

# PURDUE UNIVERSITY GRADUATE SCHOOL

Minutes of the Graduate Council Meeting  
March 24, 2022  
2:30 p.m.

Sixth Meeting  
Via Zoom

PRESENT: Linda J. Mason, chair, Council Members, Raida Abuizam, Christopher R. Agnew, Kola Ajuwon, Yong Bao, Janice S. Blum, Steven J. Burdick, Joy Colwell, G. Jonathan Day, Eric D. Deemer, Bryan DeWitt, Emad Elwakil, Keith B. Gehres, Kevin D. Gibson, Margaret Gitau, Catherine A. Golden (Provost's Representative), 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, Deputy Chair, Madelina Nuñez, Tina L. Payne, Paul Salama, Megan Sapp Nelson, Abraham Schwab, Ann Shanahan, Michael G. Smith, John A. Springer, Jill J. Sutor, Joseph D. Thomas, Eric Waltenburg, Christine Wuenschel

## APOLOGIES FOR ABSENCE RECEIVED FROM:

Thomas W. Atkinson, Christopher K. Belous, David S. Cochran, Levon Esters, Timothy B. Lescun, Judith Lewandowski, Melanie Morgan

ABSENCES: Suzanne C. Bart, Tong Jin Kim, Zhan Pang, Chenn Zhou

GUESTS: Janet Beagle, Sean McCann, Aparajita Sagar, Sherri Tague, Korena Vawter

## I. MINUTES

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

## II. DEANS REMARKS AND REPORTS

### **Dean Linda Mason**

- Dean Mason will present the three-year presentation on graduate education to the Board of Trustees in April.
- Trends in Graduate Education, West Lafayette campus:
  - 41% International
  - 41% Female
  - Master's enrollment has been primarily residential but has grown since 2017, and we now have more online master's students than residential master's students.

- Professional Development presented 325 workshops to Graduate students.
  - Purdue Fort Wayne with 210 registrations
  - Purdue Northwest with 339 registrations
  - IUPUI with 300 registrations
  - Online students 1,000 registrations
- The number of deferrals due to COVID during enrollment in 2020 were 1700. The number of deferrals is about 400 currently.
- More online programs. In 2017 there were 18 online programs. This past Fall the number of online programs increased to 38.
- The growth in the Graduate School Interdisciplinary Master's Degree offers four majors in collaboration with the colleges across campus.
- A task force will be set up this Fall to look at ways of increasing the number of underrepresented minorities in enrollment. We are nearly five and half percent underrepresented minority students in population.
- We need to do a better job of telling the story about graduate education. What happens to alums and how they use their degree after they leave the institution and the impact that Purdue had on them while they were students at the university.
- Dean Mason presented a video that showed graduate student and alumni experiences at Purdue University.
- Policies and practices work across the system in the Graduate School. A committee will be put together in the Fall about where we go and broadening that idea of creativity system wide.
- A task force committee was created by the Graduate Council a few years ago that generated a report on what they wanted to do for minimum stipends which was presented to the provost.
  - A significant change for stipends in what is set as the minimum will happen this Fall. The Graduate School works with Human Resources in determining what the minimum stipend is that is paid.
- A year of mentoring in Graduate Education had 25 individuals step up to become mentoring fellows. They will be paid \$5,000/yearly.
  - Several colleges did not have faculty to step up. We are mentoring those students, so there will be no faculty input in those particular colleges.
  - Graduate students are gathering data.
  - Faculty are working with faculty committees to spend this calendar year looking at the mentoring data by figuring out what we need to do and what the problems are.
  - The next two years we will come up with model systems that we can apply to understand what the best mentoring model is in each of the colleges and how to get the best mentoring.
  - The end result in this is to be able to apply for funding to create a center for mentoring on campus for graduate education and to be a resource as one of those places that values mentoring nationally, and that we have some of the best mentoring to be known for helping our

students get what they need to be successful in every aspect of their careers.

III. AREA COMMITTEE REPORTS (Area Committee Chairs)

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

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

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

- Graduate Student Appreciation Week will be held April 4<sup>th</sup> thru April 8<sup>th</sup>
- Collaborate with the Graduate School and other graduate student organizations
- Town halls will be offered

V. NEW BUSINESS

- a) Dr. Catherine Golden, Assistant Vice Provost for Academic Initiatives, Office of the Provost presented the Process Map for Academic Program Proposal External Steps. See Appendix C.
- b) Molly Amstutz, Director, Institutional Data Analytics & Assessment, Office of the Provost presented the Brightspace Reporting Overview Spring 2022. See Appendix D.

