PURDUE UNIVERSITY
GRADUATE SCHOOL

Minutes of the Graduate Council Meeting
October 13, 2022
2:30 p.m.

Second Meeting
Zoom

PRESENT: Council Members, James L. Mohler, Deputy Chair, Raida Abuizam, Kola Ajuwon, Bradley J. Alge, Thomas W. Atkinson, Yong Bao, Shawn G. Bauldry, Carrie Berger, Arun Bhunia, Janice S. Blum, William B. Collins, Joy Colwell, G. Jonathan Day, Eric D. Deemer, Duane D. Dunlap, Emad Elwakil, Esteban Garcia Bravo, Keith B. Gehres, Kevin D. Gibson., Richard H. Grant, Jeffrey P. Greeley, Chong Gu, Nilupa Gunaratna, Nancy A. Jackson, Troy D. Janes, Qing Jiang, Ann L. Kirchmaier, Douglas J. LaCount, Jiliang Li, Yanjun Li, Qiang Liu, Patti Ludwig-Beymer, Melanie Morgan, Brad E. Oliver, Tina L. Payne, Rodolfo Pinal, Julia M. Rayz, Joseph P. Robinson, David Rollock, Paul Salama, Abraham Schwab, Alex Seto, Ann Shanahan, Michael G. Smith, James E. Tisdale, Joshua R. Widhalm, Nicole Widmar, Christine Wuenschel Amanda D. Zelechoski

APOLOGIES FOR ABSENCE RECEIVED FROM: Steven J. Burdick, Levon Esters, Catherine A. Golden (Provost's Representative), Mary E. Johnson, Kimberly P. Kinzig, Judith Lewandowski, Linda J. Mason, chair, Clarence D. Maybee

ABSENCES: Suzanne C. Bart, Stacy K. Betz, Erla Heyns, Tong Jin Kim, Kristin K. White

GUESTS: Greg Blaisdell, Debbie Fellure, Mark Haugen, Kitty O'Doherty, Sheri Tague, Korena Vawter

I.   MINUTES
     The September 2022 Graduate Council meeting minutes were approved via the Qualtrics Survey.

II. DEANS REMARKS AND REPORTS

     James Mohler
     - Carrie Berger is a member of the senior leadership team for the IUPUI Transition to provide guidance and answer questions. It was noted that Dean Mason's goal is to minimize difficulties for graduate students, as well

as faculty and staff.

- Federal Agencies, particularly the National Science Fellowship (NSF) and the National Institute of Health (NIH) have changes relative to Responsible Conduct of Research (RCR) training.
  - In January 2022, the NIH changed the training requirements in the content that included talking about what a safe research environment looks like in positive mentoring attributes.
  - NIH are holding institutions responsible by revoking funding and listing faculty on a department list for a period of years in situations where there are reports of faculty mistreatment of graduate students, postdocs, and trainees.
  - NIH had been relatively silent until the Chips Act and the America Competes Act. They now require undergraduates, graduate students, postdocs and faculty as senior personnel to have RCR training.
  - NSF has defined that the subject matter needs to include mentor training and mentorship training to raise awareness of potential security threats and federal export control disclosure reporting requirements.
  - The efforts that Melanie Morgan is leading, relates to mentorship which is now going to be an NSF requirement. The implementation date is 2025.
  - Information will be forthcoming in the spring.
  - NSF has an additional requirement for graduate students and postdoctoral researchers who received substantial funding or support from an NSF grant now having individualized development plans.
  - As the RIO Research Integrity Officer, Dr. Mohler will provide a presentation at the Society of Research Administrators International (SRAI) in November.
  - Questions can be sent to Dr. Mohler (jlmohler@purdue.edu)
- Dean Mason asked for one or two more council members to serve on the Publication Task Force that is being assembled. There are departments that are requiring publications to be in press or in print before a person can graduate. This is a concern because of the time frame it takes to get those published. It defers the first responsibility of evaluating our graduate students on journals which we question. The Task Force is to put some guidance as to what might be appropriate in programs for faculty in the graduate space and what might not be appropriate.
- The Big 10 Academic Alliance will hold an RCR Conference on Mentoring Up: Resources for Success in Research Integrity on October 26, 2022.

Melanie Morgan

- As part of the Mentoring Initiative, Dr. Erin Dolan, from the University of Georgia and author of *The National Academics Evidence Based Recommendations for Improving Mentoring* will present a seminar on the "The Dark Side of Development: When Mentoring is Problematic and What to Do About It" on October 14, 2022.

- Workshop for Mentoring Graduate Writers will be presented by the Purdue Writing Center on October 25, 2022. This workshop is for faculty and postdocs only.

