recent hire of Dr. Javier Lopez Frias, a philosopher by training, and the expression of potential interest among your current graduate student cohort is evidence of the viability of the collaboration, as are the many courses in Kinesiology and Bioethics that can double-count in satisfaction of the course requirements of both units. We believe the program will provide wonderful opportunities for your students, and will bring a new cohort of graduates to bioethics who can help us address society’s most pressing issues.

We very much look forward to continuing to work with you, and to building what will be one of the most innovative dual-title collaborations in the country.

Sincerely,

Jonathan H. Marks  
Director, Bioethics Program  
Affiliate Faculty, Law and International Affairs  
The Pennsylvania State University
Graduate Council
Program, Option, or Minor Proposal Form

Submit 1 original, signed Graduate Council proposal form and 2 hardcopies of the graduate program proposal document, with a copy of the signed proposal form attached to each proposal copy, to the Office of the Dean of the Graduate School, 211 Kern Building, University Park. For more information about the process, see the Overview of the Graduate Council Curricular Review Process.

The Program Proposal Procedures provide guidance for the development of a graduate program proposal. If you have questions regarding the preparation of a graduate program proposal or how to complete this Graduate Council proposal form, contact the Office of the Dean of the Graduate School.

College/School: School of Graduate Professional Studies (Penn State Great Valley)
Department or Instructional Area: Management

New Graduate Program, Option, or Minor: Add

Designation of new graduate program: 
Classification of Instructional Programs (CIP) Code: 
Designation of new graduate option: 
Designation of new graduate minor: 

Indicate effective semester:
First semester following approval
Second semester following approval

Existing Graduate Program Option, or Minor: Change Drop

Current designation of graduate program: Master of Leadership Development
Current designation of graduate option: 
Current designation of graduate minor: 

New designation of existing graduate program (if changing): 
New designation of existing graduate option (if changing): 
New designation of existing graduate minor (if changing): 

Brief description of the change (if not noted above): Change to required courses, expanded elective courses, and revised admission requirements in accordance with Graduate School policy.

Indicate effective semester:
First semester following approval
Second semester following approval

Submitted by Graduate Program Head
James A. Nemes
Printed name
Signature
Date: 7/9/18

Noted by College/School Representative to Graduate Council Subcommittee on New and Revised Programs and Courses:
Pornsit Jirapon
Printed name
Signature
Date: 7/1/2018

Approved by College/School Dean/Chancellor (or Designee):
James A. Nemes
Printed name
Signature
Date: 7/9/18
Recommended by Chair, Graduate Council Subcommittee on New and Revised Programs and Courses:

<table>
<thead>
<tr>
<th>On Behalf of David Babb</th>
<th>Signature</th>
<th>Date: 12/15/2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Printed name</td>
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Recommended by Chair, Graduate Council Committee on Programs and Courses:

<table>
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<tr>
<th>On Behalf of C. Andrew Cole</th>
<th>Signature</th>
<th>Date: 12/15/2018</th>
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<tbody>
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</table>

Noted by Dean of the Graduate School:

<table>
<thead>
<tr>
<th>On Behalf of Regina Vasilatos-Younken</th>
<th>Signature</th>
<th>Date: 12/15/2018</th>
</tr>
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<tbody>
<tr>
<td>Printed name</td>
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</table>
Proposal for a Change in the Master of Leadership Development Degree Program

Contact:
Dr. Karen Duhala
Assistant Professor of Accounting and Finance
Interim Professor in Charge
Master of Leadership Development Program
Management Division
The School of Graduate Professional Studies
Penn State Great Valley

April 26, 2018
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New Graduate Bulletin Listing ......................................................................................................... 14
Description of Changes

The Master of Leadership Development (MLD) degree program, which is a professional graduate program offered by the School of Graduate Professional Studies, enrolled its first cohort of students in January 2005. A thorough review of the program was conducted in 2009, and the previous revision was implemented in fall 2010. As part of the faculty’s ongoing quality enhancement efforts, several areas of the program have been identified for change. They include the following:

- BUSAD/LEAD 556 Diversity Leadership has been removed from the Leadership Cornerstones and combined with BUSAD 542 Global Intercultural Management to form a new category within the Leadership Competencies.
- Several revisions have been made to the choice of courses available to meet the ethics requirement.
- A number of courses, both required and elective, have been revised from 500-level to 800-level.
- LEAD 862 Strategic Leadership has been selected to be the new capstone course.
- A category containing BUSAD 551 Business, Ethics and Society and BUSAD 530 Overview of the Biotechnology and Healthcare Industry has been removed.
- The selection of elective courses available in Leadership Contexts has been expanded and the number of credits increased from six to 12.

Justification for the Proposed Changes

Ongoing efforts to review the program include assessment of learning goals under the AACSB Assurance of Learning requirements and periodic surveys of students during the capstone course. The Management Division has also sought feedback from principal stakeholders - alumni, current students in the program serving on the Student Advisory Council, faculty, and members of the business community serving on the Division’s Academic Advisory Council. The Division has also benchmarked the program against AACSB Standards and similar programs at other institutions.

