

**PURDUE UNIVERSITY
GRADUATE SCHOOL**

Minutes of the Graduate Council Meeting
March 21, 2019
1:30 p.m.

Sixth Meeting
Room 218CD
STEW

PRESENT: Linda J. Mason, chair, Council Members, Dulcy M. Abraham, Christopher R. Agnew, Blake A. Allan, Thomas W. Atkinson, Taylor W. Bailey, Rita A. Burrell, Ryan A. Cabot, David S. Cochran, William (Bart) Collins, G. Jonathan Day, Duane D. Dunlap, Keith B. Gehres, Richard H. Grant, Patricia Hart, Mary E. Johnson, Signe E. Kastberg, David B. Klenosky, Samuel P. Midkiff, James L. Mohler, John A. Morgan, Melanie Morgan, Paul Salama, Abraham Schwab, David G. Skalnik, Rebecca H. Stankowski, Xavier M. Tricoche, Kevin Trimble, Candiss B. Vibbert (Provost's Representative), Nicole J. Widmar

APOLOGIES FOR ABSENCE RECEIVED FROM: Michael J. Connolly, Brian R. Dineen, Michael C. Loui, Tina L. Payne, Manushag (Nush) Powell, Carol S. Sternberger

ABSENCES: Janice S. Blum, Kuan-Chou Chen, Marius D. Dadarlat, Melissa M. Franks, Susan M. Mendrysa, Paul F. Muzikar, Rhonda G. Phillips, Megan Sapp Nelson, Anson Soderbery, Mitchell L. Springer, Yoon Yeo, Daoguo Zhou

GUESTS: Robin Cunningham, Debbie Fellure, David Starnes, Korena Vawter

I. MINUTES

The minutes of the February 21, 2019, Graduate Council meeting were approved as presented.

II. DEANS REMARKS AND REPORTS

- a. Dr. Linda Mason reminded the Graduate Council members that if they have any proposals, agreements, new programs, etc. that they are going to be starting she would prefer not to read about it in the newspaper first. As you work with your colleagues and if you hear of a new degree, or an agreement, or a joint degree that is happening between us and another institution, we would appreciate if you could guide your fellow faculty to work through the graduate approval process first. Students come to the Graduate School and say they want to apply to this new degree that they saw in the newspaper; however, if it had not gone through the approval process, it is not available to students. Dr. Mason noted that there is a process that a program can announce they are signing an agreement to investigate or to develop the

proposal to move something forward. But that language needs to relay that this degree is being proposed (not approved yet) and students cannot start signing up for it right away. We cannot say we have a degree just because someone is signing a proposal. We can work toward a quick approval by the Graduate Council and Indiana Commission of Higher Education (ICHE) if necessary, depending on what your program wants to do.

- b. Dr. Mason asked the Graduate Council to remind their reporting bodies on the GRAD 69800 and GRAD 69900 research credit courses that students who are taking a research credit course must have a discussion within the first two weeks of the semester with the major professor or whomever is going to be guiding the course. A list of requirements of what is expected for an S versus a U grade is required. This should be documented in some way; the Graduate School is not dictating what that is. If this is not documented, a faculty could lose a grade appeal. Recently it has come to Dr. Mason's attention that faculty are not aware of this new requirement, even though the information was sent in an email at the beginning of the semester. Originally, we wanted this to be part of the registration process, but it was determined that another approach was needed. Dr. Mason asked Dr. James Mohler for an update on that process.

Dr. James Mohler noted that the University is creating an electronic Form 23 process, so we were going to put the requirements for these courses in there, but it technologically would not work. We met with a group from the Registrar's Office and a group from ITAP to talk about a technological solution. It is not a perfect solution, as any technological solution is never perfect. The best way to handle this is to handle it like the way in which Initial Course Participation (ICP) does in tracking of students attending the first three weeks of class. There is a checkbox in myPurdue and the idea would be that there would be a checkbox in myPurdue for research credit courses where you could go in and select and check off - "yes" we have come to some agreement. It does not track what the agreement is; it is just an acknowledgement that you have got something somewhere that says you have agreed with the student as to what is expected for the deliverables of the research credit course. Dr. Mohler noted the intent is that once a student is signed up and that checkbox has not been selected on day one of courses, faculty and student will receive an email stating that all need to come to an agreement. At the end of the first week, the same email will be received if it has not been checked off. At the end of the second week, the same email will be received if it has not been checked off. After the end of the second week the risk is on the faculty member if that checkbox has not been signed off and if the faculty member goes in and blindly checks it off and you have no documentation, the risk is again on the faculty member. We are trying to implement this, but not make it too cumbersome. Dr. Mohler noted that for those who have many students, you will be able to "Select All" and check it off for all of them. Also, the student will not be dismissed from the course if you do not do the check off.