Kevin Gibson
- Fewer applications were received from black students.
- Fewer black students accepted and enrolled than last year.
- Across the board we went down from 2020 – 2022.
- Enrollment numbers went from 109 students in 2021 to 86 in 2022.
- We are aware of the task force goals and efforts are going into increasing the number of black student boilermakers attending Graduate School.
- Applications and enrollment may be down across the board as it may be related to the competitiveness of our fellowship packages.
- Dr. Mason ask that council members encourage departments to review the entire application pool before releasing admission offers. She also asks what the Graduate School can do to help grow recruitment and drive students to apply.

III. <u>NEW BUSINESS</u>

a) Dr. Joy Colwell, PNW Campus Report:
   - PNW on the threshold for Hispanic Serving Institute (HSI) status.
   - To qualify for HSI status, the institute must have 25% or more total undergraduates with Hispanic or Latino backgrounds.
   - HSI status qualifies an institution for additional opportunities that are supported at the federal level.
   - The Doctor Of Technology recently approved is now accepting applications.
   - PNW did an Economic Impact Study with data pre-pandemic. The information is located on the PNW website under, About PNW Economic Impact Data.
   - $745.9 million total income added to the region

b) Dr. Jiliang Li presented the IUPUI Fall 2022 Enrollment Report. The complete report is posted on the Graduate School website. https://www.purdue.edu/gradschool/faculty/enrollment.html

c) Dr. Janice Blum, IUPUI Campus Report:
   - Indiana University Purdue University in Indianapolis (IUPUI) is an urban research and academic health science leaders. Both universities came together in the 1960's. There is a history in the state capital with programs starting in the turn of the century in the 1800's.
   - With the transition of the two schools there are currently:
   - Nine departments in the School of Science. Eight will go to Purdue University and one at Indiana University. Psychology will transition to Indiana University.

- o Biology
- o Chemistry
- o Chemical Biology
- o Computer and Information Science
- o Forensic Science
- o Mathematical Sciences
- o Neuroscience
- o Physics
- o Psychology
- Seven departments in the School of Engineering and Technology with six at Purdue University one at Indiana University. Music Technology will transition to Indiana University.
  - o Biomedical Engineering
  - o Computer Engineering
  - o Electrical and Computer Engineering
  - o Mechanical Engineering
  - o Motorsports Engineering
  - o Music Technology
  - o Technology
- With the transition, it will be important that students moving to Purdue will have access to services. IUPUI currently offers:
  - o Graduate Mentoring Center
  - o Writing Center
  - o Preparing Future Faculty and Professionals
  - o Three Minute Thesis Competition
  - o Member of the Center for the Integration of Research Teaching and Learning Circle (NSF funded program). 30 institutions in that consortium where students are prepared to be future faculty though preparation as educators in STEM fields.
  - o Parent Network
  - o Doctoral Scholars Program (helps students with networking for the future)
  - o Students work with graduate emissaries to introduce graduate opportunities to diverse and talented prospective graduate students
  - o Community and Wellness programing partnering with the counseling services. The Psychology department has opened a counseling center on campus.
  - o Annual Award Program where the top 50 graduate students are recognized called the Elite 50's.

IV. <u>AREA COMMITTEE REPORTS</u> (Area Committee Chairs)
Graduate Council Document 22, I Graduate Council Documents Recommended for Approval. See Appendix B. Voted via Qualtrics survey.

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

Alex Seto, President of the Purdue Graduate Student Government (PGSG)
- PGSG hosted dozens of events in the last month, including the Fall Graduate Student Picnic with record attendance.
- PGSG is continuing with its advocacy efforts.

VI. CLOSING REMARKS
- Dr. Mohler noted that the Purdue University Authorship Standard. Document endorsed by the Graduate Council last spring is now in process to be endorsed by the Senate. There were a few changes at the recommendation of the senate. The Graduate Council was asked if the document should be reindorsed. There were no comments.

The council meeting was adjourned by Dr. Mohler at 3:15 p.m.

James Mohler, Deputy Chair
Tina L. Payne, Secretary

APPENDIX A

PENDING DOCUMENTS

(October 2022)

BOLDED ITEMS ARE IN REVIEW WITH AN AREA COMMITTEE

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

Graduate Council Document 22-28a, EDCI 67600, Unpacking Research: Writing Literature Reviews In Learning Design And Technology (PWL)
Graduate Council Document 22-28b, EDCI 67700, Unpacking Research: Writing Research Proposals In Learning Design And Technology (PWL)
Graduate Council Document 22-28c, EDCI 67800, Unpacking Research: Writing For Scholarly Publications In Learning Design And Technology (PWL)
Graduate Council Document 22-28d, EDCI 67900, Capstone: Inquiry Into Practice (PWL)
Graduate Council Document 22-28e, EDCI 68000, Curriculum & Instruction MS Portfolio (PWL)
Graduate Council Document 22-24a, **EDPS 51800, Relapse And Recovery (PNW)**
Graduate Council Document 22-29a, **EDU 51900, Advanced Study In The Teaching Of Secondary School Social Studies (PFW)**
Graduate Council Document 22-40a, **HDFS 60400, Developmental And Family Approaches To Diversity And Oppression (PWL)**
Graduate Council Document 22-1c, **PUBH 52600, Randomized Control Trials In Public Health (PWL)**

