

VITAL INSTRUCTIONAL MINIGRANT AWARDS: SUMMER 2018 – 2021

CHARLES WIDGER SCHOOL OF LAW

Increasing Engagement and Active Learning in Criminal Procedure: Adjudication – The goal of this project is to move to a more “flipped classroom” using a series of short video lectures, with embedded assessments, aligned to new material. Utilizing this approach will give students a better grasp of the core substantive material while gaining additional experience grappling with the doctrinal and ethical challenges that await them as practitioners of criminal law.

2021 – CHANENSON, Steven, JD, Charles Widger School of Law

Civ Proloton – The purpose of this project is to guide students in their learning through reflection and self-assessment by creating pre- and post-class videos in the model of online workout videos (i.e., Peloton) for each class session of Civil Procedure (Civ Pro + Peloton = Civ Proloton). The pre-class videos will help the students to be in the space to learn and the post-class videos will guide the students to reflect on the material and self-assess their learning.

2021 - JULIANO, Ann, JD, Charles Widger School of Law

COLLEGE OF ENGINEERING

Agile Classrooms with TopHat: Creating Socratic Gradebooks to Tailor Student Learning - This VITAL minigrant project will address this question by embedding the Socratic method - ask students questions and use their feedback to gauge their understanding - within Top Hat technological platform to create student- driven journeys through different paths of the same learning environment. The result will be a Socratic gradebook that identifies individual learning needs and suggests student-comprehension tailored learning activities.

2020 - CERECEDA, David, Ph.D., Mechanical Engineering

Inclusive Active Learning for Mixed Graduate-Level Engineering Class - The goal of this minigrant proposal is to help both online and in-class graduate students stay focus during the lecture, enhance the understanding of the key concepts and master problem-solving methodologies, through the implementation of Top Hat, an interactive learning tool. This project pioneers the implementation of Top Hat in a graduate course and will help set a guideline for the implementation of an interactive learning tool in other graduate courses.

2020 - LI, Bo, Ph.D., Mechanical Engineering

Development of a new course CEE 2701 – CE Project Development -This proposal is on the development of a new course titled CEE 2701 – CE Project Development. It will be replacing the existing course titled CEE 3705 Engineering Economics in a long run. The new course intends to educate the students with process, scheduling, and management of a project along with the important components from Engineering Economics such as economic analysis, decision making process, time value of money, engineering ethics, etc.

2020 - SHRESTHA, Shweta, Ph.D., Civil and Environmental Engineering

Development of a Project-based GIS Course for Civil Engineers - Geographic information systems (GIS) is a platform for managing, analyzing, and visualizing data associated with developing and managing infrastructure and the environment. The CEE Department is planning a new, project-centric GIS course focused on applications, thus exposing students to a commonly used industry tool while leveraging technology to emphasize connections between civil engineering disciplines. We seek a deeper understanding of teaching computational tools in ways that help students connect the classroom to the real world.

2020 - WATERS, Kevin, Ph.D., and SMITH, Virginia, Ph.D., Civil and Environmental Engineering

Transforming EGR 9200 to Benefit Engineering Ph.D. Students and Faculty - EGR 9200 Teaching Engineering in Higher Education teaches CoE Ph.D. students engineering pedagogy. The proposed work will restructure the course to increase student engagement and to create a mechanism for CoE faculty to improve their own teaching. This project makes the course more interactive, makes course materials available online, improves the students’ ability to improve their own teaching. These goals are accomplished through flipping the course and developing an assessment hierarchy (self/partner, and class-wide).

2020 – WEMHOFF, Aaron, Ph.D., Mechanical Engineering

Incorporating Visual Minteq Software in Water and Wastewater Treatment Course – The motivation of this project is to help students tackle overly abstract chemistry concepts in CEE 3321 by integrating hands-on learning tools in the classroom to complement traditional lecture materials. The overall goal is to advance students' technical excellence, facilitate students' deep conceptual understanding of the rational basis for the design, interpretation, implementation, and control of physiochemical process for water control, and help students' bridge the gap between theory and practice in CEE 3321

2020 – XU, Wenqing, Ph.D., Civil and Environmental Engineering

Foundation Design: Increased Problem Solving through Inverting the Classroom - This proposal will apply the inverted classroom approach to many of the topics in CEE 4801 – Foundation Design, a senior technical elective currently offered each fall semester in the Civil and Environmental Engineering department. The inverted classroom will enable more time in class for students to work on real world example problems allowing students to enhance their problem solving and critical thinking.