- c. Dr. Mason noted the new feature for the Thesis/Dissertation submission using the Hammer Research Repository (HammerRR) implemented last Fall. As of March 1, 2019, there have been nearly 7000 downloads. Dr. Mason reminded the Graduate Council that when they have conversations with their faculty, this is something where you can have other things deposited such as capstone projects and non-thesis projects. This allows multiple things to be put in to this repository. The feature allows many different types of format to be uploaded – video files, data files, etc., so if you have an NIH grant and you need to provide open access data,

this allows the drop-down tables from the table that you have to get to the broad data. There are additional features that Hammer will allow in our repository. That was the function of this new program and the turnaround is quite fast in comparison to what it was when using ProQuest. Ashlee Messersmith would be willing to come to your department and give a demonstration on HammerRR.

- d. Dr. Mason noted that one of the strategic things that Graduate Deans are talking about nationally is the idea of Career Pathway of where our students are going after graduation, and what they are doing as a career path. Many institutions have signed on to an agreement where we will be open about the data that we have on our students. Part of that is the data that the number that applied, the number that matriculate from offers, and matriculation requirements, and time-to-degree. As I have been going into this data as I prepare for the Board of Trustees, we are below national averages in all the things we should be below, which is what we want. Our time-to-degree is way below the national average for all of our fields, so we have a story to tell. Time-to-degree, income data, job placement – where are they ending up, especially for Ph.D.'s. In the past, many entering Ph.D. students would say they were going to get a faculty position and we know that is not true. Truth in advertising career paths is important, the debt load that students come into graduate education with are unbelievable and we need to have them understand their future earning potential, the proportion of students that are on funding while in school and what type of funding it is, all are critical. The handful of data that would be provided would be very simple infographics that they could click on when looking at a program. Dr. Mason noted that we are working on that data and hope to have that data by the Fall semester for next years' round of applications.
- e. Dr. James Mohler gave a report on pending degree program proposals in various stages of review and approval.
- f. Dr. James Mohler gave a report of pending course proposals in review with the Graduate Council area committees, proposals awaiting additional information from proposers, course Proposals requested by departments for removal, and new course proposals received since the previous Graduate Council meeting.

III. AREA COMMITTEE REPORTS (Area Committee Chairs)

Graduate Council Document 19C, Graduate Council Documents Recommended for Approval:

Area Committee A, Behavioral Sciences (Signe Kastberg; chair, skastber@purdue.edu):

Graduate Council Document 19-12b, **ASEC 54500, Teaching STEM Through Agriculture, Food and Natural Resources** (PWL)

Graduate Council Document 19-12a, **ASEC 58500, Science, Communication** (PWL)

Graduate Council Document 19-6a, **EDCI 63300, Instructional Design Project Management** (PWL)

*Graduate Council Document 19-4a, **EDU 50700, Assessment Theory And Practice** (PFW)*

*Graduate Council Document 19-14a, **ENE 50101, Foundations Of Engineering Education** (PWL)*

Dr. Signe Kastberg presented five courses for consideration. The courses were approved by the council, upon a motion by Dr. Kastberg.

Area Committee D, Humanities and Social Sciences (Manushag (Nush) Powell, chair; mpowell@purdue.edu):

*Graduate Council Document 19-2b, **ENGL 60211, Science Writing** (PWL)*

*Graduate Council Document 19-2d, **ENGL 60411, Writing Proposals and Grants** (PWL)*

*Graduate Council Document 19-5a, **GRAD 55000, Fellowship And Grant Application Writing** (PWL)*

*Graduate Council Document 19-3a, **PHIL 55300, Mathematical Logic** (PWL)*

*Graduate Council Document 19-3b, **PHIL 56100, Reading Philosophy: Skills And Strategies** (PWL)*

*Graduate Council Document 19-3c, **PHIL 56200, Reading To Argue** (PWL)*

*Graduate Council Document 19-3d, **PHIL 56400, Walk-Along Language Lab** (PWL)*

*Graduate Council Document 19-3e, **PHIL 57100, Writing To Learn** (PWL)*

*Graduate Council Document 19-3f, **PHIL 57200, Writing To Argue** (PWL)*

Due to the absences of Dr. Manushag Powell, Dr. James Mohler presented nine courses for consideration. The courses were approved by the council, upon a motion by Dr. Nicole Widmer.