Area Committee B, Engineering, Sciences, and Technology (Duane Dunlap, chair; ddunlap@purdue.edu):

*Graduate Council Document 22-18b***, CE 50100, Map Projection And Geometric Geodesy (PWL)**
*Graduate Council Document 22-18c***, CE 50301, Digital Photogrammetric Systems (PWL)**
*Graduate Council Document 22-18d***, CE 50400, Laser Scanning (PWL)**
*Graduate Council Document 22-18e***, CE 50600, Adjustment Of Geospatial Observations (PWL)**
Graduate Council Document 22-18f, **CE 50700 Geospatial Data Analytics (PWL)**
Graduate Council Document 22-18g, **CE 50801 Geographic Information Systems (PWL)**
Graduate Council Document 22-18h, **CE 52500, Built Environment Modeling (PWL)**
Graduate Council Document 22-18i, **CE 53100, Nanotechnology For Civil And Environmental Applications (PWL)**
Graduate Council Document 22-18j, **CE 53600, Non-destructive Testing & Sensing For Civil Infrastructures (PWL)**
Graduate Council Document 22-18k, **CE 55201, Environmental Biotechnology (PWL)**
Graduate Council Document 22-18L, **CE 65000, Photochemical Reactors: Theory, Methods, And Applications Of Ultraviolet Radiation (PWL)**

Graduate Council Document 22-30a, **CIT 50100, Data-Driven Cloud Computing Applications (IUPUI)**
Graduate Council Document 22-27a, **CNIT 53600, IT Policy, Law, And Ethics (PWL)**
Graduate Council Document 22-27b, **CNIT 53700, Professional Research And Communication (PWL)**
Graduate Council Document 22-32c, **CS 55100, Cloud Computing Fundamentals (PWL)**
Graduate Council Document 22-32a, **CS 55600, Data Security And Privacy (PWL)**
Graduate Council Document 22-32b, **CS 58500, Theoretical Computer Science Toolkit (PWL)**
Graduate Council Document 22-23f **ECE 51214, CMOS Analog IC Design (PWL)**
Graduate Council Document 22-23b, **ECE 60270, Structure And Dynamics Of Large-Scale Networks (PWL)**
Graduate Council Document 22-23c, **ECE 60431, Fiber Optic Communications (PWL)**

Graduate Council Document 22-23d **ECE 60432, Nanophotonic Modeling (PWL)**
Graduate Council Document 22-23e **ECE 60645, High-speed Semiconductor Devices (PWL)**
Graduate Council Document 22-4d, **ME 50202, Sustainable Thermal Fluid Systems Analysis (PNW)**

Area Committee C: Chemistry, Engineering, and Physical Sciences, (Suzanne Bart; chair, sbart@purdue.edu):

Graduate Council Document 22-33a, **EAPS 51201, Planetary Origins (PWL)**
Graduate Council Document 22-33b, **EAPS 52400, Laboratory Analysis (PWL)**
Graduate Council Document 22-33c, **EAPS 55501, Numerical Modeling of Planetary Orbits (PWL)**
Graduate Council Document 22-33d, **EAPS 56700, Planetary Atmospheres (PWL)**
Graduate Council Document 22-33e, **EAPS 58801, Impact Cratering (PWL)**

Area Committee D, Humanities and Social Sciences (William (Bart) Collins, chair; bcollins@purdue.edu):
Graduate Council Document 22-30b, **ANTH 60800, Proseminar In Graduate Studies In Anthropology (PWL)**
Graduate Council Document 22-30a, **ANTH 62700, Political Ecology (PWL)**

Area Committee E: Life Sciences, (Richard Grant, chair; rgrant@purdue.edu):

Graduate Council Document 22-22b, **BIOL 57110, Advanced Cell Biology (PNW)**
Graduate Council Document 22-25b, **NUR 51700, Doctor of Nursing Project Seminar,**
Doctor of Nursing Practice (PWL)
Graduate Council Document 22-25a, **NUR 60400, PhD Seminar (PWL)**

Area Committee F, Management Sciences (Nicole, Widmar, chair; nwidmar@purdue.edu):

Graduate Council Document 22-39a, **BUS 59302, Financial Analytics (PFW)**
Graduate Council Document 22-39b, **BUS 59502, Business Law And Ethics (PFW)**
Graduate Council Document 22-26a, **OBHR 66201, Leadership (PNW)**

