

PURDUE UNIVERSITY GRADUATE SCHOOL

Minutes of the Graduate Council Meeting
January 20, 2022
2:30 p.m.

Fourth Meeting
Via Zoom

PRESENT: Linda J. Mason, chair, Council Members, Raida Abuizam, Kola Ajuwon, Yong Bao, Janice S. Blum, Steven J. Burdick, David S. Cochran, Joy Colwell, Eric D. Deemer, Bryan DeWitt, Levon Esters, Keith B. Gehres, Margaret Gitau, Jeffrey P. Greeley, Chong Gu, Erla Heyns, Randolph D. Hubach, Troy D. Janes, Ann L. Kirchmaier, Douglas J. LaCount, Jiliang Li, Yanjun Li, James L. Mohler, Melanie Morgan, Madelina Nuñez, Tina L. Payne, Paul Salama, Abraham Schwab, Ann Shanahan, Michael G. Smith, John A. Springer, Jill J. Suitor, Joseph D. Thomas, Eric Waltenburg, Christine Wuenschel

APOLOGIES FOR ABSENCE RECEIVED FROM: Thomas W. Atkinson, Christopher K. Belous, G. Jonathan Day, Emad Elwakil, Kevin D. Gibson, Timothy B. Lescun, Catherine A. Golden (Provost's Representative), Megan Sapp Nelson

ABSENCES: Christopher R. Agnew, Suzanne C. Bart, Tong Jin Kim, Judith Lewandowski, Zhan Pang, Chenn Zhou

GUESTS: Debbie Fellure, Sean McCan, Sharry Vahed, Korena Vawter

I. MINUTES

The November 2021 Graduate Council meeting minutes were approved via the Qualtrics Survey.

II. DEANS REMARKS AND REPORTS

Dean Linda Mason

- The November minutes will be voted on via the Qualtrics survey.
- Attendance for the Three-year Mentoring Program was down due to COVID. However, conversations with the graduate deans about mentoring were productive.
- A call out for faculty and graduate students to be graduate school mentoring fellows for next year with a stipend.
- Representation from every college to help us think about what the issues are associated with mentoring by discipline.
- What are the things that are going on and to help formulate what we need to do over the next three years.
- Continue to hold the Dean's Town Hall meetings this Spring with the remaining six colleges: 1) Health and Human Sciences on January 26th, 2) Science on January 28th, 3) Liberal Arts on March 1st, 4) Krannert on March 25th, 5) Polytechnic Institute on March 30th, 6) Pharmacy on April 15th.

- Topics discussed during the Dean's Town Hall meetings in the Fall with the colleges were the level of stipends, the minimum stipend issues, and graduate student housing on campus.
- Melanie Morgan was part of a taskforce that looked at the stipends. The Provost Office put together a group of individuals to move that financial model forward. A summary from the taskforce report has gone forward to the Provost Office and the Fiscal Budget Planning.
- We are reminding students that minimum is one thing and what students are paid within their college, is another issue. The minimum only affects those that are being paid the minimum and it would be increased if they are being paid below the minimum.
- Stipends are disciplinary specific in how they are handled, whether they are on general funds, teaching, or research. It is working in many department across campuses, so students need to be advocates for themselves with the faculty within their departments.
- Dean Mason's department had discussions with the graduate students and the faculty. The department voted to raise assistantships to \$7,000 next fall.
- Faculty will be supportive if they understand what students are going through and will not understand if students do not have those conversations.
- Conversations need to be held among the faculty within the department and the faculty with the graduate students.
- Applications are up 39% in the number of students interested in residential, up 10% online, and up 14% for hybrid models. We are generating interest in the programs and degrees that we offer; however, that is not enough.
- Some of the things that we are seeing that have been of interest to the upper administration is the change in applications based on citizenship.
- Some colleges are seeing a decrease in the number of applications for domestic students, especially in the STEM fields. That is a decrease of over 6%.
- There has been a 59% increase in international applications. Part of that may be related to COVID and the visa issues over the past two years of students getting here and delays that some students put off.
- The decline of domestic applications is not only from Purdue, but it is across the Big 10 counterparts.
- There is a bigger decline in Ph.D.'s than in Master's and those are in residential programs, not online.
- There is a slight increase of 4% in underrepresented minority applications.
- The Summer Research Opportunity Program application date is shifting from Summer and Fall back to Spring. We want to get those students captured early for those Summer Research Opportunity Programs. Once those students leave for the summer it is hard to get them to complete the application and get the letters of reference during the summer.
- The Graduate School is asking that departments to help recruit individuals and to start looking at those applications in the next week. The Summer Research Opportunity Program is an opportunity to bring underrepresented minority domestic students to campus for eight weeks during the summer. The Summer Research Opportunity Program has been held virtually the past two years, so we are hopeful that it will be held residentially this summer.
- The Graduate School pays \$5,000 of the cost to bring students in and the department, college, and/or individual pays the other \$5,000 depending on what the model is in each school.
- It requires departments to help with this recruitment program because we know that if we can get those students to come here for the summer and to find mentors here to work with the faculty they will understand what Purdue is like by spending time on this campus. It is an amazing recruitment tool for the following Fall so that they can submit an application to attend Graduate School.

- Graduate Education is about the faculty and department connection in how we bring those students in and we rely on the faculty to do that within the departments and colleges.
- Students want to know what is going on in the departments with the faculty who are a strong partner in getting these students here.
- The Graduate Diversity Visitation Program that is held in the Fall is a way to get students who are applying to Graduate School in the Fall to come which is at the expense of the Graduate School.
- We encourage departments who have students interested in your program to watch for the information for the Graduate Diversity Visitation Program because it is a way in which we can recruit those interested.
- During the program, we help the students fill out the application to try to get that completion rate high during that event.
- James Mohler is working on the Global Law Certificate. The financial issues for the West Lafayette campus are now completed. Work is still underway to determine how this will work for the Regional Campuses.
- The Concord Law School is an accredited law school that Purdue will be offering the Law Certificates for our graduate students on assistantships starting this Fall. The assistantship money that has been paid to cover students will cover the cost. Students who are not on an assistantship will have to pay the tuition cost. We will shepherd students with the application process to get accepted into the Certificate Program. Information will be sent to the departments for the online certificate.
- There will be specific types of Certificates offered such as: 1) Business Law 2) Science Law 3) Education Law. These are intended to help understand the law within the various Certificates.
- Reminder to urge faculty to check the boxes for research deliverables. The window opened when registration opened for Spring. Only 390 of almost 2,000 faculty have completed it.
- This is part of mentoring as students want to know what is expected of them, what they need to do to get a grade, and how to receive a satisfactory completion at the end of the semester.
- It can also open up conversations about: 1) Professional Development opportunities for the semester 2) What are some career goals 3) How close is a student to graduating 4) What will student do about publications 5) What will student do about a job.
- COVID cases are on the rise. Graduate students will start getting surveyed soon, as new international students arrive on campus.
- Graduate students have been compliant. There have been a few disciplinary issues with graduate students not following through who are unvaccinated getting their surveillance.
- The Change of Duty Station form is required when a graduate staff employee's normal work duties will be more than 22 days away from their hiring campus.
- The Form 19: Off Campus Research is required for Graduate students who plan to work on research, register for 69800 or 6999 thesis credit, and who will be off campus greater than 22 days prior to each session away from campus.
- The Form 12: Research in Absentia is required for doctoral students who have completed all required course for the Ph.D. degree, have passed the preliminary exam, and who are not on a TA/RA appointment may request to register for 699 research credits in Absentia status.
- It is important to know if students are on campus or not in case something happens.

Melanie Morgan

- The general-consensus of the taskforce is that we have to raise our minimum stipends if we are going to remain competitive. The data was overwhelming as a comparison was completed with our peers of the Big 10. We look forward to hearing from the Provost and Fiscal Budget Planning.