Area Committee E: Life Sciences, Ryan Cabot, chair; rcabot@purdue.edu):

*Graduate Council Document 19-19a, **FNR 58600, Urban Ecology** (PWL)*

Dr. Ryan Cabot presented one course for consideration. The courses was approved by the council, upon a motion by Dr. Cabot.

MAJORS:

Area Committee A, Behavioral Sciences (Signe Kastberg; chair, skastber@purdue.edu):

Graduate Council Document 18-56a, Major in Neuroscience and Behavior, submitted by the Department of Psychological Sciences, PWL

Dr. Signe Kastberg presented one major for consideration. The major was approved by the council, upon a motion by Dr. Kastberg.

CERTIFICATE(S):

Area Committee E: Life Sciences, Ryan Cabot, chair; rcabot@purdue.edu):

Graduate Council Document 18-48a, Graduate Certificate in Medical Physics, submitted by the School of Health Sciences, PWL

Dr. Ryan Cabot presented one certificate for consideration. The certificate was approved by the council, upon a motion by Dr. Cabot.

IV. PURDUE GRADUATE STUDENT GOVERNMENT -- PRESIDENT'S REPORT

Mr. Taylor Bailey, President of the Purdue Graduate Student Government (PGSG) noted the following items:

- PGSG connects with the community service during Spring Break
- Graduate Student Appreciation Week will be held the first week of April
- Spring Picnic will be held in late April

Mr. Bailey gave an update on The Student Bill of Rights and Responsibilities noting that the Graduate Student Senate met last month to endorse a slightly modified version of the previous document. Mr. Bailey offered his apologies that the document had not been shared with Council at large. There were only two substantial changes where the overall theme of the document and content points had not been deleted. The two specific changes we are learning is the introduction was reduced to a single paragraph and amended where the first two sentences now state – *The Graduate Student Bill of Rights and Responsibilities is an aspirational document drafted to serve as an agreeable set of standards to shape a standardized expectation of what the Purdue graduate student experience should be. This document is not enforceable university policy, but it demonstrates a commitment of students, faculty, and administration to a set of fundamental norms to promote the most positive graduate education culture and mutual success for everyone at Purdue.*

Mr. Bailey noted the second substantial change is under Article 2. Purdue Graduate Staff Responsibilities – the first clause now states: *Graduate staff should recognize that a graduate staff appointment represents an obligatory average weekly time commitment to duties that may be uncoupled from their academic responsibilities.* Mr. Bailey noted there are a couple of format changes that do not substantially change the content of the document. Mr. Bailey noted that he will be unavailable to attend the April Graduate Council meeting and asked the Graduate Council to entertain a vote for endorsement of the document since the document

did not change. Mr. Bailey noted the he would be unequivocally clear that the request for endorsement is no way interpreted to elevate this document to be enforceable where it is to be policy, but very clearly it is a mutual agreement that the points discussed are important considerations that Graduate students should be informed of. Should students find themselves in positions where they feel these are not being met that they be empowered to advocate for themselves to ask questions when necessary.

Graduate Council Member: We would like to read the document again even though you have given us a summary since we have not seen it, if you could send it to us.

Graduate Council Member: I second that. You have made great strides in a positive direction and I think that is an important aspirational document.

Graduate Council Member: I agree that I would be uncomfortable without seeing the document that we are voting for next month.

Dr. Linda Mason: We will vote next month, so we want all the questions that Taylor can answer now since he will not be at the meeting next month.

Dr. James Mohler: I saw the revised version that was sent to the Student Affairs Committee. I assume the Council would like to see the marked up version, but can you also have a final version that is clean so that they have both documents. If you can send that to us, we will send it to the Council following the meeting.

Mr. Bailey noted that elections for next year's PGSG Board are next month. There will be some carryovers next year; himself included. With the conversations going on with the Bill of Rights and other conversations going on, there will be continuity next year.

V. NEW BUSINESS

Kathy Dixon, Director, Office of Graduate Diversity Initiatives (OGDI) in the Graduate School noted that the goal is to promote diversity and create an inclusive community for the underrepresented students by increasing the number of students served through the recruitment and retention programs.