The council meeting was adjourned by Dean Mason at 4:00 p.m.

Linda J. Mason, Chair  
Tina L. Payne, Secretary

## APPENDIX A

### PENDING DOCUMENTS

(March 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 22-6a, HK 53200, Musculoskeletal Adaptations (PWL)***

***Graduate Council Document 22-6b, HK 53600, Cardiopulmonary Physiology (PWL)***

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)***

***Graduate Council Document 22-8a, CM 52600, Value Engineering - Functional Analysis Of Systems And Techniques (PWL)***

***Graduate Council Document 22-4a, ME 50201, Single Phase Convective Heat Transfer (PNW)***

***Graduate Council Document 22-9a, TCM 50500, Preparing For Career Transitions: Creating An ePortfolio (IUPUI)***

***Graduate Council Document 22-7a, TECH 63000, Leadership of Cybersecurity & Cyberforensics (PWL)***

***Graduate Council Document 22-7b, TECH 63100, Global Perspectives On Emerging Technologies (PWL)***

***Graduate Council Document 22-7c, TECH 63200, Demographic Leadership (PWL)***

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

***Graduate Council Document 22-2a, BME 51500, Practical MRI and Applications (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 21-56a, ENGL 56602, Project Management For Writers (PFW)***

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

***Graduate Council Document 22-5a, ENTM 60900, Science Writing (PWL)***

Area Committee F, Management Sciences (TBD):

***Graduate Council Document 22-5a, ECON 58700, Advanced Quantitative Economics With Python (PWL)***

***Graduate Council Document 22-10a, MGMT 63150, Accounting For Private Equity (PWL)***

***Graduate Council Document 22-10b, MGMT 63250, Advanced International Accounting (PWL)***

***Graduate Council Document 22-10c, MGMT 63550, Accounting Consulting For Entrepreneurship (PWL)***

***Graduate Council Document 22-10d, MGMT 63650, Accounting Consulting For Entrepreneurship (PWL)***

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

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

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

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

**CERTIFICATE(S):**

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

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

**MAJOR(S):**

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

***Graduate Council Document 22-15a, Major in Microelectronics and Semiconductors Interdisciplinary Engineering Program, PWL***

## APPENDIX B

GC Document 22-C

### DOCUMENTS RECOMMENDED FOR APPROVAL BY THE GRADUATE COUNCIL MARCH 2022

#### 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 D, Humanities and Social Sciences (Jill Suitor, chair; jsuitor@purdue.edu):

*Graduate Council Document 21-56a*, **ENGL 56602, Project Management For Writers** (PFW) Lecture 2 times per week for 75 minutes. Distance. Credit 3. Prerequisite(s): Graduate level.

Project management education smartly focuses a great deal on planning and organization, process documentation, and management implementation strategies. However, building effective communication strategies and abilities is often overlooked and incorrectly thought of as a soft skill. In this class, we are going to specifically address the intricacies of communicating effectively in the workplace as an essential skill of project managers. In addition, we will also discuss planning and organizing strategies and models, process documentation, and management implementation strategies and philosophies. We'll learn about these concepts through hands-on project work that emphasizes individual and collective approaches to project management and gives us a basis for thinking through issues that influence the workplace—from emerging workspace design to the effects of globalization on distributed teams and organizations. Students should leave class with skills and knowledge that they can refer to when asked to lead and participate in a variety of projects in different organizational contexts. Permission of instructor required.

<https://purdue.curriculog.com/proposal:17915/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>

#### **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>

#### **MAJOR(S):**

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

*Graduate Council Document 22-15a, Major in Microelectronics and Semiconductors Interdisciplinary Engineering Program, PWL*

<https://purdue.curriculog.com/proposal:20224/form>

## APPENDIX C

# ACADEMIC PROGRAM PROPOSALS

Process Map & Recommendations



4/5/2022 | 1

## Purpose

### Internal & External Drivers

- Regional accreditor changes to review and notice requirements
- ICHE changes and increased scrutiny
- New ICHE leadership
- Select review windows by BOT and ICHE
- 5 years since Curriculog implementation

### Goal

- Enhance **communication, transparency, and efficiency** of academic program proposals reviews which require external review steps.