2019 – HUBLER, Jonathan, Ph.D., Civil and Environmental Engineering

A Project-Based Learning Approach to Practical Modeling of Dynamic Systems - The modeling and simulation of dynamic systems can be an extremely valuable skillset for engineers. However, students often struggle with developing these skills as they require computational knowledge and often classroom examples are quite different from real-world scenarios. This proposal aims to develop course content to help students build these skills in a project-based learning environment to foster critical thinking and afford students the opportunity to take ownership of how they analyze a system.

2019 – KOLLER, Jeffrey, Ph.D., Mechanical Engineering

Introducing Engineering Design in Freshman Mechanical Engineering Course with Active and Project-Based Learning - The goal of this project is to enhance the Freshman Mechanical engineering course with active and project-based learning, to better equip students with transferrable technical and soft skills. The course will be transformed to teach and apply Engineering Design, SolidWorks and MATLAB. The activities will be curated to foster creative thinking, problem-solving, collaboration, communication and self-regulated learning skills that are critical for students' academic success.

2019 – SETH, Deeksha, Ph.D., Mechanical Engineering

COLLEGE OF LIBERAL ARTS AND SCIENCES - LIBERAL ARTS

In Depth Instruction of EEG in Cognitive Neuroscience (CBN4100): A Course Revamping – The goal of this project is to enable students to attain a degree of mastery at the end of the course that would be objectively assessed, by focusing on one technique (electroencephalography, EEG) in the laboratory portion of the course, rather than spending a short time on each cognitive neuroscience methodology. Students would take a hands-on approach to the research process, gaining invaluable experience.

2021 – DRUMMEY, Anna, Ph.D., Psychological & Brain Sciences

An Inquiry-based Approach Using Sets, Number Theory and Combinatorics – This proposal aims to apply an inquiry-based approach to teaching Foundation of Math I, a transition course in the curriculum that marks a shift away from the computational to the theoretical, with emphasis on proof writing. The approach will be deployed using a workbook containing definitions and problems from topics in set theory, number theory, and combinatorics. Classes centered on student presentations will rigorously train students in problem-solving, proof writing, and clear communication of mathematical ideas.

2021 – KAMAT, Vikram, Ph.D., Mathematics & Statistics

Creating a Database of Modules for Alignment of Lab and Lecture in General Chemistry – The goal of this project is to create a database of modules that will explicitly correlate the General Chemistry I and General Chemistry I Laboratory courses that are taught to approximately 700 students each Fall semester. The desired impact is to improve student outcomes in both courses.

2021 – KATZ LINKMEYER, Stephanie, Ph.D., Chemistry

COLLEGE OF LIBERAL ARTS AND SCIENCES - LIBERAL ARTS cont.

Learning Centered Approach in Graduate Instruction of Spatial Techniques – This project aims to redesign portions of the graduate class, GEV 7041 GIS for Environmental Systems in order to align instruction and assessment for different levels of learning – theory, application, and practice. A modified scaffolding approach to learning of theory and practice based on flipped class model and a mastery approach to assessment will be utilized, as will units that are sequenced and that apply an iterative affirmative assessment to the learning of theory.

2021 – KREMER, Peleg, Ph.D., Geography & the Environment

Compiling and Creating Student-Centered Online Materials and Resources for Heritage Learners of Spanish – The main goal of this project is to create and compile affordable, engaging, and interactive online materials and resources for Heritage Language Learners (HLLs) of Spanish. The materials will serve to enhance HLL student learning of their own language, promote language maintenance, and foster diversity and inclusion in our institution.

2021 – LENARDON, Maria, Ph.D., Romance Languages & Literatures

Honors - Shaping a Life Initiative – The purpose of this project is to take the three distinct “Shaping” courses and develop them into a cohesive learning community. This will be done by linking the courses, creating extracurricular activities, and engaging with program alumni. Students will find further development through per and alumni mentorship in addition to increased cohesive engagement.

2021 – MORELAND, Anna, PhD., and HIDORE, Kimberly, Ph.D., Honors

Flipped Learning in a Clinical Assessment in Counseling Course – The aim of this project is to apply the use of flipped learning in the teaching of clinical assessment knowledge and skills in CHR 8855 Assessment and Appraisal in Counseling using educational videos viewed outside of class. Removing lecture from face-to-face class time will free up time for the use of authentic and experiential learning activities that facilitate student exploration and application of course concepts in real-world clinical practice.