- Summer Research Opportunities Program (SROP) is to increase the number of underrepresented students who pursue graduate degrees and research careers. SROP is designed to enhance students' academic and research skills by working with a faculty mentor from a top ranked research institution.
- Graduate Diversity Visitation Program (GDVP) encourages undergraduate and graduate underrepresented minority students to pursue a graduate education and make students aware of the many educational opportunities available at Purdue. The program establishes ties between faculty and students on the Purdue University campus and Minority Serving Institutions and Universities.

- The Bridge Program is particularly interested in underrepresented students who have been admitted to one of the graduate STEM disciplines.
 - Eight-week research program
 - Faculty and program scholar mentoring
 - Research and professional development
 - Peer network development
- Alliance for Graduate Education and the Professoriate (AGEP) is to increase the number of students receiving doctoral degrees and becoming faculty, with special emphasis on domestic underrepresented minority scholars.
- Louis Stokes Alliance For Minority Participation program (LSAMP) is aimed at increasing the quality and quantity of students successfully completing science, technology, engineering and mathematics (STEM) baccalaureate degree programs.
- Sloan Indigenous Graduate Partnership (SIGP) is supported with funds from the Alfred P. Sloan Foundation to increase the number of Native American, Native Hawaiian, Alaskan Native, and American Samoan students STEM with the long-term goal of improving their representation in academia.
- Purdue Military Research Institute (PMRI) focus areas:
 - No-Cost graduate degrees
 - Cadet/Midshipman Summer Research Program
 - Faculty Exchange

VI. CLOSING REMARKS AND ADJOURNMENT

Dr. Linda Mason

Dr. Mason noted The Three Minute Thesis (3MT™) and Say IT IN 6 will be held on Tuesday, April 16, 2019 in Loeb Playhouse at 7:00 p.m.

The council meeting was adjourned by Dr. Mason at 2:55 p.m.

Linda J. Mason, Chair

Tina L. Payne, Secretary

APPENDIX A

PENDING DOCUMENTS

(March 21, 2019)

BOLDED ITEMS ARE IN REVIEW WITH AN AREA COMMITTEE

Area Committee A, Behavioral Sciences (Signe Kastberg; chair, skastber@purdue.edu):

Graduate Council Document 19-12b, ASEC 54500, Teaching STEM Through Agriculture, Food and Natural Resources (PWL) Sem. 2. Lecture 1 time per week for 150 minutes. Credit 3.

Graduate Council Document 19-12a, ASEC 58500, Science Communication (PWL) Sem. 2. Lecture 1 time per week for 150 minutes. Credit 3.

Graduate Council Document 19-6a, EDCI 63300 (PWL) Sem. 1 and 2. SS. Lecture 1 meeting per week for 150 minutes or Distance 8 weeks. Credit 3.

Graduate Council Document 19-4a, EDU 50700, Assessment Theory And Practice (PFW) Sem. 2. Lecture 3 hours per meeting/4 meetings per term/8 weeks per term. Credit 3.

Graduate Council Document 19-14a, ENE 50101, Foundations Of Engineering Education (PWL) Sem. 1. Lecture 3 times per week for 50 minutes. Credit 3.

Area Committee B, Engineering, Sciences, and Technology (Samuel Midkiff; chair, smidkiff@purdue.edu):

Graduate Council Document 18-60a, CGT 53400, Automation of Digital Product Development Processes (PWL) Sem. 1 and 2. Lecture 1 time per week for 180 minutes. Credit 3.

Graduate Council Document 19-1a, CGT 54500, Game Development I (PWL) Sem. 1 and 2. SS. Lecture 3 times per week for 50 minutes. Credit 3.

Graduate Council Document 19-1b, CGT 55500, Game Development I (PWL) Sem. 1 and 2. SS. Lecture 3 times per week for 50 minutes. Credit 3.

Graduate Council Document 19-1d-, CGT 57500, Data Visualization Tools And Applications (PWL) Sem. 1. Lecture 1 time per week for 180 minutes. Distance. Credit 3.

Graduate Council Document 19-1c, CGT 64500, Game Research (PWL) Sem. 1 and 2. SS. Lecture 3 times per week for 50 minutes. Credit 3.

Graduate Council Document 19-15a, ECE 61020 Operation of Modern Power Systems (PWL) Sem. 2. Lecture 3 times per week for 50 minutes. Credit 3.