Justification for specific changes are as follows:

- BUSAD/LEAD 556 Diversity Leadership has been moved from a required Leadership Cornerstone and combined with BUSAD 542 Global Intercultural Management to form a separate category within the Leadership Competencies. AACSB specifies that
specialized business master’s programs meet certain requirements, including “Applying specialized knowledge in a diverse global context.” This assures that all students in the program meet the learning goals of the program while having some choice in the focus of the course. The removal of BUSAD/LEAD 556 reduces the number of credits in the Cornerstones from 12 to nine.

- Under Leadership Competencies, the course number for MGMT 573 Corporate Innovative Strategies has been revised to MGMT 873 to meet Graduate Council Guidelines.
- Several changes have been made to the choice of courses available to meet the ethics requirement. A dedicated course designed for the program, PHIL 597 Ethical Dimensions of Leadership, has been replaced with a permanent course, LEAD 863 having the same title and content. Two specialized ethics courses have been removed, and two courses with a leadership focus have been included. STS 589, Ethics and Values in Science and Technology, which is also available online, has been added as a replacement for BUSAD 576.
- Under Leadership Contexts, the course number for LEAD 562 Strategic Leadership has been revised to LEAD 862 to meet Graduate Council guidelines. This course has been selected to be the new capstone. It reflects better alignment with current thinking on the impact of leadership development on organizational performance, and builds on the leadership cornerstone and competencies courses. It is almost exclusively attractive as an advanced course for Master of Leadership Development students, and will be redesigned to include an organizational field project and gamification project. LEAD 882 (formerly LEAD 582) has evolved to become better suited as an M.B.A. elective as well as an elective in the Sustainable Management Practices certificate program.
- Both BUSAD 530 Overview of Biotechnology and Healthcare Industry and BUSAD 551 Business, Ethics, and Society (formerly Business Stakeholder Relations) have evolved since the program was launched, and limiting the students to a choice of these two courses is no longer in the interest of the students. BUSAD 530 is no longer as attractive, and the content of BUSAD 551 has become redundant with that of the courses in the ethics category. The replacement for BUSAD 551, MBADM 815, is now a choice in the ethics category.
- The remaining 12 credits of Leadership Contexts electives may be chosen from a menu of approved courses, compared to six credits under the existing program. This allows students to select individual courses to enhance specific skill sets, such as negotiation
strategies or project management, or focus on clusters related to areas such as entrepreneurship or sustainable management practices.
Comparison of Changes

The following table detail the changes to the proposed program in comparison to the current program as specified in the Bulletin.

**Leadership Cornerstones**

<table>
<thead>
<tr>
<th>Current Program</th>
<th>Credits</th>
<th>Proposed Program</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>LEAD 501 Leadership Across the Life Span</td>
<td>3</td>
<td>[No change]</td>
<td>3</td>
</tr>
<tr>
<td>BUSAD/LEAD 555 Full-Range Leadership Development</td>
<td>3</td>
<td>[No change]</td>
<td>3</td>
</tr>
<tr>
<td>BUSAD/LEAD 556 Diversity Leadership</td>
<td>3</td>
<td>Move to Leadership Contexts</td>
<td>-</td>
</tr>
<tr>
<td>LEAD 557 Leadership Models and Methods</td>
<td>3</td>
<td>[No change]</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total Leadership Cornerstones credit hours</strong></td>
<td>12</td>
<td></td>
<td>9</td>
</tr>
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</table>

**Leadership Competencies**

<table>
<thead>
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<th>Current Program</th>
<th>Credits</th>
<th>Proposed Program</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>LEAD 561 Dynamic Communication in Leadership Contexts</td>
<td>3</td>
<td>[No change]</td>
<td>3</td>
</tr>
<tr>
<td>MGMT 573 Corporate Innovative Strategies OR BUSAD/LEAD 519 Developing Creative High Performance Organizations OR SYSEN 550 Creativity and Problem Solving I</td>
<td>3</td>
<td>MGMT 873 Corporate Innovative Strategies OR BUSAD/LEAD 519 Developing Creative High Performance Organizations OR SYSEN 550 Creativity and Problem Solving I</td>
<td>3</td>
</tr>
<tr>
<td>BUSAD 534 Ethical Dimensions of Management in the Biotechnology and Healthcare Industry OR BUSAD 576 Ethical Issues in Information Technology OR PHIL 597 Ethical Dimensions of Leadership</td>
<td>3</td>
<td>MBADM 815 Ethical and Responsible Business Leadership OR LEAD 863 Ethical Dimensions of Leadership OR PSY 833 Ethics and Leadership: Psychological and Social Processes OR STS 589 Ethics and Values in Science and Technology</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>BUSAD 542 Global Intercultural Management OR</td>
<td>3</td>
</tr>
</tbody>
</table>
### Leadership Contexts

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>LEAD 562 Strategic Leadership</td>
<td>3</td>
<td>Revised to LEAD 862 Strategic Leadership and moved to capstone course</td>
<td></td>
</tr>
<tr>
<td>BUSAD 530 Biotechnology and Health Industry Overview OR BUSAD 551 Business, Ethics, and Society (formerly Business Stakeholder Relations)</td>
<td>3</td>
<td>[Drop]</td>
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</tbody>
</table>

| Context Electives                              | 6       | Context Electives                                | 12      |

| Total Leadership Contexts credit hours         | 12      | 12                                               |         |