III. PRESENTATION

Gary Bertoline, Senior Vice President for Purdue Online & Learning Innovation, Distinguished Professor of Computer Graphics Technology & Computer and Information Technology

- Great organization built to support online instruction here at Purdue.
- The way this has been set up accelerates the opportunities. Only 10% of the budget going through online is coming from recurring central resources. Everything else is soft funded based on the revenue that is generated.
- Each college has an academic administrator that is an Associate Dean of Graduate programs along with a staff level position.
- Purdue has one of the best teaching and learning technology support groups in the nation. They do more online instruction because they help faculty with face to face courses.
- Purdue Online has experienced very strong growth. On target to reach or exceed \$80 million in revenue. Last year they had \$67 million and the previous year the low 40's. Anticipate generating a million dollars in the near future.
- Purdue Online cannot do anything without collaborating with our academic colleagues. That is where everything comes from. Purdue Online is not an independent operation or Purdue Global.
- Since the Fall of 2020, 115 new high quality courses fully online and largely self-supporting and revenue generating graduate programs have been created. Currently, there are about 65 courses in development.
- Purdue Online had started online two years before COVID hit. That helped the University to transition into online or blended learning.
- The growth that Purdue Online is seeing is because of the strong international brand.
- Coursera contacted Purdue Online to participate in a new partnership.
- Purdue Online was ranked third best in the nation in Newsweek. This is impressive since it has been in existence about four years.
- One of the challenges that is being looked in to, is evaluating the role of Online Program Management (OPM) such as Wiley and edX.
- One of the things that is going on in higher education is pressure on the OPM sets online program managers that normally take about 50% of the revenue right off of the top. That is happening to us with some of the programs that we have.
- Attention is on the Federal government. Three senators sent letters to Wiley, edX, and Coursera asking them to justify the 50% they are taking from OPM.
- Purdue Online is looking at exit strategies so that we become our own internal OPM. It can be done for much less cost than and external OPM, as well as the quality would go up.
- Within that, is the role of Kaplan that was purchased by Purdue for one dollar. Kaplan had a role in how they would serve as an internal OPM for Purdue. This is being looked in to because Purdue is being asked to justify its cost to Congress.
- Looking at this idea of a system wide use of online education. Currently, online education is in four buckets: 1) Purdue Global 2) Purdue Northwest 3) Purdue Fort Wayne 4) Purdue West Lafayette.

- Meeting with Purdue Global to find a better way of integrating those efforts and maximizing the value within them.
- Goal for Purdue Online should be “best in class”. Purdue Online is in a strong position because of their rankings; however, there is still more that we can do.
- Purdue Online wants to emphasize accessibility, affordability, and innovation as far as what we do to become best in class.
- Trying to do a better job of differentiating between Purdue Online, which we are calling the home of selective offerings. Purdue Global focuses on accessibility. An example of that is it is highly unlikely that Purdue Global will ever have Engineering programs or other special types of programs that Purdue West Lafayette offers.
- Another difference is that Purdue Online does not offer online undergraduate programs of study and has no plans to do so.
- Purdue Global's strength is on undergraduate programs.
- Trying to differentiate and communicate these much better so that everyone understands what the differences are.
- Purdue Online has full degree programs, more certificates coming online, and more coursework.
- The Professional Doctorate of Technology has over 200 students, which well exceed the expectation of 30.
- In corporate partnerships, there is a huge need for upscaling and rescaling executive education especially in emerging technologies.
- When talking to corporate partnerships, we are looking at very selective kinds of things that Purdue is world class for, and ahead of others as well as Purdue Global.
- There are many opportunities here to offer these kinds of courses and experiences, while the colleges win at the same time because they are generating revenue.
- Based on just offering courses, some of these can add to a certificate that can lead into graduate education.
- Purdue Online has a strong partnership with Lilly, Rolls Royce in Indianapolis, Cummins and Wabash National.
- Discussions with Saab, the new company that is moving in the Aerospace District.
- Purdue Online charges a fee and 10% of the revenue that comes back to Purdue Online and most of that money is given back to the Colleges.
- Retention is high for Purdue Online. One reason is that we are ranked so high and we have a good student support system underlying all of the Purdue Online instructions for every program.

IV. AREA COMMITTEE REPORTS (Area Committee Chairs)

Graduate Council Document 22A, Graduate Council Documents Recommended for Approval.
See Appendix B. Voted via Qualtrics survey.

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

Madelina Nuñez, President of the Purdue Graduate Student Government (PGSG)

- Purdue Graduate Student Government (PGSG) and Purdue Student Government (PSG) Mental Health Action Week (MHAW) is March 7th – March 11th.
- MHAW is a campus wide initiative that PGSG began in 2018.

- In 2019, PGSG collaborated with PGS to make this a joint effort that mental health is a priority for: 1) Providing resources 2) Destigmatizing 3) Provide information where students can go 4) Provide distressing events 5) Provide informational materials.
- The University Senate will vote on a resolution to add MHAW to the University calendar.
- With the Spring semester just starting, further updates will be provided at the February meeting.

VI. OLD BUSINESS

- Dr. James Mohler presented GC Doc 21-H, Purdue University Authorship Standard. Document will be endorsed by Council via the January Qualtrics Survey. See Appendix C
- Dr. James Mohler presented GC Doc 21-L, Guidelines for Stackable Certificates. Document will be voted on by the Senate via the January Qualtrics Survey. See Appendix D.

The council meeting was adjourned by Dean Mason at 3:35 p.m.

James Mohler, Deputy Chair

Tina L. Payne, Secretary

APPENDIX A

PENDING DOCUMENTS

(January 2022)

BOLDED ITEMS ARE IN REVIEW WITH AN AREA COMMITTEE

Area Committee B, Engineering, Sciences, and Technology (John A. Springer, chair; jaspring@purdue.edu):

Graduate Council Document 21-42h, ECE 50024, Machine Learning (PWL)

Graduate Council Document 21-42i, ECE 50631, Fundamentals Of Current Flow (PWL)

Graduate Council Document 21-42j, ECE 50632, Introduction To Quantum Transport (PWL)

Graduate Council Document 21-42k, ECE 50633, Boltzmann Law: Physics To Computing (PWL)

Graduate Council Document 21-42L, ECE 51220, Applied Algorithms (PWL)

Graduate Council Document 21-41b, ECE 53401, Embedded Autonomous Systems In Automotive Platforms (IUPUI)

Graduate Council Document 21-42d, ECE 60422, Primer On RF Design (PWL)

Graduate Council Document 21-42e, ECE 60423, RF System Design (PWL)

Graduate Council Document 21-42f, ECE 60424, RF Design: Passive And Active Components (PWL)

Graduate Council Document 21-42m, ECE 60827, Programmable Accelerator Architectures (PWL)

Graduate Council Document 21-42g, ECE 60858, Introduction To Operating Systems (PWL)

Graduate Council Document 21-42n, ECE 61010, Time Domain Simulation And Optimization For Design (PWL)

Graduate Council Document 21-54b, FMGT 56000, Emergency Preparedness for Facilities Personnel (IUPUI)

Graduate Council Document 21-7m, ME 50810, Introduction To Two Phase Flow And Heat Transfer (PNW)

Graduate Council Document 21-7n, ME 55610, Finite Element Method For Fluid Flow And Heat Transfer (PNW)

Graduate Council Document 21-7o, ME 59310, Modeling Of Solar Cells And Batteries (PNW)

Graduate Council Document 21-7p, ME 59400, Modeling Of Micro/Nano Materials Systems (PNW)

Graduate Council Document 21-7r, ME 61700, Applied Thermal Physics And Molecular Spectroscopy (PWL)

Graduate Council Document 21-7q, ME 62000, Combustion Of Energetic Materials (PWL)