Graduate Council Document 19-16a, IE 54100, Nature-Inspired Computation (PWL) Sem. 1 and 2. Lecture 3 times per week for 50 minutes. Credit 3.

Graduate Council Document 19-16b, IE 54900, Machine Vision in Intelligent Robotic Systems (PWL) Sem. 1 and 2. Lecture 3 times per week for 50 minutes. Credit 3.

Graduate Council Document 19-16c, IE 57800, Applied Ergonomics (PWL) Sem. 1 and 2. SS. Lecture/Distance 3 times per week for 50 minutes. Credit 3.

Graduate Council Document 18-22a, IE 68500, Competitive Strategy (PWL) Sem. 2. Lecture 3 times per week for 50 minutes. Credit 3.

Graduate Council Document 19-17a, ME 53100, Characteristics Of Particles, Powders, And Compacts (PWL) Sem. 2. Lecture 2 times per week for 50 minutes. Lab 1 time per week for 100 minutes. Credit 3.

Area Committee C: Chemistry, Engineering, and Physical Sciences, Chair to be determined):

Graduate Council Document 19-13a, BCHM 61200, Bioinformatic Analysis of Genome Scale Data (PWL) Sem. SS. Lecture 2 times per week for 50 minutes for 8 weeks. Credit 3. Prerequisites: BCHM 60100, 60200 and 60501 or approval of instructor.

Graduate Council Document 18-4d, BME 50100, Multivariate Analyses in Biostatistics (PWL) Sem. 1 and 2. Lecture 2 times per week for 75 minutes. Credit 3. Prerequisites: Graduate Level OR STAT 35000 OR STAT 51100 OR IE 330.

Graduate Council Document 19-11a, BME 55600, Introduction to Clinical Medicine for Engineering Solutions (PWL) Sem. 1 and 2. SS. Lecture 2 times per week for 75 minutes. Distance. Credit 3.

Graduate Council Document 18-59a, EAPS 60200, New Graduate Student Seminar (PWL) Sem. 1. Lecture 1 time per week for 50 minutes. Credit 1.

Area Committee D, Humanities and Social Sciences (Manushag (Nush) Powell, chair: mnpowell@purdue.edu):

Graduate Council Document 19-2b, ENGL 60211, Science Writing (PWL) Sem. 1 and 2. SS. Lecture 200 minutes per meeting/1 online meeting per week/8 weeks per term and Recitation 100 minutes per meeting/1 online meeting per week/8 weeks per term. Prerequisites: B-. Credit 3.

Graduate Council Document 19-2c, ENGL 60311, Medical and Healthcare Writing (PWL) Sem. 1 and 2. SS. Lecture 200 minutes per meeting/1 online meeting per week/8 weeks per term and Recitation 100 minutes per meeting/1 online meeting per week/8 weeks per term. Credit 3.

Graduate Council Document 19-2d, ENGL 60411, Writing Proposals and Grants (PWL) and Recitation 100 minutes per meeting/1 online meeting per week/8 weeks per term. Credit 3.

Graduate Council Document 19-5a, GRAD 55000, Fellowship And Grant Application Writing (PWL) Sem. 1. Lecture 1 time per week for 50 minutes. Credit 1.

Graduate Council Document 19-3a, PHIL 55300, Mathematical Logic (PWL) Sem. 1 and 2. Lecture 3 times per week for 50 minutes. Credit 3.

Graduate Council Document 19-3b, PHIL 56100, Reading Philosophy: Skills And Strategies (PWL) Sem. 1 and 2. SS. Lecture 2 times per week for 75 minutes. Credit 3. Co-Requisites: PHIL 56100 will be taken in conjunction with PHIL 57100.

Graduate Council Document 19-3c, PHIL 56200, Reading To Argue (PWL) Sem. 1 and 2. SS. Lecture 2 times per week for 75 minutes. Credit 3. Co-Requisites: PHIL 56200 will be taken in conjunction with PHIL 57200.

Graduate Council Document 19-3d, PHIL 56400, Walk-Along Language Lab (PWL) Sem. 1 and 2. SS. Lecture 1 time per week for 50 minutes. Credit 1. Co-Requisites: PHIL 56400 will be taken with a co-current 500-level philosophy course.