### Capstone course

<table>
<thead>
<tr>
<th>Current Program</th>
<th>Credits</th>
<th>Proposed Program</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>BUSAD/LEAD 582 Social Entrepreneurship and Community Leadership</td>
<td>3</td>
<td>BUSAD/LEAD 862 Strategic Leadership</td>
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### Total credit hours

<table>
<thead>
<tr>
<th>Current Program</th>
<th>Credits</th>
<th>Proposed Program</th>
<th>Credits</th>
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<td>Leadership Cornerstones</td>
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<td></td>
<td>9</td>
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<tr>
<td>Leadership Competencies</td>
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<td></td>
<td>12</td>
</tr>
<tr>
<td>Leadership Contexts</td>
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<td></td>
<td>12</td>
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<tr>
<td>Capstone course</td>
<td>3</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Total program credit hours</td>
<td>36</td>
<td></td>
<td>36</td>
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</table>
**Evidence of Consultation**

Consultation on the proposed program change was sought from a range of units across the University as shown below:

<table>
<thead>
<tr>
<th>Unit</th>
<th>Respondent</th>
<th>Remarks</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>School of Graduate Professional Studies</td>
<td>James Nemes, Chancellor and Chief Academic Officer</td>
<td>“I have reviewed the proposed changes to the Master of Leadership Development Program and am fully supportive.”</td>
<td></td>
</tr>
<tr>
<td>Smeal College of Business</td>
<td>Brian Cameron, Associate Dean</td>
<td>“The Smeal College of Business does not have any concerns with this program change proposal. We wish you the best with this program.”</td>
<td></td>
</tr>
<tr>
<td>Department of Psychology</td>
<td>Barbara Watters, Director of Master of Professional Studies in the Psychology of Leadership</td>
<td>PSY 533 Ethics in Leadership...will be numbered 833 as of January, 2019...to be consistent with Graduate Council guidelines regarding 500-versus 800-level courses.</td>
<td>“I support and agree with everything proposed. Benchmarking against various internal and external criteria provided your team with an action plan that will strengthen what is already an excellent program.”</td>
</tr>
<tr>
<td>School of Business Administration, PSU Harrisburg</td>
<td>Stephen P. Schappe, Director</td>
<td>“We have no objections and are”</td>
<td></td>
</tr>
</tbody>
</table>
Black School of Business, PSU Behrend | Greg Filbeck, Director | pleased to support your efforts.”

Online Master of Business Administration | Janet Duck, Director | “I think the revisions look great. I have no concerns or objections.”

| | Please see consultation responses in appendix A. | “I am good with this proposal and with the re-use of the course information developed for MBADM 815 from the OMBA.” |
REVISED GRADUATE BULLETIN LISTING

Leadership Development (LEAD)

JAMES A. NEMES, Interim Chancellor  
School of Graduate Professional Studies  
Penn State Great Valley  
30 East Swedesford Road  
Malvern, PA 19355-1443  
610-648-3335

KAREN DUHALA, Director of Management Programs  
School of Graduate Professional Studies  
Penn State Great Valley, Management Division  
610-648-3229  
Online: www.sgps.psu.edu

Degree Conferred:

Master of Leadership Development (M.L.D.)

The Graduate Faculty

John C. Cameron, J.D. (Temple) Associate Instructional Professor of Management and Organization

Minyoung Cheong, Ph.D. (SUNY, Binghamton) Assistant Professor of Management

Denise Potosky, Ph.D (Rutgers) Professor of Management and Organization

John J. Sosik, Ph.D. (SUNY, Binghamton) Professor of Management and Organization

Eric W. Stein, Ph.D. (Pennsylvania) Associate Professor of Management Science and Information Systems

Cynthia Walton, Ph.D. (Florida) Assistant Professor of Management

The Program

The Penn State Great Valley Master of Leadership Development (MLD) program is a 36-credit interdisciplinary professional program that blends the social and behavioral sciences with ethical studies to develop outstanding organizational and community leaders. As part of the School's Management Division, the program is accredited under the specialized accreditation received from the Association to Advance Collegiate Schools of Business International (AACSB). The program is designed to meet the educational needs of professionals at the middle to senior levels of management. Note that the focus of this program is different from that of the MBA offered by the School: While the MBA program provides an overview of leadership, the purpose of the MLD program is to provide an in-depth analysis of the theory and practice of authentic transformational leadership by providing an environment in which faculty and students can have a complete and open collaboration on what constitutes exemplary leadership. The MLD curriculum
emphasizes strategic leadership and the creation of wealth in organizations, balancing financial measure of performance with learning and growth, and customer and external process perspectives. The program builds on the mid- and high-level managerial and administrative experience of students in order to achieve its goal of promoting positive change in individuals, teams, organizations, and communities. The MLD program develops authentic transformational leadership aimed at enhancing individual, team, and organizational effectiveness.

The program provides training in leadership-relevant research, and some students continue on to pursue a doctoral degree. Required research may be conducted utilizing the Penn State Great Valley's Library and Computer Center, which provide local research support as well as access to the library and computer resources of the entire Penn State system.