2021 – WAHESH, Edward, Ph.D., Education & Counseling

Design and Implementation of a General Biology Peer Mentoring Program – The goal of this project is to create a peer mentoring program that will complement the gateway General Biology course sequences and provide a space for students to collaborate with peers to review course content and engage in active learning. Peer mentoring will ideally improve course retention, increase student success in the course, and expand the diversity of graduates found within the major. Peer mentors will be trained in leadership and pedagogy.

2021 – WINTERTON, Christina, Ph.D., and CHAPMAN, Samantha, Ph.D., Biology

Increasing Social Presence and Student Engagement in Online Cultural Courses - This project seeks to enhance social presence and student engagement in two online cultural courses. This project will introduce interactive discussion tools that will make asynchronous discussions more engaging and motivate students to support one another in an active learning community. I plan to invite guest speakers to my live Zoom sessions and integrate their presentations into the course curriculum so that students establish connections between the course material and local and global communities.

2020 - GONZALEZ, Jill, Ph.D., - Romance Languages and Literatures

Development of a Chemistry Laboratory Safety Course - Laboratory safety is a fundamental part of the scientific experience. Introducing laboratory safety as a cultural responsibility invokes leadership in students. Safety taught through traditional lectures, case studies, guest speakers and student innovation creates a unique opportunity for students to understand and appreciate why a culture of safety is an important aspect of their scientific training, giving students the tools they need to be successful in future careers in science, medicine or other professions.

2020 – MINBIOLE, Kevin, Ph.D., and KURCHAN, Eydiejo, Ph.D., - Chemistry

COLLEGE OF LIBERAL ARTS AND SCIENCES - LIBERAL ARTS cont.

Abnormal Psychology: A Flipped Lecture with Case Study Approach - The aim of this project is to develop a flipped lecture plus case study approach to teaching Abnormal Psychology. A set of instructional videos will be developed for out-of-class viewing. Class time will be devoted to applying video content to first- and third-person case studies. This approach seeks to enhance student learning and engagement, emphasize contextual and socio-cultural issues surrounding mental health, reduce mental health stigma, and promote collaborative, team-based work in the classroom.

2020 – PANTESCO, Elizabeth, Ph.D., - Psychological and Brain Sciences

Inclusive Teaching for Graduate Courses in Philosophy - This proposal seeks to provide the graduate philosophy community with the opportunity to reflect on issues of diversity through a series of three workshops that focus on nurturing inclusive graduate seminars, curating inclusive graduate course material and effective mentoring. Participants will be able to better understand accessibility in graduate education, identify best practices of content selection and delivery method for our discipline and set the common basis for successful mentoring for philosophy graduate students.

[Scholz, S. \(2022\). Graduate Seminars and the Climate Problem in Philosophy. *Teaching Philosophy*. Advance online publication. <https://doi.org/10.5840/teachphil202256172>.](https://doi.org/10.5840/teachphil202256172)

2020 - SCHOLZ, Sally, Ph.D., and POPA, Delia, Ph.D., - Philosophy

Statistical Genetics: A Primary Literature Approach - This proposal is for the creation of a new graduate-level course at Villanova University, titled Statistical Genetics. This course will be driven by primary research literature in statistical genetics, in which students will be tasked with the responsibility of leading discussions on journal articles and recreating analyses therein. The goals are to equip students with the tools required to perform modern cutting-edge research in statistical genetics, and to increase student interest in research.

2019 - CHI, Peter, Ph.D., Mathematics and Statistics

An Introduction to Linear Algebra through Applications for Science, Technology, Engineering, and Big Data - This new course will explore one of the most widely applicable areas of mathematics: linear algebra and matrix theory. By focusing on modern applications, students in science, technology, engineering, and data science will experience the power of linear algebra as a valuable analytical framework. We will combine lecture, group assignments, and projects. This course represents a new approach to the teaching and learning of linear algebra for my department.

2019 - FEEMAN, Timothy, Ph.D., Mathematics and Statistics

Exploring Student Responsiveness to Pace-Based Learning in Advanced Environmental Science Laboratory Course

The goal of this project is to create a series of place-based learning exercises for a new advanced Environmental Science lab course to be offered in spring 2020, open to upper-level undergraduate and graduate students. Two half-semester long exercises will vary both in the level of student involvement in experimental design and connectivity to community stakeholders. This will mark the first time I have used these exercises to fulfill the laboratory requirements of a course.