Graduate Council Document 19-3e, PHIL 57100, Writing To Learn (PWL) Sem. 1 and 2. SS. Lecture 2 times per week for 75 minutes. Credit 3. Co-requisites: PHIL 57100 should be taken in conjunction with PHIL 56100.

Graduate Council Document 19-3f, PHIL 57200, Writing To Argue (PWL) Sem. 1 and 2. SS. Lecture 2 times per week for 75 minutes. Credit 3. Co-requisites: PHIL 57200 should be taken in conjunction with PHIL 56200.

Area Committee E: Life Sciences, Ryan Cabot, chair; rcabot@purdue.edu):
Graduate Council Document 19-19a, FNR 58600, Urban Ecology (PWL) Sem. 1. Lecture 2 times per week for 50 minutes and Recitation 2 times per week for 50 minutes. Credit 3.

Area Committee F, Management Sciences (Nicole J. Widmar, chair; nwidmar@purdue.edu)
Graduate Council Document 19-18a, MGMT 66600, International Business (PNW) Sem. 1 and 2. SS. Lecture 1 time per week for 75 minutes and Distance 50% or Lecture 150 minutes per meeting or Distance 100%. Variable Title Credit 2 to 4.
Graduate Council Document 19-18b, MGMT 66800, International Business Practicum (PNW) Sem. 1 and 2. SS. Lecture 1 time per week for 100 minutes plus Experiential 2 weeks study abroad. Credit 2. Prerequisites: MGMT 61100.

NEW DOCUMENTS RECEIVED

(After the March 21, 2019 Graduate Council Meeting)

Area Committee B, Engineering, Sciences, and Technology (Samuel Midkiff; chair, smidkiff@purdue.edu):

Graduate Council Document 19-38a, CSCI 53200, Cloud Computing Systems (IUPUI) Sem. 2. Lecture 2 times per week for 75 minutes. Credit 3.

The course specific topics cover the architectural aspects of modern Cloud systems, focusing on network architecture, by exploring the potentials of applications of cloud systems. The course builds on students' prior foundational knowledge from studies in computer networks, operating systems and computer architecture. Material covered in the class will include some concepts from several textbooks and research papers. The course is highly interactive, based on class discussions. An important part of the course will be dedicated to improving research skills, such as writing papers and preparing presentations.

Graduate Council Document 19-38b, CSCI 53300, Wireless Sensor Networks (IUPUI) Sem. 2. Lecture 2 times per week for 75 minutes. Credit 3. Prerequisites: CSCI 53600 or instructor permission.

Credit Hours: 3.00. This course studies the fundamental principles of wireless sensor networks. The course will expose students to the fundamental issues in designing and analyzing sensor networks and their information processing applications. Topics include sensor network architecture, MAC layer, routing and data dissemination, transport protocols, sensor network operating systems, sensor network programming, querying, network management, and real-world applications. Typically offered Spring.

Graduate Council Document 19-39a, MSE 56200, Soft Materials (PWL) Sem. 1. Lecture 1 time per week for 150 minutes. Credit 3.

Credit Hours: 3.00. Soft materials are an important and diverse class of materials that share the common trait of being easily deformable by external stresses, electric or magnetic fields or even thermal fluctuations. These materials are the foundation of important technologies that are used in everyday life including ceramic and pharmaceutical processing (tablet formation), cosmetics (hand creams), cleaning products, foods (milk, mayonnaise) and bio-technologies (drug delivery). The aim of this class is to gain a fundamental understanding of the physical and chemical underpinnings of common soft materials systems and how they are used to engineer technologically relevant materials and structures. Typically offered Fall.

Graduate Council Document 19-39b, MSE 58900, Archaeology and Materials (PWL)
Sem. 1 and 2. Lecture 2 times per week for 50 minutes. Lab 1 time per week for 100 minutes.
Credit 3. Prerequisites: Junior, senior or graduate level standing.

This course provides instruction in the methods and theories used by archaeologists and materials scientists to study ancient and historic technology. The course will focus on the analysis and interpretation of archaeological artifacts and provide opportunities for hands-on learning.

Area Committee C: Chemistry, Engineering, and Physical Sciences, Chair to be determined):

Graduate Council Document 19-27b, ABE 51200, Good Regulatory Practices (PWL)
Sem. 1 and 2. SS. Lecture 1 time per week for 100 minutes. Recitation 1 time per week for 50 minutes. Distance. Credit 3. Prerequisites: Graduate level ABE 51100 or TLI 52100. Minimum Grade of D-.