The MLD program is geared primarily toward the needs of part-time students who are employed full-time. Courses in the program, which are offered at Great Valley, are scheduled for the convenience of adult learners, mainly in the evening or on Saturdays.

**Admission Requirements**

Requirement listed here are in addition to the requirements stated in the GENERAL INFORMATION section of the Graduate Bulletin. Applicants apply for admission to the program via the Graduate School application for admission.

Admission is granted only to candidates who demonstrate high promise of success for graduate work. Requirements listed here are in addition to the Graduate School requirements stated in the GENERAL INFORMATION section of the Graduate Bulletin.

An undergraduate and/or graduate GPA of at least 3.0 on a 4.0 scale is required for admission. It is strongly preferred that applicants present at least five years of related professional work experience.

All international applicants whose first language is not English or who have not received baccalaureate or master's degrees from an institution in which the language of instruction is English must take the TOEFL (Test of English as a Foreign Language) and receive a minimum of 570 (paper score), or 230 (electronic score), or 80 points on the new Internet-based test with a minimum of 23 points on the speaking portion, or the International English Language Testing System (IELTS) with a minimum composite score of 6.5 for admission and submit the results of that test with the application for admission.

Admission decisions are based on a review of the applicant's professional and academic accomplishments as presented in the Admissions Dossier and the quality of the applicant's credentials in relation to those of other applicants who meet the requirements for admission. A complete Admissions Dossier includes the following:

- online Graduate School application and non-refundable application fee;
- current resume, preferably indicating at least five years of related work experience;
- official transcripts from all post-secondary institutions attended;
- two official transcripts from each regionally accredited college or university attended, (both undergraduate and graduate), with credit conditional equivalent to those required by Penn State; or a postsecondary degree that is equivalent to a U.S. baccalaureate degree earned from an officially recognized degree-granting institution;
- completion of two 300-word leadership essay questions developed by the faculty to assess an applicant’s logical reasoning and writing skills;
- two confidential evaluation forms/letters of endorsement from executives or community leaders detailing their evaluation of the applicant’s leadership ability and potential.

The language of instruction at Penn State is English. English proficiency test scores (TOEFL/IELTS) may be required for international applicants. Consult the English Proficiency section of the Graduate Bulletin and Admission Procedures page for more information.

**Application Filing Dates:** Penn State Great Valley's MLD program has a rolling admissions policy. Students may be admitted and enroll in classes in early September or early January. More detailed information about the program may be found at [http://www.sgps.psu.edu/prospective/academicprograms/leadership/MLD.shtml](http://www.sgps.psu.edu/prospective/academicprograms/leadership/MLD.shtml). More detailed information...
about the application process and the application requirements may be found at http://www.sgps.psu.edu/prospective/academicprograms/leadership/mld/admission.ashx.

Degree Requirements

Requirements listed here are in addition to requirements stated in the DEGREE REQUIREMENTS section of the Graduate Bulletin.

A minimum of 36 credits at the 400, 500, or 800 level is required, with a minimum of 18 credits at the 500 or 800 level. Thirty-six (36) credits are required to complete the MLD degree. A series of leadership cornerstone (12 credits) and leadership competency courses (9-12 credits) are required to provide all MLD students with a common body of knowledge. Leadership Context courses (12 credits) and a Capstone course (3 credits) round out the program.

Leadership Cornerstone courses (12-9 credits) provide a foundation for leadership development studies. They include: LEAD 501 (Leadership Across the Lifespan) (3 cr.), BUSAD 555/LEAD 555 (Full-Range Leadership Development) (3 cr.), BUSAD/LEAD 556 (Diversity Leadership), and LEAD 557 (Leadership Models and Methods) (3 cr.).

Leadership Competency courses (9-12 credits) build a foundation for effective leadership communication, creativity/innovation, and moral development. They include: LEAD 561 (Dynamic Communication in Leadership Contexts) (3 cr.), MGMT 5873 (Corporate Innovation Strategies) or SYSEN 550 (Creativity, Innovation, and Change) or BUSAD/LEAD 519 (Developing Creative High Performance Organizations) (3 cr.), BUSAD 556 or BUSAD 542 (3 cr.) and MBADM 815 or BUSAD 576 (Ethical Issues in Information Technology) (3 cr.).

Leadership Context courses (12 credits) provide an overview of the situations in which leadership processes are embedded. Students can choose 4 context-specific electives (12 credits). They include: LEAD 562 (Strategic Leadership), BUSAD 551 (Business Environment) or BUSAD 530 (Biotechnology and Health Industry Overview), and a choice of 2-4 context-specific electives (6-12 credits). A list of courses that will fulfill this requirement is maintained by the program office.

All students must complete a capstone course that provides students with an opportunity to enact what they have learned in their course work in the context of promoting positive change in their community organizations. LEAD 582 (Social Entrepreneurship and Community Leadership) (3 cr.) is the capstone course for this program.

Student Aid

Graduate assistantships available to students in this program and other forms of student aid are described in the Student Aid of the Graduate Bulletin. Students on graduate assistantships must adhere to the course load limits set forth in the Graduate Bulletin.