CERTIFICATE(S):

Area Committee B, Engineering, Sciences, and Technology (Duane Dunlap, chair; ddunlap@purdue.edu):

Graduate Council Document 22-37a, **Postbaccalaureate Certificate in Hypersonics submitted by the Department of Aeronautics and Astronautics, PWL**

MAJOR(S):

Area Committee B, Engineering, Sciences, and Technology (Duane Dunlap, chair; ddunlap@purdue.edu):

Graduate Council Document 22-34a, **Major in Autonomy/Interdisciplinary Engineering submitted by the Department of Interdisciplinary Engineering (MS/MSE), PWL**

Graduate Council Document 22-35a, **Major in Internet of Things/Interdisciplinary Engineering   submitted by the Department of Interdisciplinary Engineering (MS/MSE), PWL**

Graduate Council Document 22-36a, **Major in Robotics/Interdisciplinary Engineering submitted by the Department of Interdisciplinary Engineering (MS/MSE), PWL**

GC Document 22-I

**DOCUMENTS RECOMMENDED FOR APPROVAL
BY THE GRADUATE COUNCIL
OCTOBER 2022**

GRADUATE COURSE PROPOSALS:

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

Graduate Council Document 22-28a, **EDCI 67600, Unpacking Research: Writing Literature Reviews In Learning Design And Technology** (PWL) Lecture 1 meeting of 1 hour 50 min/week OR Distance (DIS), equivalent of 1 meeting of 1 hour 50 min/week. Credit 2.
    This course is designed to introduce the learner to the process of analyzing and preparing literature reviews on topics relevant to the field of Learning Design and Technology. Emphasis is placed on helping the learner to understand, critique, and synthesize the research literature in order to apply it to their own personal research agenda. Course activities and assignments are designed to help the learner develop the knowledge, tools, and strategies needed to become thoughtful consumers and producers of research and to use this knowledge to inform their practice. Learning experiences revolve around two major themes: 1) the examination and thoughtful critique of current research and 2) preparation of a thorough literature review that provides a rationale for continued study. Permission of instructor required.
https://purdue.curriculog.com/proposal:20965/form

Graduate Council Document 22-28b, **EDCI 67700, Unpacking Research: Writing Research Proposals In Learning Design And Technology** (PWL) Lecture 1 meeting of 1 hour 50 min/week OR Distance (DIS), equivalent of 1 meeting of 1 hour 50 min/week. Credit 2. Prerequisite(s): EDCI 67600.
    This course is designed to introduce the novice researcher to the process of developing a research problem statement supported by literature resulting in a professional organization conference proposal and a proposal for a funding agency in the field of Learning Design and Technology. Permission of instructor required.
https://purdue.curriculog.com/proposal:20961/form

Graduate Council Document 22-28c, **EDCI 67800, Unpacking Research: Writing For Scholarly Publications In Learning Design And Technology** (PWL) Lecture 1 meeting of 1 hour 50 min/week OR Distance (DIS), equivalent of 1 meeting of 1 hour 50 min/week. Credit 2. Prerequisite(s): EDCI 67600 and EDCI 67700.
    This course is designed to introduce the novice researcher to the process of publishing research in the field of Learning Design and Technology. Emphasis is placed on practical aspects

of the publishing process as well as familiarizing students with the role that editors and reviewers play in that process. Prerequisite courses include: EDCI 67600 Writing Literature Reviews and EDCI 67700 Writing Research Proposals. Students must bring a draft manuscript completed through the methods portion into the course, and students must have completed research and collected data to facilitate completion of a research-based manuscript for publication during the course. Permission of instructor required.
https://purdue.curriculog.com/proposal:20960/form

Graduate Council Document 22-28d, **EDCI 67900, Capstone: Inquiry Into Practice** (PWL) Distance. Credit 3.

    This course conceptually centers on the Ghanaian Sankofa symbol of a bird retrieving an egg from its back while facing forward. This metaphor represents the need to "go back to the past and bring forward that which is useful" (About the Sankofa [n.d.]. Retrieved from https://cola.siu.edu/africanastudies/about-us/sankofa.php). The twin aspect of looking back with the future in mind plays out in consonance with the Portfolio course generally taken in tandem with this course. In this course, students will reinforce and extend their learning of key concepts across the program and deepen their engagement with a topic of interest to them through an action research project. Permission of department required.
https://purdue.curriculog.com/proposal:20937/form

Graduate Council Document 22-28e, **EDCI 68000, Curriculum & Instruction MS Portfolio** (PWL) Distance. Credit 1.