Graduate Council Document 21-, MSE 51800, Failure Analysis (PWL)

Area Committee C: Chemistry, Engineering, and Physical Sciences, Margret Gitau, chair; mgitau@purdue.edu):

Graduate Council Document 21-20e, CHE 52300, Engineering Applications Of Biological Molecules (PWL)

Graduate Council Document 21-20f, CHE 56000, Introduction To Energy Storage Systems (PWL)

Graduate Council Document 21-58a, CHM 69699, Chemistry Graduate Internship (PWL)

Area Committee D, Humanities and Social Sciences (Jill Sutor, chair; jsutor@purdue.edu):

Graduate Council Document 21-16a, AMST 60600, American Studies Methods (PWL)

Graduate Council Document 21-43c, COM 50300, Cross Cultural Communication (PWL)

Graduate Council Document 21-56a, ENGL 56602, Project Management For Writers (PFW)

Area Committee E: Life Sciences, (Timothy Lescun, chair; tlescun@purdue.edu):

Graduate Council Document 21-44a, BMS 52900 Basic Bone Biology (PWL)

Graduate Council Document 21-28b, FNR 59100, Teaching In Natural Resources Practicum (PWL)

Graduate Council Document 21-30e, NUR 64210, Systems Approaches To Health Care Engineering (PNW)

Graduate Council Document 21-29b, NUTR 52900 Basic Bone Biology (PWL)

APPENDIX B

GC Document 22-A

DOCUMENTS RECOMMENDED FOR APPROVAL BY THE GRADUATE COUNCIL JANUARY 2022

GRADUATE COURSE PROPOSALS:

Area Committee B, Engineering, Sciences, and Technology (John A. Springer, chair; jaspring@purdue.edu):

Graduate Council Document 21-42h, ECE 50024, Machine Learning (PWL) Lecture 3 times per week for 50 minutes. Credit 3. Prerequisite(s): ECE 20875 and ECE30200 or equivalent courses.

An introductory course to machine learning, with a focus on supervised learning using linear models. The course will have four parts: (1) mathematical background on linear algebra, probability, and optimization. (2) classification methods including Bayesian decision, linear regression, logistic regression, and support vector machine. (3) robustness of classifier and adversarial examples. (4) learning theory on the feasibility of learning, VC dimension, complexity analysis, bias-variance analysis. Suitable for senior undergraduates and graduates with a background in probability, linear algebra, and programming.

<https://purdue.curriculog.com/proposal:17476/form>

Graduate Council Document 21-42i, ECE 50631, Fundamentals Of Current Flow (PWL) Lecture 3 times per week for 50 minutes for 5 weeks. Credit 1.

Traditional description of electronic motion through a solid is based on diffusive transport which means that the electron takes a random walk from the source to the drain. However, modern nanoelectronic devices often have channel lengths comparable to a mean free path so that electrons travel ballistically, or “like a bullet.” This course provides a unified conceptual framework for ballistic and diffusive transport of both electrons and phonons, that is very different from what is taught in standard courses, but indispensable to understanding nanoelectronic devices.

<https://purdue.curriculog.com/proposal:17364/form>

Graduate Council Document 21-42j, ECE 50632, Introduction To Quantum Transport (PWL) Lecture 3 times per week for 50 minutes for 5 weeks. Credit 1.

This course introduces the Schrödinger equation, uses the tight-binding method to discuss the concept of bandstructure and $E(k)$ relations, along with simple quantum transport problems. No prior background in quantum mechanics or statistical mechanics is assumed.

<https://purdue.curriculog.com/proposal:17366/form>

Graduate Council Document 21-42k, ECE 50633, Boltzmann Law: Physics To Computing (PWL) Lecture 3 times per week for 50 minutes for 5 weeks. Credit 1.

This course introduces the key concepts of equilibrium statistical mechanics leading to the celebrated Boltzmann law and how it leads to Boltzmann machines and related concepts in modern machine learning. No prior background in statistical mechanics is assumed.

<https://purdue.curriculog.com/proposal:17367/form>

Graduate Council Document 21-42L, ECE 51220, Applied Algorithms (PWL) Lecture 3 times per week for 50 minutes. Credit 3. Prerequisite(s): ECE 36800 or equivalent.

Solving large-scale problems typically rely on many clever data structures and algorithms. This course aims to cover many such useful algorithms for solving large-scale problems. These algorithms include greedy algorithms, dynamic programming and more advanced graph algorithms. The course also aims to demonstrate how such algorithms can be applied to solve optimization problems encountered in engineering applications. In particular, applications in the design of VLSI (very large scale integration) at circuit, layout, or system level will be used to demonstrate how an engineering problem can be formulated as a tree/graph problem and solved using established tree/graph algorithms.

<https://purdue.curriculog.com/proposal:17368/form>

Graduate Council Document 21-41b, ECE 53401, Embedded Autonomous Systems In Automotive Platforms (IUPUI) Sem. 1 and 2. SS. Lecture 2 times per week for 75 minutes. Credit 3.

A treatment of Embedded and Autonomous Systems: Motor Control, Image Vision, Sensors, Security, Neural Networks, SLAM, Machine and Deep Learning, Protocols, Standards and Implementation using Multiprocessors, Multicores, ISP, Bluebox and APEX.

<https://purdue.curriculog.com/proposal:16827/form>

Graduate Council Document 21-42d, ECE 60422, Primer On RF Design (PWL) Sem. 1 and 2. SS. Lecture 3 times per week for 50 minutes for 5 weeks per term. Credit 1. Prerequisite(s): ECE 31100 or equivalent.

This course covers the fundamentals of RF design. It is designed as a first course for students or engineers with limited background in high-frequency electronics. Engineers that need to understand the 'RF language' and gain working knowledge of critical RF concepts will benefit from taking this course. Students in this class will learn the basic RF tools and design principles. By the end of this class students will be able to understand important RF concepts and how these are related to the design of practical RF blocks. Typically offered Fall Spring Summer.

<https://purdue.curriculog.com/proposal:14255/form>

Graduate Council Document 21-42e, ECE 60423, RF System Design (PWL) Sem. 1 and 2. SS. Lecture 3 times per week for 50 minutes for 5 weeks per term. Credit 1. Prerequisite(s): ECE 60422.

Following the 'Primer on RF Design' course, this class focuses on system-level issues. We discuss several important design considerations including noise, non-linearity, distortion, sensitivity and dynamic range and their impact in selecting the appropriate system architecture. The course also covers common receiver architectures including superheterodyne and direct-conversion receivers.

<https://purdue.curriculog.com/proposal:18106/form>

Graduate Council Document 21-42f, ECE 60424, RF Design: Passive And Active Components (PWL) Sem. 1 and 2. SS. Lecture 3 times per week for 50 minutes for 5 weeks per term. Credit 1. Prerequisite(s): ECE 60422.

Following the 'Primer on RF Design' course, this class focuses on passive and active components. We use the techniques learnt in the previous course, to design advanced RF devices including couplers, filters and amplifiers. Current research topics are discussed as appropriate.

<https://purdue.curriculog.com/proposal:18108/form>

Graduate Council Document 21-42m, **ECE 60827, Programmable Accelerator Architectures** (PWL) Lecture 3 times per week for 50 minutes. Credit 3. Prerequisite(s): ECE 43700 or equivalent and ECE 56500.

Programmable hardware accelerators seek to fulfill the promise of continued performance and energy-efficiency gains in the era of a slowing Moore's law, larger problem sizes and an increased focus on energy-efficiency. These factors have caused hardware acceleration to become ubiquitous in today's computing world and critically important in computing's future. This class will introduce students to the architectures of programmable accelerators. We will delve deeply into the architectures of modern massively parallel accelerators like GPUs, culminating in a course project. General topics in hardware acceleration will be discussed, including but not limited to GPGPU and massively parallel computing, approximate accelerators, reconfigurable hardware and programmable hardware for machine learning.