There are a limited number of scholarships, fellowships, and graduate assistantships available. For more information on these, contact the Financial Aid Office at Penn State Great Valley.

Most students work full-time and take classes part-time. In many cases, employers have a tuition-reimbursement plan paying for partial or full tuition. To learn more about payment options for students who receive employer tuition reimbursement benefits, or for more information about financial aid and on other payment options that may be available to you, contact the Great Valley Financial Aid Office, 610-648-3311.

Courses

Graduate courses carry numbers from 500 to 599, 600 to 699 and 800 to 899. Advanced undergraduate courses numbered between 400 and 499 may be used to meet some graduate degree requirements when taken by graduate students. Courses below the 400 level may not. A graduate student may register for or audit these courses in order to make up deficiencies or to fill in gaps in previous education but not to meet requirements for an advanced degree.

BUSINESS ADMINISTRATION (BUSAD) courses
INTERNATIONAL BUSINESS (IB) courses
LEADERSHIP (LEAD) courses
MANAGEMENT (MGMT) courses
PSYCHOLOGY courses
SYSTEMS ENGINEERING (SYSEN) courses
SCIENCE AND TECHNOLOGY courses

Last Revised by the Department: Spring Semester 2010

Blue Sheet Item #: 38-06-138
Review Date: 04/13/2010
Faculty linked: 8/14/14
NEW GRADUATE BULLETIN LISTING

Leadership Development (LEAD)

JAMES A. NEMES, Interim Chancellor
School of Graduate Professional Studies
Penn State Great Valley
30 East Swedesford Road
Malvern, PA 19355-1443
610-648-3335

KAREN DUHALA, Director of Management Programs
School of Graduate Professional Studies
Penn State Great Valley, Management Division
610-648-3229
Online: www.sgps.psu.edu

Degree Conferred:
Master of Leadership Development (M.L.D.)

The Graduate Faculty

John C. Cameron, J.D. (Temple) Associate Instructional Professor of Management and Organization
Minyoung Cheong, Ph.D. (SUNY, Binghamton) Assistant Professor of Management
Denise Potosky, Ph.D. (Rutgers) Professor of Management and Organization
John J. Sosik, Ph.D. (SUNY, Binghamton) Professor of Management and Organization
Eric W. Stein, Ph.D. (Pennsylvania) Associate Professor of Management Science and Information Systems
Cynthia Walton, Ph.D. (Florida) Assistant Professor of Management

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The program provides training in leadership-relevant research, and some students continue on to pursue a doctoral degree. Required research may be conducted utilizing Penn State Great Valley’s research support as well as access to the library and computer resources of the entire Penn State system.

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- completion of two 300-word leadership essay questions developed by the faculty to assess an applicant’s logical reasoning and writing skills;
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Leadership Cornerstone courses (9 credits) provide a foundation for leadership development studies. They include: LEAD 501 (3 cr.), BUSAD 555/LEAD 555 (3 cr.), and LEAD 557 (3 cr.).

Leadership Competency courses (12 credits) build a foundation for effective leadership communication,
creativity/innovation, and moral development. They include: LEAD 561 (3 cr.), MGMT 873 or SYSEN 550 or BUSAD/LEAD 519 (3 cr.), BUSAD/LEAD 556 or BUSAD 542 (3 cr.), and MBADM 815 or LEAD 863 or PSY 833 or STS 589 (3 cr.).

Leadership Context courses (12 credits) provide an overview of the situations in which leadership processes are embedded. They include a choice of 4 context-specific electives. Students can choose 4 context-specific electives (12 credits). A list of courses that will fulfill this requirement is maintained by the program office.

All students must complete a capstone course that provides students with an opportunity to enact what they have learned in their course work in the context of promoting positive change in organizations. LEAD 862 (3 cr.) is the capstone course for this program.

**Student Aid**

Graduate assistantships available to students in this program and other forms of student aid are described in the Student Aid section of the Graduate Bulletin. Students on graduate assistantships must adhere to the course load limits set forth in the Graduate Bulletin.

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- **BUSINESS ADMINISTRATION (BUSAD) courses**
- **INTERNATIONAL BUSINESS (IB) courses**
- **LEADERSHIP (LEAD) courses**
- **MANAGEMENT (MGMT) courses**
- **PSYCHOLOGY (PSY) courses**
- **SYSTEMS ENGINEERING (SYSEN) courses**
- **SCIENCE AND TECHNOLOGY (STS) courses**
Hi Ursula,

This email exchange needs to be provided as documentation with the MLD revision proposal. I am forwarding you the changes to the proposal in a separate email.

KD

Hi Janet,

Thanks for reviewing this. I believe that it will carry our local section number, such as 101 or 301 if offered at the GV campus, so there would not be any confusion with the OMBA sections.

KD

Hi Karen,

Thanks for the reminder... after review of this information, I am good with this proposal and with the re-use of the course information developed for MBADM 815 from the OMBA. As I understand, this will be noted as "Section 5" so that the reports on MBADM classes with the same prefix/# are easily identifiable. Is this also your understanding?