Includes a review of the FDA and ICH regulations on good manufacturing, good laboratory, good clinical practices. The meaning of these regulations, the globalization of practices and the roles and responsibilities of various professionals implementing these regulations will be addressed. Special emphasis will be detailed coverage of the process for the assembly and submission of an IND or NDA, and the function of the regulatory affairs department in a pharmaceutical company.

Graduate Council Document 19-27c, ABE 51300, Quality Management, Audits, Inspections (PWL) Sem. 1 and 2. SS. Lecture 1 time per week for 100 minutes. Recitation 1 time per week for 50 minutes. Distance. Credit 3.

This course provides advanced topics in quality management and business improvement methods that apply to the pharmaceutical industry. Emphasis will be placed on specific issues of industry, audits, and inspections, as well as the successful selection and presentation of business and quality improvement projects to produce compliance and competitive advantage.

Graduate Council Document 19-27d, ABE 51400, Documents and Dialogues of Drug Development and Registration (PWL) Sem. 1 and 2. SS. Lecture 1 time per week for 100 minutes. Recitation 1 time per week for 50 minutes. Distance. Credit 3.

This capstone advanced course will integrate previous learning relating to laws and regulations, quality principles and practices, and the preparation and submission of documents for preclinical research clinical trials and new drug approvals. Special topic lectures will be given. Considerable time will be devoted to preparing regulatory documents and conducting “mock” dialogs and negotiations with “pretend” agency officials.

Graduate Council Document 19-27e, ABE 51500, Molecular Basis of Manufacturing (PWL) Sem. 1 and 2. SS. Lecture 1 time per week for 100 minutes. Recitation 1 time per week for 50 minutes. Distance. Credit 3.

This advanced course addresses important Chemistry Manufacturing and Control (CMC) issues related to manufacturing and quality by design. The course provides important information on strategies for quality by design, manufacturing strategies for early development, the best approaches to analyzing data, and strategies for reporting the information to the FDA. This course will also focus on product design and processing. Using product and process design helps achieve quality by design (QbD), strong development reports, excellent regulatory submissions and allows continuous improvement. The course includes laboratory exercises, laboratory tours, and/or workshops outlining how to interpret the data.

Graduate Council Document 19-27f, ABE 54000, Principles of Systems & Synthetic Biology (PWL) Sem. 1. Lecture 2 times per week for 75 minutes. Credit 3. Prerequisites: BIOL 23000 or BCHM 56100, and MA 16000 or higher.

Synthetic biology harnesses the power and adaptability of biology to engineer living systems that address grand societal challenges. This course introduces students to fundamental concepts and techniques in this interdisciplinary discipline, and studies state-of-the-art techniques from the primary literature. The course follows the standard Design-Build-Test-Learn (DBTL) cycle of contemporary practice and includes topics such as biological circuit design, advanced DNA assembly techniques, genome editing technologies, next generation sequencing, and directed evolution.

Area Committee E: Life Sciences, Ryan Cabot, chair; rcabot@purdue.edu):

Graduate Council Document 19-29a, AGRY 51800, Plant Physiology And Biotechnology Research Techniques (PWL) Sem. 2. Lecture 1 time per week for 50 minutes. Recitation 1 time per week for 50 minutes. Lab 1 time per week for 110 minutes. Credit 3.

This course has two components. The physiology section covers some of the popular experiments, such as the measurement of water potential, photosynthesis, stomata density, carbohydrate content, enzyme activity, mineral deficiency, drought stress physiology, plant pigment analysis, etc. The biotechnology section guides students through the entire procedure of genetic engineering, culminating in a project that will serve as an example on how to use molecular tools to answer fundamental physiological questions. Each class starts with a 40-50 minute lecture followed by a 1-hour recitation and 2-hour laboratory period.

Graduate Council Document 19-36a, ENTM 61000, Current Trends In Insect Pest Management (PWL) Sem. 1. Lecture 2 times per week for 50 minutes. Lab 1 time per week for 100 minutes. Credit 3.

Credit Hours: 3.00. Concepts of pest management and dynamics of pest populations, with emphasis on population regulation in theory and practice. The principles of applied ecology that pertain to insects and agricultural crops and systems. Identification, biology, behavior, and relationships of pests of forage, fiber, and vegetable crops. A knowledge of introductory entomology is recommended. Prerequisites: None. Offered in even-numbered years. Typically offered Fall.