<https://purdue.curriculog.com/proposal:17318/form>

Graduate Council Document 21-42g, **ECE 60858, Introduction To Operating Systems** (PWL) Sem. 1. Lecture 3 times per week for 50 minutes. Credit 3.

This course will cover basic design principles of major components of modern Operating Systems: 1. Processes Management: processes, threads, CPU scheduling, inter-process communication, process synchronization, mutual exclusion, deadlocks; 2. Memory Management: dynamic address relocation, segmentation, paging, virtual memory, page replacement algorithms, protection, sharing; 3. File Systems: file system interface, file system implementation, including directories, disk allocation, disk scheduling, memory-mapped files, journaling file system, Network File System; 4. Storage Systems: Disk structure, disk scheduling, swap-space management, RAID. The course will additionally introduce (1) system design principles including extra-level of indirection, optimizing the common case, separation of policy and mechanism, and the principle of locality and caching, (2) advance OS topics such as Network File System, and (3) Case study of a modern OS such as Linux. Students are expected to spend at least three hours per week gaining hands-on experience building major components of a modern time-sharing operating system. Typically offered Fall.

<https://purdue.curriculog.com/proposal:14279/form>

Graduate Council Document 21-42n, **ECE 61010, Time Domain Simulation And Optimization For Design** (PWL) Lecture 3 times per week for 50 minutes for 5 weeks. Credit 1.

This is a skills course that teaches time domain simulation and multi-objective design optimization. This course will serve the needs of students in power and energy system and component design, but is widely applicable to all areas of engineering and does not require domain specific knowledge.

<https://purdue.curriculog.com/proposal:17472/form>

Graduate Council Document 21-54b, **FMGT 56000, Emergency Preparedness for Facilities Personnel** (IUPUI) Sem. 1 and 2. SS. Lecture 1 time per week for 150 minutes for 16 weeks or 1 time per week for 400 minutes for 6 weeks. Credit 3.

This course encompasses a broad survey of emergency management topics relevant to facility managers and related personnel. Issues such as mitigation, preparedness, response and recovery, planning, risk assessment, life-safety and regulations, natural disasters and terrorism will be discussed, and opportunities for personalized planning through applied exercises will be utilized to provide enhanced understanding to the student.

<https://purdue.curriculog.com/proposal:17735/form>

Graduate Council Document 21-7m, **ME 50810, Introduction To Two Phase Flow And Heat Transfer** (PNW) Sem. 1 and 2. Lecture 2 times per week for 75 minutes. Credit 3. Prerequisite(s): ME 41600.

This course is intended for graduate engineer or scientist who is interested in multiphase flow and heat transfer area (where several different phases of fluids co-exist, e.g. water boiling, combustion and the operation of the power plant). Thermo-fluid transport phenomena in multiphase system will be discussed as well as the methodology and techniques to formulate and solve problems associated with the phenomena. Permission of instructor required.

<https://purdue.curriculog.com/proposal:17715/form>

Graduate Council Document 21-7n, **ME 55610, Finite Element Method For Fluid Flow And Heat Transfer** (PNW) Sem. 1 and 2. Lecture 2 times per week for 75 minutes. Credit 3. Prerequisite(s): ME 41600.

This course is intended for the graduate engineer or scientist who is interested in learning the basic principles and foundation of the finite element method. In this course, the finite element method will be discussed utilizing the Galerkin Method of Weighted Residuals approach. Problems will be addressed to illustrate the basics of the numerical scheme. The intent of this course is to demonstrate the wide applicability of the finite element approach especially focus on solving problems in heat transfer, species transport and fluid flow. Permission of instructor required.

<https://purdue.curriculog.com/proposal:17716/form>

Graduate Council Document 21-7o, **ME 59310, Modeling Of Solar Cells And Batteries** (PNW) Sem. 1 and 2. Lecture 2 times per week for 75 minutes. Credit 3.

This course is an introductory graduate course on modeling solar cells and batteries based on current research in the field. Topics include 1) Mathematical analysis: Ordinary differential equation, Laplace transform analysis 2) Modeling and simulations with MATLAB/Simulink and COMSOL 3) Applied experiments using data acquisition systems.

<https://purdue.curriculog.com/proposal:17684/form>

Graduate Council Document 21-7p, **ME 59400, Modeling Of Micro/Nano Materials Systems** (PNW) Sem. 1 and 2. SS. Lecture 2 times per week for 75 minutes. Credit 3.

Students learn how to apply fundamental knowledge of materials science and solid mechanics to the modeling and simulation of nano/micro material systems such as interatomic bonding, crystal structure, crystal orientation, defects, elastic material properties, single vs. polycrystal, and viscoelastic properties. Students learn basic principles of 1) Creating micro/nano material systems: nanowires, nanoparticle-based systems, thin films, and polycrystalline materials 2) Simulating micro/nano material systems using Molecular Dynamics (MD) and Finite Element Method (FEM). 3) High resolution microscopy: AFM and SEM for characterizing micro/nano material systems. Permission of instructor required.

<https://purdue.curriculog.com/proposal:17670/form>

Graduate Council Document 21-7r, **ME 61700, Applied Thermal Physics And Molecular Spectroscopy** (PWL) Sem. 1 and 2. Lecture 2 times per week for 75 minutes. Credit 3. Prerequisite(s): ME 20000 or ME 31500 or CHM 12500.

The fundamentals of statistical mechanics, kinetic theory, and molecular spectroscopy will be taught in order to predict and characterize the behavior of non-equilibrium gases using optical and laser diagnostics. This material will be taught within the context of applications involving combustion, plasmas, propulsion, energetic materials, shock waves and laser radiation.

<https://purdue.curriculog.com/proposal:17717/form>

Graduate Council Document 21-7q, **ME 62000, Combustion Of Energetic Materials** (PWL) Sem. 1. Lecture 3 times per week for 50 minutes. Credit 3. Prerequisite(s): ME 52500 or AAE 53900 or consent of instructor.

Students will learn the concepts of how to approach research in the area of Energetic Materials (EM) based on an understanding of the fundamental principles. Students will learn how energetic materials are fabricated, safety used, as well as understand life cycle issues, homogeneous & heterogenous combustion, and advanced energetic material concepts. Multiphase combustion phenomena will be introduced and emphasized. They will apply these concepts to a literature review and group research project, as well as that includes applying thermochemistry and chemical kinetic software. In addition, six hands-on labs are performed. This material will be covered in the context of real-world applications, with an emphasis on energetic materials, combustion, propulsion, explosives, pyrotechnics, and detonation phenomenon.

<https://purdue.curriculog.com/proposal:17139/form>

Graduate Council Document 21-, **MSE 51800, Failure Analysis** (PWL) Lecture 3 times per week for 50 minutes OR Lecture 2 times per week for 75 minutes OR Distance. Credit 3. Prerequisite(s): Graduate standing or (MSE 33500 and MSE 38200).

Introduction to failure analysis and prevention. Concepts of materials failure, root cause analysis, manufacturing aspects of failure, techniques for identifying failure, fracture, corrosion, wear, and case studies. Also includes business and entrepreneurship aspects.

<https://purdue.curriculog.com/proposal:17909/form>

Area Committee C: Chemistry, Engineering, and Physical Sciences, Margaret Gitau; chair, (mgitau@purdue.edu):

Graduate Council Document 21-20e, **CHE 52300, Engineering Applications Of Biological Molecules** (PWL) Sem. 1 and 2. Lecture 2 times per week for 75 minutes. Credit 3. Prerequisites: BIOL 23000.