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## Definitions

### Academic Program\* Proposal

- Proposal to **create a new** or **modify an existing** degree, certificate, or other postsecondary program of organized instruction, which includes major but not concentration or minor

### External Review Steps

- An **Academic Program Proposal** which requires review and approval the Indiana Commission of Higher Education (ICHE), and/or Higher Learning Commission (HLC) before implementation.



*\*HLC Glossary: "Educational program" is synonymous with HLC's use of the terms "academic offering(s)" and "academic program(s)."*

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## System Considerations

### Scope

- System workflows are distinct by institution, program level, proposal type and modality
  - **Exclude:** College Steps
  - **Exclude:** Courses, Minors, Concentrations
  - **Exclude:** Independent sections of the system
- New Degree Proposals = System
- Other Academic Program Proposals = PWL and Purdue Online



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# LET'S CLARIFY...

What proposal types have external review steps?

How long does external review typically take?



## External Review Steps

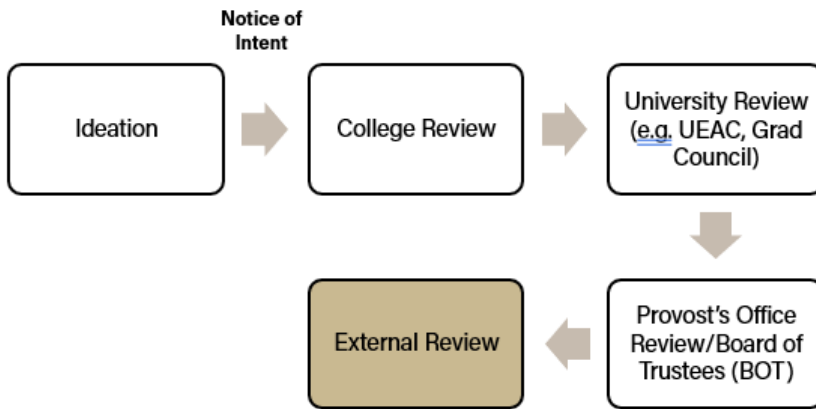
### Reviewers by Program Type

Academic Program Proposal Type	ICHE	HLC	Minimum External Review Timeline
New Degree*	✓	✓	4-5 months
New Certificate	✓	✓	1-2 months
New Major	x	✓	1 month
Revision to modality	✓	✓	1-2 months
Revision to CIP	✓	x	1-2 months
Revision to name	✓	x	1-2 months
Revision to curriculum	x	✓	1 month
Other admin changes**	✓	Varies	1-2 months



\* MS in Graduate Studies falls here for now.

\*\*List of other admin options.



High-level overview of PWL current workflow. Timeline is for **External Review Steps** only.

***LET'S DISCUSS...***

## Preliminary Findings

### Findings To-Date

- Lack of clarity on external review steps
- Lengthy timelines from ideation to implementation
- Moving goal posts - extra steps, documents and requirements along the way
- More guidance on escalation and points of contact

### Preliminary Recommendations

#### Communication

- Published deadlines shared annually
- Clarity on contacts and consultation resources
- Increase comment use by reviewers

#### Transparency

- Identify similar proposals much earlier on; consultation
- Clarify key questions at each review level
- Centralize place for resources across offices

#### Efficiency

- Better utilization of new Curriculog features
- Potential steps for elimination
- Streamline Curriculog forms
- Set review turnaround standards

## *Academic Initiatives*

### Next Steps

- Continue with faculty and stakeholder input
  - PWL and Purdue system perspectives
  
- Based on scope...
  - Process map for PWL academic proposals
  - General process map for system new degree proposals
  
- **April** – Share recommendations
  
- **Summer** – Design and deliver
  
- **August** – Implementation



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## *QUESTIONS?*

Catherine Golden, EdD, MPA  
Assistant Vice Provost for Academic Initiatives  
[cagolden@purdue.edu](mailto:cagolden@purdue.edu)



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## APPENDIX D

# Brightspace Data Warehouse

PLANNING FOR REPORTING



### Background

Purdue West Lafayette, Fort Wayne, and Northwest transitioned to Brightspace (Bspace) as the enterprise-supported learning management system (LMS) during 2020. These three campuses share the same instance of Bspace. Brightspace supplies standard data exports – refreshed daily. An IT project has recently been completed to load these exports into Purdue’s data warehouse. The next giant leap is ensuring data is available and accessible for university stakeholders.