Janet
From: Duhala, Karen  
Sent: Wednesday, June 27, 2018 4:52:22 PM  
To: Duck, Janet  
Subject: FW: MLD Revision Proposal  

Hi Janet,

We are preparing to submit the MLD proposal and we are missing only your consultation. As noted below, we do not intend for students to take the online course but rather only are using the number for the ethics course going forward. We would appreciate if you can take a few minutes to review the proposal. Thanks!

Karen

---

From: Duhala, Karen  
Sent: Wednesday, May 16, 2018 5:50 PM  
To: Duck, Janet <jmd226@psu.edu>  
Subject: MLD Revision Proposal  

Hi Janet,

We are in the process of submitting a program revision for the Master of Leadership Development. We had planned to use the MBADM 815 course number for our MBA ethics course going forward, as the University has encouraged programs from developing new courses when similar courses were already in the Bulletin. This is reflected in the proposal as one of the ethics course choices. Vicki Hewitt has asked that your program review the proposal. We are not planning for our resident students to take your online course, only use the same number for the resident course, as John Cameron is developing the course and is the primary faculty member for the course here.

Thanks for reviewing this. If you have any questions, please contact me.

Karen

---

Karen Duhala, Ph.D.  
Assistant Professor of Accounting and Finance  
Director of Management Programs  
Professor-in-charge, Master of Leadership Development Program  
Management Division  
Penn State Great Valley  
Kxd27@psu.edu  
610-725-5378
Graduate Council
Program, Option, or Minor Proposal Form

Submit 1 original, signed Graduate Council proposal form and 2 hardcopies of the graduate program proposal document, with a copy of the signed proposal form attached to each proposal copy, to the Office of the Dean of the Graduate School, 211 Kern Building, University Park. For more information about the process, see the Overview of the Graduate Council Curricular Review Process.

The Program Proposal Procedures provide guidance for the development of a graduate program proposal. If you have questions regarding the preparation of a graduate program proposal or how to complete this Graduate Council proposal form, contact the Office of the Dean of the Graduate School.

College/School: Penn State Harrisburg Capital College / Behavioral Sciences and Education
Department or Instructional Area: Applied Psychological Research Education

New Graduate Program, Option, or Minor: Add

Designation of new graduate program:
Classification of Instructional Programs (CIP) Code: Penn State Graduate School
Designation of new graduate option:
Designation of new graduate minor:

Indicate effective semester:
First semester following approval
Second semester following approval

Office of the Vice Provost and
Dean of the Graduate School

Existing Graduate Program Option, or Minor: Change Drop

Current designation of graduate program: Applied Psychological Research M.A. Program
Current designation of graduate option:
Current designation of graduate minor:

New designation of existing graduate program (if changing):
New designation of existing graduate option (if changing):
New designation of existing graduate minor (if changing):

Brief description of the change (if not noted above): Program Closure

Indicate effective semester: Immediately
First semester following approval
Second semester following approval

Submitted by Graduate Program Head
Gina Brusford
Printed name
Date: 10/31/18
Signature

Noted by College/School Representative to Graduate Council Subcommittee on New and Revised Programs and Courses:
John R. Haddad
Printed name
Date: 11/1/18
Signature

Approved by College/School Dean/Chancellor (or Designee):
Peter Idowny
Printed name
Date: Nov. 6, 2018
Signature
Recommended by Chair, Graduate Council Subcommittee on New and Revised Programs and Courses:

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<th>On Behalf of David Babb</th>
<th>Signature</th>
<th>Date: 12/5/18</th>
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Recommended by Chair, Graduate Council Committee on Programs and Courses:

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<th>On Behalf of C. Andrew Cole</th>
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Noted by Dean of the Graduate School:

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<th>On Behalf of Regina Vasilatos-Younken</th>
<th>Signature</th>
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October 10, 2018

RE: Closure of Applied Psychological Research M.A. program

The psychology faculty have voted to close the Applied Psychological Research M.A. program at Penn State Harrisburg. This program closure was prompted via administrative review and the faculty concurred with the closure. This program closure will have minimal impacts on students. There are no current students in the program. In addition, there may be mild impacts on course enrollments in the Applied Clinical Psychology program as some of these courses were also required for our Applied Psychological Research students. No other campuses offer this program.

Further, the IUG psychology program that funneled students into the Applied Psychological Research M.A. currently has only one student enrolled with a plan for graduation in 2019. This student will have access to the required courses she needs to complete the degree as most of these classes overlap with the Applied Clinical Psychology students’ core courses (e.g., Statistics). She also has a faculty mentor working with her through the remainder of her time in the program. The apprenticeship model with a faculty member was the crux of this program and thus most of her time will be spent working with this faculty member on research. We will not be taking new students into the IUG program because of this closure.

Sincerely,

[Signature]

Gina M. Brelsford, Ph.D.
Professor-in-Charge M.A. Applied Clinical Psychology Program
Professor-in-Charge M.A. Applied Psychological Research Program
Re: closure of the Applied Psychological Research program-consultation

Hetzel-Riggin, Melanie Dyan
Wed 10/17, 9:34 AM
Breisford, Gina; Brown, Wilson James

Curricular changes

You forwarded this message on 10/19/2018 10:45 AM

Gina,

I am also sad to hear about this, as I think that there is are students who could take advantage of a research masters degree in psychology at Penn State. I understand your need given recent numbers, but hopefully if the tide changes in the future we could revisit together what a research masters degree in psychology would look like.