   This course was created to help guide C&I students near completion of their coursework to develop their competency portfolio. A competency portfolio reflects the depth and breadth of a student's educational growth since entering the graduate program. The purpose of the C&I competency portfolio is to demonstrate that students have mastered the graduate competencies for the C&I online Master's program. The portfolio will contain student projects aligned with C&I competencies and will be reviewed by committee members. The competencies are based on the Curriculum & Instruction departmental competencies and several program-specific competencies. The competency portfolio is a requirement for graduation from the C&I Master's program. (multiple media are welcome) Permission of department required.
https://purdue.curriculog.com/proposal:20941/form

Graduate Council Document 22-24a, **EDPS 51800, Relapse And Recovery** (PNW) Lecture 1 time per week for 150 minutes for 16 weeks or 2 times per week for 150 minutes for 8 weeks. Credit 3.

  Concepts and overview of relapse and recovery, counseling procedures and techniques, and treatment considerations. The emphasis of the course will be chemical dependencies, including alcoholism. Gambling, sexual compulsivity, and eating disorders will also be explored. Underlying all of these concepts will be a consideration of the impact of recovery and relapse on the individual, family, and culture. There will be an emphasis on breadth of understanding and areas of consensus and controversy.
https://purdue.curriculog.com/proposal:20426/form

Graduate Council Document 22-29a, **EDU 51900, Advanced Study In The Teaching Of Secondary School Social Studies** (PFW) Lecture 1 time per week for 150 minutes. Credit 3.
     This course is intended to prepare teachers to design and integrate methods of teaching secondary-level social studies. Note: Public school participation is required.
https://purdue.curriculog.com/proposal:18418/form

Graduate Council Document 22-40a, **HDFS 60400, Developmental And Family Approaches To Diversity And Oppression** (PWL) Lecture 1 time per week for 165 minutes. Credit 3.
     In this course, we will utilize an intersectional lens throughout the course to critically examine the development of individuals oppressed due to their minority status in the United States. We will review current research and literature across disciplines to: 1) understand the origin, meaning, and purpose of race and racism; 2) learn about the history of oppression and resilience of minoritized groups; 3) analyze systems of discrimination; 4) introduce theoretical frameworks for studying the unique, intersectional experiences of minoritized populations and examples of their application to empirical research, and 5) discuss how research can be used to advance social justice. Permission of department required.
https://purdue.curriculog.com/proposal:21313/form

Graduate Council Document 22-1c, **PUBH 52600, Randomized Control Trials In Public Health** (PWL) Lecture 2 times per week for 75 minutes. Credit 3. Prerequisite(s): A graduate-level introductory statistics course.
     Randomized control trials provide solid evidence on whether interventions and programs "work" to improve health outcomes. In this course, students will learn how to design a randomized study, handle practical issues that arise in data collection, analyze data using appropriate methods and good statistical practice, identify limitations to statistical evidence, and interpret and communicate findings in an audience-appropriate way. This is a hands-on course in which students will work with data and build skills using SAS statistical software in preparation for careers as biostatisticians, data scientists, and researchers.
https://purdue.curriculog.com/proposal:17980/form

Area Committee B, Engineering, Sciences, and Technology (Duane Dunlap, chair; ddunlap@purdue.edu):

Graduate Council Document 22-18c, **CE 50301, Digital Photogrammetric Systems** (PWL) Lecture 3 times per week for 50 minutes. Credit 3.
     This course deals with various aspects related to 3D reconstruction from 2D imagery. The course starts with comprehensive coverage of data acquisition systems while focusing on different factors that affect the quality of image measurements. Then, the course focuses on the mathematical details for deriving 3D information from imagery including 2D/3D rotation, collinearity equations, projective transformation, direct linear transformation, theory of orientation, bundle adjustment, image resampling according to epipolar geometry, image matching, and orthophoto generation. The course also covers the similarities/differences between photogrammetric and computer vision approaches towards 3D reconstruction.
https://purdue.curriculog.com/proposal:20015/form

Graduate Council Document 22-18d, **CE 50400, Laser Scanning** (PWL) Lecture 3 times per week for 50 minutes. Credit 3. Prerequisites: CE 50300 or permission from instructor.

This course covers laser scanning data acquisition and processing activities. The first half of the course deals with the operational principles of laser scanning including laser light generation, laser scanning patterns, georeferencing, point positioning equation, impact of random and systematic errors on derived point clouds, and system calibration. The second half deals with point cloud data processing including characterization, data structures, segmentation, quality control, and product delivery. The course also covers the similarities/differences between photogrammetric and laser scanning approaches for 3D reconstruction.
https://purdue.curriculog.com/proposal:20017/form

Graduate Council Document 22-18f, **CE 50700 Geospatial Data Analytics** (PWL) Lecture 3 times per week for 50 minutes. Credit 3. Prerequisites: CE 50800.