### How would you make use of this data?

Our next step is identifying what you and our broad campus community needs in the form of standard reports via Cognos, what training may be necessary, and/or what other data is still needed, missing, or needs to be joined to make this \*new\* source of information as useful as possible.

- What use cases do you have for Bspace data?
- What content (reports or dashboards) would help support your needs?
- At what level of detail (categories, demographics, etc.)?
- How would you like to access Bspace data?

Brightspace data may be used to meet a variety of needs across campus, such as:

- understanding the impacts of student and instructor activity.
- tracking learner progress and performance.
- analyzing assessment effectiveness; developing effective course content.
- meeting institutional reporting requirements.
- and supplying data for research on the scholarship of teaching and learning.

### Out of Scope

Please keep the following limitations in mind as you consider how Brightspace data can be used:

There is extremely limited data available for textual analysis. For example, the Bspace data warehouse does not include full discussion post data. Textual data is retrievable through other avenues.

Bspace data is refreshed overnight. There is no real-time data available. Available data dates to our implementation of this LMS in Spring 2020.

No data is available for external tools. For example, if students take a quiz through an external link, their results will not be in the Bspace data warehouse.



## What Data is in the Warehouse?

Here you will find available data and potential and actual questions gathered from our campus community, so far. This should give you a good idea about what to consider when identifying what ~~Bspace~~ data may be useful for your needs.

Category	Available Data	Questions
Academic Engagement	Count of activity feed posts, activity feed comments, discussion posts, survey attempts, and quiz attempts	How frequently are students engaging with course components?
Activity Exemptions	Grade exemption information	Which grades were a student exempt from?
Assignment Submissions	Assignment name, type, possible score, start date, end date, due date. Assignment date submitted, score, is feedback given and read.	When are students receiving feedback? When are students submitting assignments?
Attendance User Sessions	Attendance details by course session	How frequently did a student attend class?
Content Progress & Completion	Content title, type, completion type, start date, end date, due date. Was content read or visited, last visited date, count of visits, time spent in content, completion date.	What content have students accessed?
Grade Results	Grade name, type, category, max points Regular and weighted points received and points possible.	What course elements had the most impact on students' grades?
Quiz Activity	Quiz <u>attempt</u> start time, completion time, score, points possible. Quiz name, description, start date, end date, due date, time limit. Quiz question and answer details.	What questions are most frequently missed?
Rubric Assessments	Rubric name, description, type, overall score, scored date, assessor. Rubric criterion name and score.	What parts of assignments have lower grades?
User Enrollment	User enrollment and unenrollment details for courses, sections, groups.	
Other/Combination	See above.	What students are at risk? How do group assignments impact grades? Is there a correlation between when an assignment is submitted and students' grades?

NEW DOCUMENTS RECEIVED  
(After the March 24, 2022 Graduate Council Meeting)

**GRADUATE COURSE PROPOSALS:**

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

*Graduate Council Document 22-23a*, ECE 51216, Digital Systems Design Automation (PWL) Lecture 3 times per week for 50 minutes. Credit 3. Prerequisite(s): ECE 27000 and ECE 26400 and senior standing, or graduate standing.

This course will provide an introduction to the tools used to design and analyze circuits at the logic level of abstraction (where circuits are composed of gates and flip-flops). Most digital chips used in computing and electronic systems (including microprocessors, graphics processors, chips used in network routers, cell phones, digital audio/video appliances, automotive electronics) are entirely or largely designed using EDA tools. This course will focus on the foundations of logic-level EDA tools, including the design of exact and heuristic algorithms that form the basis for VLSI Computer-Aided Design. Topics covered include an overview of the IC design flow and levels of abstraction, synthesis of two-level (AND-OR / PLA) circuits, multi-level logic synthesis and technology mapping, sequential circuit synthesis, Logic-level verification using Boolean Satisfiability and BDDs, Timing Analysis, Power analysis and Reduction, and design techniques for emerging nanoscale technologies.