This course introduces the applications of biological molecules in different engineering fields. The first part of the course will provide a general overview of fundamental molecular and cell biology, biophysics and biomechanics. The second part of the course will focus on three specific areas, namely 1) biopolymer, 2) nanobiotechnology and 3) genetic engineering. For each focus area, a general overview will be provided followed by in-class discussions of seminal papers of the field and team-based case studies. The goal of the course is to introduce the recent advances in the interface of biology and engineering to our students and prepare them for research and development work in interdisciplinary environments. Typically offered Fall Spring.

<https://purdue.curriculog.com/proposal:16286/form>

Graduate Council Document 21-20f, **CHE 56000, Introduction To Energy Storage Systems** (PWL) Sem. 1 and 2. Lecture 2 times per week for 75 minutes. Credit 3.

Energy Storage Systems Laboratory course is designed to introduce fundamentals of electrochemistry and electrochemical engineering of rechargeable lithium ion batteries (LIBs) to undergraduate and graduate students. The course will be reviewing working principles of LIBs, hands on experience on their assembly, charge-discharge testing, data analysis and related safety aspects. Strong emphasis will be given on the Li-ion battery technology, nanotechnology implementation and the materials design. Beyond conventional Li-ion systems and Pb-acid batteries, next generation Na-ion, K-ion and Li-S batteries will be discussed and designed. Students will be fabricating and testing high energy density batteries utilizing engineered electrodes, electrolytes and separators. Broader perspectives on sustainable, cost effective, longer lasting battery manufacturing will be provided. Typically offered Fall Spring.

<https://purdue.curriculog.com/proposal:16289/form>

Graduate Council Document 21-58a, **CHM 69699, Chemistry Graduate Internship** (PWL) Experiential. Credit 0.

Graduate internship experience. Students submit final work report and company evaluation. Permission of instructor required.

<https://purdue.curriculog.com/proposal:18250/form>

Area Committee D, Humanities and Social Sciences (Jill Sutor, chair; jsutor@purdue.edu):

Graduate Council Document 21-43c, **COM 50300, Cross Cultural Communication** (PWL) Lecture 3 times per week for 50 minutes or 2 times per week for 75 minutes or 1 time per week for 150 minutes. Distance 16 week term or 8 week term. Credit 3.

In this course, we examine the scholarly history of intercultural and cross-cultural communication along with conceptual and empirical challenges in doing this type of inquiry. Several contexts will be studied from the point of view of forms of cultural wisdom and variation in practices. Larger questions of identity, diversity, and intercultural competence will be explored, especially through filters of globalization and ethical issues in intercultural relations. Students will have regular reading assignments, short reaction papers, give oral presentations, and write a final research paper or proposal, depending on their stage in their programs.

<https://purdue.curriculog.com/proposal:17897/form>

Area Committee E: Life Sciences, (Timothy Lescun, chair; tlescun@purdue.edu):

Graduate Council Document 21-44a, **BMS 52900 Basic Bone Biology** (PWL) Sem. 2. Lecture 2 times per week for 75 minutes. Credit 3. Cross-listed with NUTR 52900.

This course is designed to present the fundamentals of bone biology. Approximately 45 hours of lecture will help the learner achieve the objectives outlined. Lectures will be given to present information and tie into information learners have acquired or will acquire in other courses (e.g. biomechanics, physiology, molecular biology, etc.) to assist them in combining all of their courses and research experiences together into one interdisciplinary learning experience. It is expected that students take additional time outside of scheduled class time to further learning. Materials for the learners will be posted on the course's website. These materials will include: Lecture notes and PowerPoints: Each lecturer will post his/her lecture notes and associated PowerPoint slides prior to the lecture. Additional information: As the course progresses, instructors may come across additional information that they may find useful for student learning of the material. These materials will be posted for students to utilize as they see fit. * *Materials found on other sites (e.g. social networking sites) will not be official course materials, so use at your own risk.* Permission of instructor required.

<https://purdue.curriculog.com/proposal:16770/form>

Graduate Council Document 21-28b, **FNR 59100, Teaching In Natural Resources Practicum** (PWL) Sem. 1 and 2. Laboratory 1 time per week for 100 minutes. Credit 1 or 2. Prerequisite(s): Graduate status or instructor approval.

This practicum course provides students with an opportunity to gain teaching experience in natural resource courses. This course is only open to students that are not being paid as teaching assistants. Permission of Instructor required.

<https://purdue.curriculog.com/proposal:16782/form>

Graduate Council Document 21-30e, NUR 64210, Systems Approaches To Health Care Engineering (PNW) Sem. 1 and 2. SS. Lecture 2 times per week for 100 minutes. Distance. Credit 3.

Students develop an understanding of the fundamentals of systems engineering tools and approaches through hands-on problem-solving exercises. They apply systems engineering tools and methods to a clinical problem requiring a systems approach. Students will use system engineering tools and approaches such as process mapping, bottle-neck analysis, queuing, lean engineering, simulation, optimization, dealing with uncertainty, what-if analysis, quality assurance and performance monitoring techniques. Permission of department required.

<https://purdue.curriculog.com/proposal:17470/form>

Graduate Council Document 21-29b, NUTR 52900 Basic Bone Biology (PWL) Sem. 2. Lecture 2 times per week for 75 minutes. Credit 3. Cross-listed with BMS 52900.

This course is designed to present the fundamentals of bone biology. The course objectives are designed to provide learners with a solid framework for understanding mechanisms, diseases, and treatments associated with the musculoskeletal system as they advance in their education and training.

- Approximately 45 hours of lecture will help the learner achieve the objectives outlined. Lectures will be given to present information and tie into information learners have acquired or will acquire in other courses (e.g. biomechanics, physiology, molecular biology, etc.) to assist them in combining all of their courses and research experiences together into one interdisciplinary learning experience.
- Directors will attend and supervise the scheduled lecture sessions if they are not providing the lecture content, and they will be available during these times to answer questions. However, it is expected that students take additional time outside of scheduled class time to further learning.
- Materials for the learners will be posted on the course's website. These materials will include:
- Lecture notes and PowerPoints: Each lecturer will post his/her lecture notes and associated PowerPoint slides prior to the lecture.
- Additional information: As the course progresses, instructors may come across additional information that they may find useful for student learning of the material. These materials will be posted for students to utilize as they see fit.

** Materials found on other sites (e.g. social networking sites) will not be official course materials, so use at your own risk.*

** Course offered every other spring*

<https://purdue.curriculog.com/proposal:16990/form>

CERTIFICATE(S):

Area Committee C: Chemistry, Engineering, and Physical Sciences, Margaret Gitau; chair, mgitau@purdue.edu):

Graduate Council Document 21-57a, Graduate Certificate in Regulatory Affairs and Regulatory Science for Medical Devices School of Biomedical Engineering, PWL

<https://purdue.curriculog.com/proposal:5976/form>

APPENDIX C



Graduate Council Document 21-H

Presented to the Graduate Council on September 17, 2021 and January 20, 2022

Authorship of Scholarly Works (S-)

Standard: [University Policy Office will complete]

Responsible Executive: Provost and Executive Vice President for Academic Affairs and Diversity

Responsible Office: Research Integrity Office

Date Issued: [University Policy Office will complete]

Date Last Revised: N/A

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CONTACTS

Clarification of Standard		
Title/Office	Telephone	Email/Webpage
Research Integrity Officer	765-496-3844	researchintegrity@purdue.edu

INDIVIDUALS AND ENTITIES AFFECTED BY THIS STANDARD

All Purdue Associates who make a scholarly contribution to research or the reporting of research in scholarly works.

STATEMENT OF STANDARD

Accuracy of authorship attribution is paramount to scholarly integrity and maintaining the public trust in the research and scholarship generated from Purdue University. Attribution of authorship is as critical to the integrity

of the publication record as the reported methodology, interpretation or conclusions. Inaccurate identification of authors harms the participating scholars and the credibility of the research and the institution.