I sadly support this decision.

Best,
Melanie D. Hetzel-Riggin, Ph.D.

On Oct 16, 2018, at 2:46 PM, Breisford, Gina <gmv103@psu.edu> wrote:

Hi Wilson:

Thank you. I agree that it is unfortunate we have to close the program. My hope is that in the future new programs can fill this void.

Gina M. Breisford, Ph.D.
Associate Professor of Psychology
Professor-In-Charge, M.A. Applied Clinical Psychology program
Associate Editor, Psychology of Religion and Spirituality
Licensed Clinical Psychologist (PA)

Penn State Harrisburg
W311 Olmsted Building
777 W. Harrisburg Pike
Middletown, PA 17057
gmv103@psu.edu
717-948-6759 (office)

From: Brown, Wilson James
Sent: Tuesday, October 16, 2018 11:06 AM
To: Breisford, Gina; Hetzel-Riggin, Melanie Dyan
Subject: RE: closure of the Applied Psychological Research program-consultation

Hi Gina,

I'm sorry to hear this. At Penn State Behrend, we have been hopeful, given the strong research core in our undergraduate psychology program, of pursuing an APSYR MA program in the future. However, it makes sense at this point to enhance the focus on the ACPSY program. I am in support of this decision.
Wilson J. Brown, Ph.D.
Program Coordinator, Applied Clinical Psychology M.A. Program
Assistant Professor of Clinical Psychology
School of Humanities & Social Sciences
Pennsylvania State University, The Behrend College
4701 College Drive
Erie, PA 16563
(814) 898-6936
wilsonbrown@psu.edu

From: Brelsford, Gina
Sent: Monday, October 15, 2018 5:34 PM
To: Brown, Wilson James <wjb172@psu.edu>; Hetzel-Riggin, Melanie Dyan <mdh33@psu.edu>
Subject: closure of the Applied Psychological Research program-consultation

Dear Wilson and Melanie:

We are closing to the Applied Psychological Research (APSYR) M.A. program at Penn State Harrisburg. I realize that you do not offer that particular program at your campus, but you do offer the Applied Clinical Psychology (APSYC) M.A. program. In fact, we are the only program to offer the APSYR program. Thus, we value your opinion and request formal consultation on the closure. We are closing the program due to low enrollment for many years. Our closure was encouraged by administration and will allow us to focus on the strong ACPSY program that we have at both of Penn State Harrisburg and Penn State Erie.

Can you please let me know if you support this closure?

Thank you.

Gina M. Brelsford, Ph.D.
Associate Professor of Psychology
Professor-in-Charge, M.A. Applied Clinical Psychology program
Associate Editor, Psychology of Religion and Spirituality
Licensed Clinical Psychologist (PA)

Penn State Harrisburg
W311 Olmsted Building
777 W. Harrisburg Pike
Middletown, PA 17057
## Applied Psychological Research
### Harrisburg Capital College

### Applied Psychological Research – Admissions Data

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<td>Applications</td>
<td>8</td>
<td>3</td>
<td>4</td>
<td>11</td>
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<td>21</td>
<td>18</td>
<td>14</td>
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<td>8</td>
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<tr>
<td>Offers (% selectivity)</td>
<td>5 (83%)</td>
<td>2 (67%)</td>
<td>4 (100%)</td>
<td>6 (55%)</td>
<td>5 (50%)</td>
<td>13 (62%)</td>
<td>8 (44%)</td>
<td>4 (29%)</td>
<td>2 (20%)</td>
<td>2 (25%)</td>
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<td>Accepts (% yield)</td>
<td>4 (80%)</td>
<td>1 (50%)</td>
<td>2 (50%)</td>
<td>4 (87%)</td>
<td>2 (40%)</td>
<td>9 (60%)</td>
<td>4 (50%)</td>
<td>2 (50%)</td>
<td>1 (50%)</td>
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(last updated 08/01/2018)

### Applied Psychological Research – Average GRE Scores for New Enrollees*

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<tr>
<td>Analytical (P)†</td>
<td>-</td>
<td>-</td>
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<tr>
<td>Verbal (P)†</td>
<td>c</td>
<td>c</td>
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<td>c</td>
<td>157.50 (74%)</td>
<td>c</td>
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n=8

| Quantitative (P)† | c       | c       | c       | c       | c       | 156.33 (68%) | c       | c       | c       | c       |

n=8

| Analytical Writing (P)† | c       | c       | c       | c       | c       | 4.40 (98%) | c       | c       | c       | c       |

n=5

*GRE tests taken on or after August 1st, 2011 are scored according the following scale:

Verbal Reasoning: 130 - 170, 1 point increments
Quantitative Reasoning: 130 - 170, 1 point increments
Analytical Writing: 0 - 6, half point increments

For tests taken prior to August 1st, 2011, scores were converted to the new scale accordingly.