The course will introduce fundamental theories, analytical methods and programming skills that are needed to work with geospatial data. Students will learn the theories, methods, and techniques to visualize, analyze and model various geospatial data through hands-on computer programming practice based on various open source geospatial libraries. To be specific, the course will use R and its related packages as the basic tool for implementation. The goal is to enable the learners to develop their own geospatial analytical applications.
https://purdue.curriculog.com/proposal:20006/form

Graduate Council Document 22-18g, **CE 50801 Geographic Information Systems** (PWL) Lecture 3 times per week for 50 minutes. Credit 3.

This course covers a range of fundamentals in geographic information science and technology. Students will learn the use of current popular geographic information system (GIS) tools to handle various geographic data. Through working on real world geospatial problems, students shall gain extensive and hands-on experience in geographic data manipulation, visualization, and analysis. Course assignments are focused on both GIS theoretical basics and practical skills for students to achieve expected proficiency. The course will work with geospatial data in geography, topography, environmental science, hydrology, transportation, and geosocial science. It is targeted to students with interest in civil and environmental engineering, agriculture, geography, earth science, natural resources, smart cities or other related subjects.
https://purdue.curriculog.com/proposal:13948/form

Graduate Council Document 22-18h, **CE 52500, Built Environment Modeling** (PWL) Lecture 3 times per week for 50 minutes. Credit 3.

A study of computational tools to model, analyze, and manage the built environment, specifically, the civil infrastructure from a life cycle and system's perspective. Such computational tools include geospatial technologies, engineering sensing technologies, engineering database, building information modeling, object-oriented modeling, and spatial analytics.
https://purdue.curriculog.com/proposal:20738/form

Graduate Council Document 22-18i, **CE 53100, Nanotechnology For Civil And Environmental Applications** (PWL) Lecture 3 times per week for 50 minutes. Credit 3.

    This course will introduce students to the field of nanotechnology with a special emphasis on nanomaterials synthesis, characterizations and their applications in civil and environmental engineering. The specific applications will include, but not limited to, tailoring mechanical property, durability, self-cleaning, self-sealing, self-sensing, energy harvesting and other multi-functionality. It integrates the fields of materials science, civil engineering and electrical engineering. The basic concepts will be discussed including nano-scale effect, process-structure-property relationship, nano- and micro-structure property characterizations, multi-functional materials, nano-device fabrication and their applications for energy harvesting, water infiltrations and environmental sensing. lab will be provided to students enrolled in the course to learn nano and micro-structure characterizations skills.

https://purdue.curriculog.com/proposal:20315/form

Graduate Council Document 22-18j, **CE 53600, Non-destructive Testing & Sensing For Civil Infrastructures** (PWL) Lecture 3 times per week for 50 minutes. Credit 3.

    This course will equip students with necessary fundamental knowledge related to the Non-Destructive Testing methods. The topics will be discussed including fundamental materials mechanical properties and linear fracture mechanics of materials, testing procedures of commonly used civil materials and structures. The content such as, elasticity, fracture mechanics, and wave propagation, will be covered. Various case studies will be discussed to help students understand and apply the knowledge to field inspection or monitoring of civil materials and structures.

https://purdue.curriculog.com/proposal:20316/form

Graduate Council Document 22-18k, **CE 55201, Environmental Biotechnology** (PWL) Lecture 3 times per week for 50 minutes. Credit 3. Prerequisites: CE35000 or CE/EEE45600.

    This course focuses on fundamental of molecular biology and biotechnology for environmental applications. The major topics include activated sludge processes, stoichiometry, bioenergetics, anaerobic digestion, biological nitrogen and phosphorus removal, molecular microbiology tools, biofouling, antibiotic resistance, viruses and biofuels.

https://purdue.curriculog.com/proposal:20318/form

*Graduate Council Document 22-27a***, CNIT 53600, IT Policy, Law, And Ethics** (PWL) Course is offered 100% online. Schedule Type: DIS; 8 Week Module for Fall and Spring. 8 Week Module for Summer. Credit 3.

    This course examines the policy, legal, and ethical aspects of information technology. Issues covered include ethical decision making, policy development, professionalism, privacy, freedom of expression, intellectual property, liability, and social responsibility. Included will be the philosophical ethical theories that underpin ethical decision making in the context of executing IT based projects.

https://purdue.curriculog.com/proposal:19257/form

Graduate Council Document 22-27b, **CNIT 53700, Professional Research And Communication** (PWL) Course is offered 100% online. Schedule Type: DIS; 8 Week Module for Fall and Spring. 8 Week Module for Summer. Credit 1.