<https://purdue.curriculog.com/proposal:17316/form>

*Graduate Council Document 22-23b*, ECE 60270, Structure And Dynamics Of Large-Scale Networks (PWL) Lecture 3 times per week for 50 minutes. Credit 3.

Large-scale networks are prevalent in both engineered systems (e.g., the Internet, the power grid, industrial control networks, large robotic swarms and sensor networks) and in natural systems (e.g., genetic networks, ecological networks, social and economic networks). While the specific details of such networks will depend on the application, the last few decades have seen the emergence of an underlying "science" of networks, comprised of a common language (graph theory) for representing large-scale networks, along with mathematical models and analytical techniques for studying structure and dynamics. This course will provide a detailed introduction to the field of network science. It will develop common mathematical representations of networks, metrics for identifying important features of networks, generative mechanisms for networks (including both random-graph and strategic network formation perspectives), and tools for studying dynamical processes on networks (such as information cascades, opinion dynamics and interconnected dynamical systems). This is an introductory course that establishes several of the fundamental tools and concepts in network science, and requires only an undergraduate background in probability and linear algebra.

<https://purdue.curriculog.com/proposal:18643/form>

*Graduate Council Document 22-23c*, ECE 60431, Fiber Optic Communications (PWL) Lecture 3 times per week for 50 minutes for 5 weeks. Distance. Credit 3. Prerequisite(s): ECE 60400.

This course will aim to introduce students to the fundamentals of fiber optic communications, which constitute the backbone of the internet. The course will start with a refresher on the operation of key components needed for an effective fiber optic communication system, and then show how these components interact at a system level. Finally, the course will conclude with outlook for future research in extending the capabilities of these networks to higher bandwidths and quantum-secured communications.

<https://purdue.curriculog.com/proposal:18704/form>

*Graduate Council Document 22-23d* **ECE 60432, Nanophotonic Modeling** (PWL) Lecture 3 times per week for 50 minutes for 5 weeks. Distance. Credit 1. Prerequisite(s): ECE 60400 or equivalent.

This engineering course is an introduction to photonic materials and devices structured on the wavelength scale. Generally, these systems will be characterized as having critical dimensions at the nanometer scale. These can include nanophotonic, plasmonic, and metamaterials components and systems.

<https://purdue.curriculog.com/proposal:18705/form>

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

*Graduate Council Document 22-21a*, AD 59200, Graduate Seminar In Art Or Design History (PWL) Lecture 1 time per week for 150 minutes. Credit 3.

This is a graduate seminar that focuses on a particular theme, period, or movement in the history of art or design.

<https://purdue.curriculog.com/proposal:19065/form>

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

*Graduate Council Document 22-22a*, BIOL 53901, Microbiomes (PFW) Lecture 2 times per week for 75 minutes. Credit 3. Prerequisites: BIOL 21800 with a grade of C- or better.

Microbiomes are described as communities of microorganisms that inhabit a particular environment. While the focus is often on the human body and role of these microorganisms in human disease, microbiomes can be found in animals, plants, soils, aquatic environments, and anywhere else a community of microorganisms exist. The expansion of next-generation sequencing technologies has now made the study of these large and complex communities possible and accessible to a broader audience. In this course, students will learn about different types of microbiome communities and how they are analyzed. Using open-source software, students will learn how to analyze the community composition of microbiomes and draw

conclusions using a variety of statistical analyses and visualization tools. Other approaches to analyzing microbiomes, such as “omics” technologies, will also be discussed.

<https://purdue.curriculog.com/proposal:18596/form>

Area Committee F, Management Sciences (TBD):

*Graduate Council Document 22-10i*, MGMT 59200, Contracts For Managers (PWL) Lecture 3 times per week for 50 minutes. Credit 3.

Purpose of the course is to provide the student with an understanding of the contract legal environment as it pertains to profit and non-profit organizations and of the ethical considerations and social and political influences that affect such organizations. Students will examine a wide range of substantive rules of public law, which will provide a framework for a discussion of the ways in which managerial decision making affects and is affected by the legal environment.

<https://purdue.curriculog.com/proposal:20584/form>

**MAJOR(S):**

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*Graduate Council Document 22-38a*, Major in Facilities Management from the Department of Engineering and Technology Administration, IUPUI

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