This standard affirms the university's commitment to research and scholarship integrity as represented by listed authors and associated acknowledgement sections. This standard and its requirements are rooted in, and informed by, Purdue's overarching Statement of Integrity and Code of Conduct.

Suitable Authorship Practices

All Purdue Associates are required to list authors of scholarly works in accordance with authorship norms commonly accepted within a particular domain of scholarship and in accordance with the following:

1. List authors accurately and completely;
2. Do not list any gift authors, guest authors or ghost authors (see Unacceptable Authorship Practices below);
and
3. Apportion credit fairly and accurately (through the order of authorship or other means).

This standard applies to all situations that include, or allegedly should include, a Purdue Associate as a co-author.

Authorship Defined

Many organizations, journals and conferences publish guidelines for author identification. In the absence of such a guideline, include authors based upon the following from the Committee on Publication Ethics (COPE):

1. Substantial contribution to the work (e.g., conception, design, acquisition, analysis or interpretation);
and
2. Accountability for the work that was done and its review, approval and presentation in a publication.

At Purdue University, substantial contribution to a work that deserves credit as an author requires both material participation and intellectual contribution. Credit for Co-author is expected when an individual both materially participates in a research project and provides intellectual contribution for which a resulting publication would suffer if it were lacking.

Acknowledgements may be used to denote contributions to the work that do not meet the criteria of authorship, such as supporting the study, general mentoring, acting as study coordinator and other related auxiliary activities.

Author Order

The meaning of author order may vary by discipline or publication. Purdue Associates are encouraged to follow discipline or source conventions in the ordering of authors. Typically, the order of authorship conveys level of contribution. If there is equal involvement, authors are often ordered alphabetically by surname.

Where there is no prevailing convention and authorship is unequal, Purdue Associates should strive for correct representation based on contribution to the work. It is encouraged that Purdue Associates discuss and agree upon authorship and author order at the outset of a project.

Unacceptable Authorship Practices

Purdue Associates are required to avoid any manipulation of author identification to mislead the reader. In particular, the following practices are unacceptable:

1. Gift authorship – co-authorship given as reward or repayment to someone who did not contribute significantly to a work; “quid pro quo” authorship.
2. Guest authorship – co-authorship given due to reputation or influence to increase the potential for acceptance of the publication, when the co-author did not contribute significantly to the work; “honorary” authorship.
3. Ghost authorship – concealment of an author’s hand in the research or report of research.

Resolution of Authorship Disputes

A Purdue Associate who experiences an inaccurate or omitted authorship identification is encouraged to seek satisfactory resolution from the lead author or Corresponding author. If attempts to resolve the issue fail, the associate may report the concern in writing to the Research Integrity Officer.

The Research Integrity Officer and/or a tenured faculty member of their choosing, with no conflict of interest, will mediate among authors to obtain a voluntary resolution to the dispute. Choices of tenured faculty could be: disinterested faculty in the appropriate discipline, the chair of a unit graduate program, the associate dean of research, or others. If a voluntary resolution is not reached, the Research Integrity Officer will, in consultation with the Office of the Provost, refer the dispute to an appropriate academic head or dean to advise the Office of the Provost on an appropriate resolution.

In the event that a credible allegation of plagiarism exists in addition to the authorship dispute, the allegation will be subject to review under the University’s policy on Research Misconduct (III.A.2).

This standard does not supersede intellectual property rights outlined in University Policy I.A.1. Intellectual Property and Standard S-19 Courseware and Online Modules.

RESPONSIBILITIES

Purdue Associates

- Understand this standard and use it as a guide for establishing authorship credit, author order and appropriate acknowledgement in all scholarly activities.
- Report in good faith inaccurate, omitted or unacceptable authorship information as outlined in this standard.
- Abstain from the unacceptable practices of gift, guest and ghost authorship.
- Communicate this standard to other Purdue Associates in the course of research work and graduate advising at Purdue University.
- When requested, work with Purdue officials to resolve authorship disputes

Dean/Associate Dean and School/Department Head/Chair

- Understand this standard and use it as a guide for establishing authorship credit, author order and appropriate acknowledgement in all scholarly activities.
- Report in good faith inaccurate, omitted or unacceptable authorship information as outlined in this standard.
- Using this standard as a guide, assist in resolving authorship disputes.

Provost

- With guidance from the RIO, assign an academic head or dean to mediate and propose an authorship dispute resolution if faculty mediation fails to resolve the situation.
- When disputes involve external parties, work with the RIO to assign an appropriate individual to mediate and propose an authorship dispute resolution.

Research Integrity Officer

- Administer this standard.
- Receive reports of inaccurate, omitted or unacceptable authorship information as outlined in this standard and coordinate resolution of authorship disputes.

DEFINITIONS

All defined terms are capitalized throughout the document. Refer to the central [Policy Glossary](#) for additional defined terms.

Acknowledgment

Recognition of a participant whose involvement does not meet the discipline's recognized criteria for authorship.

Co-author

A participant whose contribution to a scholarly work meets the discipline's recognized criteria for authorship.

Corresponding Author

Sometimes also called primary author; a participant who takes primary responsibility for the submission and communication with the publisher and responds to any questions about the work during and after publication.

Principal Investigator

Principal Investigator is the primary individual responsible for the preparation, conduct, and administration of a research grant, cooperative agreement, training or public service project, contract, or other sponsored project in compliance with applicable laws and regulations and institutional policy governing the conduct of sponsored research.

Purdue Associate

See definition in the policy on [Research Misconduct \(III.A.2\)](#).

Research Misconduct

See definition in the policy on [Research Misconduct \(III.A.2\)](#).

RELATED DOCUMENTS, FORMS AND TOOLS

This standard is issued in support of the policy on [Research Misconduct \(III.A.2\)](#), as amended or superseded.

[Authorship Determination Scorecard](#) (PDF): A score sheet for quantifying contributions to a project to determine order of authorship.

[Authorship Tie-breaker Scorecard](#) (PDF): A score sheet used when two or more people achieve the same score on the authorship determination scorecard.

HISTORY AND UPDATES

[TBD]: This is the first standard to address this issue.

APPENDIX

There are no appendices to this standard.

APPENDIX D

PURDUE

UNIVERSITY

GRADUATE COUNCIL

Graduate Council Report 21-L
Presented to the Council on November 18, 2021

To: Purdue University Graduate Council
From: Jamie Mohler, Associate Dean
Date: November 18, 2021
Subject: GC Report for Guidelines and Expectations for Stackable Certificates Leading to a Master's Degree

Being able to “stack” certificates towards a master’s degree can be advantageous for students. At times, a student does not have the confidence, or possibly the interest, in pursuing a master’s degree but does see value in post-bachelorette certificates. Yet, once a student has completed one or more certificates and then feels confidence in pursuing an applicable master’s degree they may wish to stack those certificates towards a master’s degree that allows it. Additionally, certain programs may desire purposefully stacking two or more certificates towards a master’s degree.

Enabling the stacking of certificates towards master’s degrees, then, can be advantageous. Students can obtain certificates on the way towards a master’s degree, but those pursuing master’s degrees may obtain appropriate certificates when the coursework taken meets the requirements of those certificates and so long as the following requirements are met:

- Each certificate in a stacked scenario must have nine unique credits apart from any other certificate being pursued.
- Any overlapping courses amongst certificates must be replaced with appropriate courses (as determined by the student and major advisor) such that the resulting master’s degree has no duplicative or “double counted” courses.
- A student cannot obtain both a certificate and a degree concentration or degree major with the same name as the certificate.
- A student may be enrolled in multiple certificates at the same time as enrollment in a master’s degree.
- Certificates stacking towards a master’s must be awarded prior to or concurrently with the master’s degree.