This course explores aspects of research and communications that pertains to technology-based projects and professions as well as informed changes in business process. Specifically, the methods involved in objective driven research within and across technology and business domains, as well as the use of rationale for a concisely written summary of research methods and findings for a working professional.

https://purdue.curriculog.com/proposal:20309/form

Graduate Council Document 22-32a, **CS 55600, Data Security And Privacy** (PWL) Lecture 3 times per week for 50 minutes or 2 times per week for 75 minutes. Distance. Credit 3. Prerequisite(s): C or better in CS 42600 or CS 52600.

Data security and privacy is an important part of information security. This course provides an introduction to the fundamental principles and techniques for data security and privacy. The course covers fundamental theories of access control, discretionary access control, mandatory access control, and role-based access control, database access control approaches including grant revoke, virtual private databases and labelled databases, database encryption. On privacy, it covers data anonymization, re-identification attacks, definition, primitives, and applications of differential privacy.

https://purdue.curriculog.com/proposal:20676/form

Graduate Council Document 22-32b, **CS 58500, Theoretical Computer Science Toolkit** (PWL) Lecture 3 times per week for 50 minutes or 2 times per week for 75 minutes. Credit 3.

This course covers fundamental techniques and a range of mathematical tools that underlie today's research in theoretical computer science. The course material is essential for research in theoretical computer science as well as machine learning theory. The course is targeted at students who plan to pursue research in these areas. Topics will be chosen from four core areas: Convex Analysis and Optimization, Spectral Methods, Concentration Inequalities, and Discrete Fourier Analysis. Depending on student and instructor interest, additional topics will be chosen and may include applied analysis, coding theory, probabilistic proofs, and more advanced topics in discrete Fourier analysis. Students will read papers in theoretical computer science and machine learning theory using, exploring and extending the covered techniques and tools. Students are expected to be proficient in probability theory, have the maturity to follow and carry out basic analysis proofs, and have completed courses in calculus, linear algebra, discrete mathematics, and analysis of algorithms. More specifically, the course expects mastery of the material covered in Calc III (Math 261), Linear Algebra (Math 265), Probability (STAT 416), Foundations of CS (CS 182), and Analysis of Algorithms (CS 381 or CS 580).

https://purdue.curriculog.com/proposal:20654/form

Graduate Council Document 22-4d, **ME 50202, Sustainable Thermal Fluid Systems Analysis** (PNW) Lecture 3 times per week for 50 minutes. Credit 3. Prerequisite(s): ME 30500 and ME 41600 and ME/CE 31200.

This course will cover thermal fluid analysis of sustainable energy conversion processes, production and use of alternative fuels such as hydrogen, efficient energy systems and waste heat recovery, environmental impacts of industrial technologies, industrial energy consumption, power generation, and energy end-use distribution for improved thermal energy utilization.
https://purdue.curriculog.com/proposal:20602/form

Area Committee D, Humanities and Social Sciences (William (Bart) Collins, chair; bcollins@purdue.edu):

Graduate Council Document 22-30b, **ANTH 60800, Proseminar In Graduate Studies In Anthropology** (PWL) Lecture 1 time per week for 50 minutes. Credit 1.

This is an introduction to graduate study in Anthropology at Purdue. Students will be introduced to the research of Purdue Anthropology faculty and how their work fits into the contemporary landscapes of their fields. Students will gain familiarity with tools needed for graduate work in Anthropology at Purdue and be exposed to navigating the world of academic conferences and publishing. Students will have opportunities to engage in discussions on research ethics in our field. Students will engage with visiting speakers and their work as well as participate in learning how to organize academic events. During the semester, students will also be introduced to the resources available at Purdue to support their graduate studies and professional development including funding opportunities, procedures for preparing for research, career planning, supports for teaching, information about the structure of the Anthropology graduate program and supports for work-life balance. Students will receive credit for the course based on participation. Permission of instructor required.
https://purdue.curriculog.com/proposal:21225/form

Graduate Council Document 22-30a, **ANTH 62700, Political Ecology** (PWL) Lecture 2 times per week for 75 minutes or 1 time per week for 150 minutes. Credit 3.

Political ecology centers on questions described as a research framework that pairs the strengths of political economic analysis with sociocultural and ecological approaches to environmental change. Students will explore the diverse ways of doing political ecology by drawing upon the fields of anthropology, political science, geography, and history as well as interdisciplinary environmental sciences. Students will critically examine the field through a historical exploration of its intellectual genealogy, an investigation of current research trends, and imagining possible future directions. Emphasis will be placed on both theory and methods while analyzing a variety of case studies. Permission of instructor required.
https://purdue.curriculog.com/proposal:21199/form

Graduate Council Document 22-22b, **BIOL 57110, Advanced Cell Biology** (PNW) Lecture 2 times per week for 75 minutes. Credit 3. Prerequisite(s): BIOL 24300 Cell Biology and BIOL 24400 Genetics, or permission of instructor.