TP = Percentile Ranking

| c = data not displayed because n is too small to protect confidentiality of the student data
| "-" indicates n=0

(last updated 08/01/2018)
### Applied Psychological Research – Jr/Sr GPA for New Enrollees

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<tr>
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<td>c</td>
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<td>n=8</td>
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c = data not displayed because n is too small to protect confidentiality of the student data
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### Applied Psychological Research – Demographics for New Enrollees

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<td>Total New Enrl</td>
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<td>1</td>
<td>2</td>
<td>1</td>
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<td>-</td>
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<td>2 (33%)</td>
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<tr>
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<td>3 (50%)</td>
<td>c</td>
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<td>Two or More</td>
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<td>c</td>
<td>c</td>
<td>1 (17%)</td>
<td>c</td>
<td>c</td>
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</tr>
<tr>
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</tbody>
</table>

*URM: Underrepresented Minorities
†Two or More: Applicant selected more than one race/ethnicity.
‡Unknown: Applicant chose not to disclose race/ethnicity information.

c = data not displayed because n is too small to protect confidentiality of the student data
"-" indicates n=0

### MA

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<td>c</td>
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<td>c</td>
<td>c</td>
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<tr>
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c = data not displayed because n is too small to protect confidentiality of the student data
"-" indicates n=0
### Applied Psychological Research – Total Enrollments by Degree

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### Applied Psychological Research – Total Enrollments by Demographic

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<tr>
<td>Domestic</td>
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<td>9 (100%)</td>
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<td>5 (100%)</td>
<td>12 (100%)</td>
<td>12 (92%)</td>
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</tr>
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<td>Total URM</td>
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<td>1 (20%)</td>
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<tr>
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<td>c</td>
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</tr>
<tr>
<td>Hawaiian/Pac. Is.</td>
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<td>Hispanic/Latino</td>
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<td>Asian</td>
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<td>-</td>
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<td>c</td>
<td>-</td>
<td>3 (25%)</td>
<td>3 (23%)</td>
<td>1 (11%)</td>
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<tr>
<td>White</td>
<td>9 (100%)</td>
<td>8 (89%)</td>
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<td>c</td>
<td>4 (80%)</td>
<td>7 (58%)</td>
<td>8 (92%)</td>
<td>7 (73%)</td>
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<td>c</td>
<td>2 (17%)</td>
<td>1 (8%)</td>
<td>-</td>
<td>-</td>
<td>c</td>
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<tr>
<td>Unknown</td>
<td>-</td>
<td>1 (11%)</td>
<td>c</td>
<td>c</td>
<td>-</td>
<td>-</td>
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<td>-</td>
<td>-</td>
<td>c</td>
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<tr>
<td>International</td>
<td>-</td>
<td>-</td>
<td>c</td>
<td>c</td>
<td>-</td>
<td>1 (8%)</td>
<td>1 (11%)</td>
<td>c</td>
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</tbody>
</table>

- URM: Underrepresented Minorities
- Two or More: Applicant selected more than one race/ethnicity.
- Unknown: Applicant chose not to disclose race/ethnicity information.
- "c" = data not displayed because n is too small to protect confidentiality of the student data
- "/" indicates n=0

### Gender

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<tr>
<td>Female</td>
<td>8 (89%)</td>
<td>7 (76%)</td>
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<td>3 (60%)</td>
<td>7 (58%)</td>
<td>7 (58%)</td>
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<td>Male</td>
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<td>2 (22%)</td>
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<td>2 (40%)</td>
<td>5 (42%)</td>
<td>6 (46%)</td>
<td>3 (23%)</td>
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<tr>
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<td>2</td>
<td>4</td>
<td>5</td>
<td>12</td>
<td>13</td>
<td>9</td>
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- "c" = data not displayed because n is too small to protect confidentiality of the student data
- "/" indicates n=0
## Applied Psychological Research – Total Degrees Conferred by Degree

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*"* indicates n=0

*Advisor/Reporting Department data is unavailable for this year.

## Applied Psychological Research – Median Time to Degree (years)

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<td>In Major/Degree *</td>
<td>3.4</td>
<td>3.4</td>
<td>4.5</td>
<td>-</td>
<td>5.7</td>
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<td>6.3</td>
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<td>7.3</td>
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<td>n=7</td>
<td>n=3</td>
<td>n=6</td>
<td>n=6</td>
<td>n=2</td>
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*In Major/Degree: The median time to degree in graduating major and degree at Penn State.

**First Enrollment: The median time to degree based on the first enrollment as a graduate student at Penn State.

*"* indicates n=0

## Applied Psychological Research – Degree Completion, HB Campus

<table>
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<tr>
<th>MA</th>
<th>#Started</th>
<th>1 year</th>
<th>2 years</th>
<th>3 years</th>
<th>4 years</th>
<th>5 years</th>
<th>6 years</th>
<th>7 years</th>
<th>8 years</th>
<th>9 years</th>
<th>Total Completed</th>
<th>% Completed</th>
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<td>2008/09 Cohort</td>
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<td>-</td>
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<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>4</td>
<td>80%</td>
</tr>
<tr>
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<tr>
<td>2010/11 Cohort</td>
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*"* indicates n=0

(Last updated 06/01/2016)