NEW DOCUMENTS RECEIVED
(After the January 20, 2022 Graduate Council Meeting)

GRADUATE COURSE PROPOSALS:

Area Committee A, Behavioral Sciences (G. Jonathan Day, chair; gjday@purdue.edu):

Graduate Council Document 22-6a, HK 53200, Musculoskeletal Adaptations (PWL)
Lecture 2 times per week for 75 minutes. Credit 3. Prerequisites: HK 36800.

This course will utilize traditional lecture combined with small group, student-lead learning to study the impact of acute and chronic exercise on skeletal muscle and tendon. Topics covered will include muscle growth, muscle metabolism, structural and functional changes in skeletal muscle and tendon, the impact of age and sex on exercise adaptations, and the impact of exogenous agents on skeletal muscle and tendon adaptations to exercise. Other topics may include the impact of unloading (e.g., bedrest) and spinal injury on skeletal muscle and tendon. This course will be relevant to those interested in exercise physiology, athletic training, physical therapy, occupational therapy, medical school, nutrition science, engineering, and similar programs of study. Permission of department required.

<https://purdue.curriculog.com/proposal:18201/form>

Graduate Council Document 22-6b, HK 53600, Cardiopulmonary Physiology (PWL)
Lecture 2 times per week for 75 minutes. Credit 3. Prerequisites: HK 36800.

This course will provide a comprehensive overview of the characteristics and regulatory mechanisms underlying the cardiorespiratory adjustments to exercise. The effects of chronic diseases, including chronic obstructive pulmonary disease, peripheral artery disease and chronic heart failure, on the cardiovascular and respiratory responses to exercise will also be discussed in detail. Permission of department required.

<https://purdue.curriculog.com/proposal:18200/form>

Area Committee B, Engineering, Sciences, and Technology (John A. Springer, chair; jaspring@purdue.edu):

Graduate Council Document 22-8a, CM 51800, Building Information Modeling And Sustainability (PWL)
Lecture 1 time per week for 150 minutes. Credit 3.

This course explores environmental sustainability in all its forms, starting with the historical and theoretical basis and continuing through an understanding of sustainable building construction, design, development, and renewable energy strategies/management tools. In this course students explore Building Information modeling technology to assess and compare the design impact on the environment.

<https://purdue.curriculog.com/proposal:16164/form>

Graduate Council Document 22-8a, CM 52600, Value Engineering - Functional Analysis Of Systems And Techniques (PWL) Lecture 1 time per week for 150 minutes. Credit 3.

This course applies value engineering principles and life cycle costs to the built environment with particular focus on the effect of the decisions made in the design, construction, operation and maintenance of the built environment on the quality and cost. <https://purdue.curriculog.com/proposal:16162/form>

Graduate Council Document 22-4a, ME 50201, Single Phase Convective Heat Transfer (PNW) Lecture 2 times per week for 75 minutes. Credit 3. Prerequisites: ME 41600 or Equivalent; OR ME/CE 31200 or Equivalent; OR ME 30500 or equivalent.

This course will cover fundamentals of single phase convective heat transfer by focusing on methods in determining convective heat transfer rates in various flow conditions most of which will be combined with calculations for the other modes of heat transfer to predict the overall heat transfer. The topics will include external laminar flows, laminar flow in ducts, external and internal turbulent flows, natural convection, combined convection, and convective heat transfer in porous media flow. Permission of instructor required.

<https://purdue.curriculog.com/proposal:18563/form>

Graduate Council Document 22-9a, TCM 50500, Preparing For Career Transitions: Creating An ePortfolio (IUPUI) Lecture 1 time per week for 60 minutes for 13 weeks. Credit 3.

Students will reflect on their work and present evidence of knowledge, skills, and professional attributes to prospective employers in rapidly changing workplace contexts. Students will learn about the roles of e-portfolios in presenting work to prospective employers, reflect on their goals and abilities, and learn principles of effective e-portfolio design.

<https://purdue.curriculog.com/proposal:10694/form>

Graduate Council Document 22-7a, TECH 63000, Leadership of Cybersecurity & Cyberforensics (PWL) Course offered 100% online. This is a core course in the online professional doctorate. Doctor of Technology program administered by Purdue Online Polytechnic. Schedule Type: Distance 1 time per week for 150 minutes. Prerequisites: C lowest passing grade.

This course will provide an overview of cybersecurity for technology leaders. The digital age is ever changing and provides new challenges, threats and opportunities to the technologies that we use. As leaders, we need to learn the considerations of the impact of our decisions on the stakeholders in our environment and the risks they expose. In this course, we will analyze current trends and threats in the information security space. In addition, the course will also force the analysis of current computing environments and the unique challenges they can bring. Permission of department required. Typically offered Fall Spring Summer.

<https://purdue.curriculog.com/proposal:12737/form>

Graduate Council Document 22-7b, TECH 63100, Global Perspectives On Emerging Technologies (PWL) Course offered 100% online. This is a core course in the online professional doctorate. Doctor of Technology program administered by Purdue Online Polytechnic. Schedule Type: Distance 1 time per week for 150 minutes. Prerequisites: C lowest passing grade.

This course centers on an in-depth treatment of the discipline of technology and its intersections with culture, innovation and economics. Systematic analysis of technology and its international dimensions will be required as is horizon scanning, both nationally and internationally. Proficient written and oral communication is necessary for success. Permission of the department is required. Typically offered Fall, Spring, Summer.

<https://purdue.curriculog.com/proposal:12738/form>

Graduate Council Document 22-7c, TECH 63200, Demographic Leadership (PWL) Course offered 100% online. This is a core course in the online professional doctorate. Doctor of Technology program administered by Purdue Online Polytechnic. Schedule Type: Distance 1 time per week for 150 minutes.

This course addresses the major underlying changes redefining the United States. It directly yet sensitively examines how we as individuals can more readily deal with demographic shifts, and in the end, how changes in racial and ethnic diversity and age distribution present us all an opportunity to be our better selves. Permission of department required. Typically offered Fall Spring Summer.

<https://purdue.curriculog.com/proposal:12884/form>

Area Committee C: Chemistry, Engineering, and Physical Sciences, Margaret Gitau; chair, mgitau@purdue.edu):

Graduate Council Document 22-2b, BME 52600, Cardiac Electrophysiology (IUPUI)

Lecture 2 times per week for 75 minutes. Credit 3. Prerequisite(s): BME 39500 or equivalent with permission of instructor. Familiarity with basic analog and digital electronic circuits, basic methods of engineering design and basic numerical simulation techniques and numerical methods for the solution of ordinary and partial differential equations. Competency in the use of MATLAB in the solution of ordinary differential equations. A basic understanding of electrical sources and fields. Co-Requisite: BME 39500 or equivalent with instructor permission.

This course will introduce the basic principles of cardiac-generated bioelectricity as measured at cellular, extracellular and body surfaces. The generation, detection and classification of abnormal cardiac rhythms will be emphasized. Clinical and engineering principles of relevant electro-therapies will also be studied including cardiac pacemakers, defibrillators and ablation therapies involving cardiac mapping and a variety of ablative energy sources. Modern signal processing methods as applied to electrocardiography will also be presented. Permission of department required.

<https://purdue.curriculog.com/proposal:10841/form>

Area Committee E: Life Sciences, (Timothy Lescun, chair; tlescun@purdue.edu):

Graduate Council Document 22-5a, **ENTM 60900, Science Writing** (PWL) Lecture 1 time per week for 50 minutes. Credit 1.

This course is designed for graduate students (MS or PhD) at any stage in their professional career who are seeking formal training in manuscript and grant writing for a scientific audience. Students will be required to attend class and prepare for in-class group discussions and writing activities by reading assigned sections of the text or associated papers. Students will also be required to prepare a written assignment (manuscript or grant) over the course of the semester, which they will use to practice and hone newly acquired skills, as well as participating in peer-evaluation of one another's writing. Permission of department required.