   In this lecture only course, we will explore in-depth cell structure and function. Topics covered include: protein structure; methods used to explore molecular mechanisms and visualize cell structures; membrane structure and transport; electrical properties of membranes; protein sorting and trafficking; structure and function of the cytoskeleton; cell signaling and communication; apoptosis, the cell cycle and how it is controlled; and cancer. Primary research studies will be incorporated to reinforce lecture topics.
https://purdue.curriculog.com/proposal:20986/form

Graduate Council Document 22-25b, **NUR 51700, Doctor of Nursing Project Seminar, Doctor of Nursing Practice** (PWL) Lecture 180/1/2. Credit 0.
This seminar will allow the student to begin contemplating and organizing their thoughts in developing the DNP project. In this seminar, the student will be introduced to the requirements for the DNP project and begin to cultivate feasible project questions that have an impact in clinical care, obtain feedback and network with peers.
https://purdue.curriculog.com/proposal:20860/form

Graduate Council Document 22-25a, **NUR 60400, PhD Seminar** (PWL) LEC/120/1/3. Credit 0.
   This seminar is taken by Ph.D. nursing students each semester to integrate themselves to the academic and professional roles of the Ph.D. prepared nurse. This seminar will facilitate students to share their research ideas and progress through networking and collegial discourse. It also provides a low-stake forum where students can give and receive feedback on each other's research. Seminar goals include improving students' presentation and writing skills, teaching how to give constructive criticism, and advising on the academic and professional job market.
https://purdue.curriculog.com/proposal:19589/form

Graduate Council Document 22-39a, **BUS 59302, Financial Analytics** (PFW)
Lecture 1 time per week for 165 minutes. Credit 3. Prerequisites: BUS 52400 and BUS 54000 and BUS 54200.

   An introductory graduate course designed to expose students to various advanced analytical tools in finance. The course provides the user-friendly guides using a data-driven approach to Portfolio Theory, Capital Asset Pricing Model (CAPM), Duration Analysis, GAP Analysis, and Value at Risk (VaR).
https://purdue.curriculog.com/proposal:21381/form

Graduate Council Document 22-39b, **BUS 59502, Business Law And Ethics** (PFW)
Lecture 1 time per week for 240 minutes for 10 weeks or 1 time per week for 165 minutes for 16
weeks. Credit 3. Prerequisites: None for MBA students.

Business Law and Ethics examines a wide range of common law, statutory, and regulatory
concepts that play key roles in well-reasoned business decision-making. This course intersects
two related fields: the law related to business and commercial activities; and, business
ethics. Topics to be emphasized include the following: the American legal system; contract
formation and performance; the UCC and Sales of Goods law; business entities, from the
proprietorship through the limited liability company (LLC); the role and duties of boards of
directors; Alternative Dispute Resolution (ADR), including key aspects of negotiation,
mediation, and arbitration; agency law; intellectual property; employment discrimination and
harassment law; business ethics frameworks and the application of ethics in personal and
corporate decision-making.
https://purdue.curriculog.com/proposal:21414/form

Graduate Council Document 22-26a, **OBHR 66201, Leadership** (PNW) Lecture. Meeting time
to vary by credit hours. Credit 1 - 4.

Examines organizational leadership responsibilities, forms of leadership, the acquisition, use,
and consequences of power, critical leader skills, and how corporate environments shape
leadership. Emphasis on self-discovery and development of managerial leadership knowledge
and skills.
https://purdue.curriculog.com/proposal:18647/form

CERTIFICATE(S):

Area Committee B, Engineering, Sciences, and Technology (Duane Dunlap, chair;
ddunlap@purdue.edu):

Graduate Council Document 22-37a, Postbaccalaureate Certificate in Hypersonics
submitted by the Department of Aeronautics and Astronautics, PWL
https://purdue.curriculog.com/proposal:20981/form

MAJOR(S):

Area Committee B, Engineering, Sciences, and Technology (Duane Dunlap, chair;
ddunlap@purdue.edu):

Graduate Council Document 22-34a, Major in Autonomy/Interdisciplinary Engineering
submitted by the Department of Interdisciplinary Engineering (MS/MSE), PWL
https://purdue.curriculog.com/proposal:18940/form

Graduate Council Document 22-35a, Major in Internet of Things/Interdisciplinary Engineering submitted by the Department of Interdisciplinary Engineering (MS/MSE), PWL
https://purdue.curriculog.com/proposal:18941/form

Graduate Council Document 22-36a, Major in Robotics/Interdisciplinary Engineering submitted by the Department of Interdisciplinary Engineering (MS/MSE), PWL
https://purdue.curriculog.com/proposal:18939/form