<https://purdue.curriculog.com/proposal:19739/form>

Area Committee F, Management Sciences (TBD):

Graduate Council Document 22-5a, **ECON 58700, Advanced Quantitative Economics With Python** (PWL) Distance. Credit . Prerequisite(s): ECON 57700.

The main goal of this course is to extend the computational and programming toolkit developed in Quantitative Economics with Python course. In particular, we will cover advanced methods for working with, visualizing and analyzing data in Python. In addition, we will consider more advanced programming techniques including stochastic optimization and dynamic programming. Throughout the course we will consider a number applications related to microeconomics, macroeconomics, and econometrics covered in the MS Econ program curriculum.

<https://purdue.curriculog.com/proposal:18703/form>

Graduate Council Document 22-10a, **MGMT 63150, Accounting For Private Equity** (PWL) Credit 3.0: Lecture 3 times per week for 50 minutes. Credit 2.0: Lecture 2 times per week for 50 minutes. Distance. Credit 2 or 3.

The course offers students with knowledge of private equity services that accounting firms provide to clients. It covers investment banking, buy & sell side due diligence, M&A tax services, business valuations, etc.

<https://purdue.curriculog.com/proposal:19912/form>

Graduate Council Document 22-10b, **MGMT 63250, Advanced International Accounting** (PWL) Credit 3.0: Lecture 1 time per week for 150 minutes. Credit 2.0: Lecture 1 time per week for 100 minutes. Distance. Credit 2 or 3.

This course is designed to help students a) Learn about the development of international accounting movements and implications in a globalized financial market; b) Develop the ability to read and interpret the financial statements of companies that are prepared in accordance with International Financial Reporting Standards (IFRS); c) Emphasize the importance of professional judgment in international accounting when assessing different accounting treatments for the same event; d) Learn to cope with differences in financial measurement, recognition, and reporting practices; and e) Enhance the students' communication skills. The course should also contribute to the requisite background required for professional examinations such as CPA and to become prepared for a long-range successful accounting, auditing, and/or managerial career.

<https://purdue.curriculog.com/proposal:19808/form>

Graduate Council Document 22-10c, **MGMT 63550, Accounting Consulting For Entrepreneurship** (PWL) Credit 3.0: Lecture 3 times per week for 50 minutes. Credit 2.0: Lecture 2 times per week for 50 minutes. Distance.. Credit 2 or 3.

This course is an experiential learning experience that is part of the Experiential Learning Initiative in the Krannert School of Management. The main goal of the course is to provide various accounting services to STEM start-up companies which are based on Purdue's innovations (www.purduefoundry.com) and to established companies in the bigger corporate world. At the same time, we also would like to give our students the opportunity to apply their acquired classroom knowledge and have them exposed to some real-world accounting problems that start-up or established companies typically experience. Our students are expected to provide various accounting support services that are related to financial accounting & reporting, managerial accounting, business planning, and/or tax issues. The format of the course is very open. The first four weeks will be spent in a classroom setting, with presentations on how to professionally manage a client relationship and how to successfully tackle projects in a challenging STEM start-up and/or established corporate environment. Each project will be completed by teams of 3-5 students, which will be formed at the beginning of the semester. After the initial classroom sessions, the project teams will be on their own, with faculty guidance, running the engagement. The teams will meet with the clients to determine their needs and expectations. The students will do the work and deliver the output including a final presentation to the client.

<https://purdue.curriculog.com/proposal:19925/form>

Graduate Council Document 22-10d, **MGMT 63650, Accounting Consulting For Entrepreneurship** (PWL) Lecture 3 times per week for 50 minutes. Distance. Credit 3.

This course is designed to introduce students to the foundational elements underlying ethics and ethical behavior, with an emphasis on ethical issues facing professional accountants. The course will provide students with a framework of ethical reasoning, professional values and attitudes for exercising professional skepticism, and other behavior that is in the best interest of the public and accounting profession. The course will also review the core values of integrity, objectivity, and independence as well as rules of professional conduct. This course uses real-world case studies and practical hands-on applications in order to enhance the student's ability to recognize ethical dilemmas and overcome them with sound ethical decision-making. Students successfully completing this course in a face-to-face, traditional classroom setting may be assured that the course meets the Texas State Board of Public Accountancy (TSBPA) and Illinois Board of Examiners ethics course required to apply for taking the Uniform CPA Examination.

<https://purdue.curriculog.com/proposal:19916/form>

Graduate Council Document 22-10e, **MGMT 63750, Advanced Taxation** (PWL)

Credit 3.0: Lecture 3 times per week for 50 minutes. Credit 2.0: Lecture 2 times per week for 50 minutes.

Distance. Credit 2 or 3.

This course is directed at students who wish to learn more about the taxation of business entities beyond the basic principles taught in MGMT 504 Introductory Tax Accounting or an equivalent course. The course will cover broad topics such as tax law sources and tax research; the tax advantages and disadvantages of various business entities as well as how entrepreneurs may choose the optimal entity for tax purposes; taxable and nontaxable methods of mergers, acquisitions, and divestitures; fundamental concepts of consolidated tax returns for C Corporations; and the accounting for income taxes under ASC 740.

<https://purdue.curriculog.com/proposal:19923/form>

Graduate Council Document 22-10f, **MGMT 63850, Public Company Reporting & Regulation** (PWL) Credit

3.0: Lecture 3 times per week for 50 minutes. Credit 2.0: Lecture 2 times per week for 50 minutes. Distance.

Credit 2 or 3.

This course introduces students to the Securities and Exchange Commission's (SEC) rules and regulations as they apply to U.S. companies and their auditors. Requirements for frequently encountered annual reporting responsibilities (e.g., Forms 10-K, 10-Q, 8-K, proxy statements, etc.) and registration statements are explored and analyzed. Actual SEC filings provide real-world applications and interpretation of the SEC's rules. Rules imposed by the primary U.S.-based stock exchanges are introduced as is the history of the SEC and current trends affecting this rulemaking body. Additionally, this course encompasses the enforcement power of the SEC and its implications to companies, their officers, and accountants.

<https://purdue.curriculog.com/proposal:19928/form>

Graduate Council Document 22-10g, **MGMT 63901, London Trip for IASB** (PWL) Distance. Individual Study.

Credit 2 or 3.

This is an experiential study abroad class with workshops held at the International Accounting Standards Board (IASB) as well as at one of the leading universities in the UK. In addition, students will visit public multinational companies and/or accounting firms in the Greater London area, UK.

<https://purdue.curriculog.com/proposal:19920/form>

Graduate Council Document 22-10h, **MGMT 63902, Washington DC Accounting For Policy** (PWL) Distance.

Individual Study. Credit 2 or 3.

This course offers students an intensive, distinctive, personal and professional development experience, addressing critical public policy institutions, issues, and trends affecting the profession of accounting. Over 3 days in Washington, D.C., participants meet with and gain a greater understanding of the role of regulatory agencies such as the Public Company Accounting Oversight Board and the Securities and Exchange Commission. Participants also have meetings and discussions with organizations governing the accounting profession, such as the American Institute of Certified Public Accountants and the Center for Audit Quality, as well as more informal but important organizations such as trade associations and think tanks. The course often includes visits with members and staff from Congress and officials from the Executive Branch to understand their institutional roles in governing the profession. These meetings include discussions of the relevant tax, securities, commodities, and oversight committees in Congress, for example. Within the Executive Branch, discussions typically include the operations of forensic accounting and compliance within agencies such as the U.S. Treasury and Internal Revenues Service and the Federal Bureau of Investigation. Participants also gain practical insights into the strategic role of government relations, as well as the role of public policy lobbying and advocacy by the overall profession and individual firms, regarding issues that affect them and their clients. Other topical sessions often include discussions of cybersecurity policy, tax policy, and other topics relevant to the profession and key clients.

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