2019 - GOLDSMITH, Steven, Ph.D., Geography and the Environment

Object Based Curriculum Laboratory Planning for MSE Polymers - The goal of this project is to commit dedicated time in the laboratory to develop a lab manual and experimental techniques appropriate for non-science major undergraduates to relate to Polymers as a topic relevant to their lives. The desired impact is to ensure that students can clearly see the connection between what they are doing in the laboratory and what they encounter with everyday polymers while becoming connected to the major concepts of Polymer Science.

2019 – GURON, Marta, Ph.D., Chemistry

COLLEGE OF LIBERAL ARTS AND SCIENCES - LIBERAL ARTS cont.

Linear Algebra Rebooted: A Blended Master's Level Course - By alternating in-person and online meetings throughout the semester, a blended linear algebra course will be designed to be more accessible to working students. The course will also include a pre-assessment to measure student background knowledge, and early self-paced online modules to refresh and reinforce foundational concepts. An emphasis on proof-writing in a linear algebra context will support students to master skills in logic and proofs.

2019 – HAYMAKER, Kathryn, Ph.D., Mathematics and Statistics

English Department Diversity and Inclusion Pedagogy Workshop – The English Department's Diversity Committee proposes a day-long pedagogy workshop on diversity and inclusion in Fall 2019 for faculty, focused on strategies for teaching literature in an inclusive way. The goal will be to acquire new knowledge about best practices and to equip self-selected faculty with new resources to share with colleagues. In a required follow-up session in Spring 2020, faculty will reconvene to assess how they have implemented ideas from the workshop, and data from the workshop will help to guide future instructional development efforts.

2019 – LUTES, Jean, Ph.D., English

Teaching for the Intellectual Virtues in Philosophy of Religion - I propose to develop an existing course which prior to this Spring 2019 has not been taught since Fall 2010. In this seminar, I aim to develop materials, activities, assessments, and a classroom environment that encourages intellectually virtuous engagement with religious claims, broadly construed. The primary aim of the present project is to have students learn how to be intellectually virtuous in their inquiry on philosophically difficult and controversial claims.

2019 – NAPIER, Stephen, Ph.D., Philosophy

College Admissions Counseling: A Graduate Online Certificate Program – There is both a significant need and a desire among current and future school counselors for training in college counseling; many secondary school systems are actively seeking counselors with this training or experience. A College Admissions Counseling Certificate Program will: a) enable professional counselors to heighten their competitive professional edge, and b) allow Villanova to establish itself as a leading innovator in this growing field.

2019 – SCHMIDT, Christopher, Ph.D., Education and Counseling

Engaging Students in the Science of Speech - The project will develop introductory reading materials for the Mendel Science Experience (MSE) course, "The Sounds of Human Language." This will provide students with background knowledge that will allow them to understand research articles and provide opportunities for in-depth discussion of the material in class. In turn, this will improve student's learning of the content in the course, helping achieve the goal of the MSE program to provide students with a foundation in basic science.

2019 – TOSCANO, Joseph, Ph.D., Psychological and Brain Sciences

Integration of Dispositional Development Framework into the Undergraduate Teacher Education Program - The purpose of this minigrant is to provide funding for the continued development and implementation of an Undergraduate Teacher Education Program (UTEP) Dispositions Framework. The UTEP Framework would serve as a reflective tool that supports the academic, social/emotional, and professional development of students enrolled in UTEP. As a result of their participation, students enrolled in UTEP will hone and demonstrate their reflective skills and gain critical insight into the evaluative process prior to entering the profession.

2018 – BIALKA, Christa, Ph.D., Education and Counseling

Teaching Hands-On Cybersecurity Safely and Responsibly - The goal of this project is to design a set of hands-on labs and assignments to safely teach students the basic techniques used to attack and defend enterprise IT systems. From these exercises, students will learn practical skills in breaking into and repairing IT systems, as well as the ethical impact of breaching systems illegally. These assignments will be used in a flipped-classroom course preparing students for careers in enterprise operations security.

2018 – CARTER, Henry, Ph.D., Computing Sciences

COLLEGE OF LIBERAL ARTS AND SCIENCES - LIBERAL ARTS cont.

Bringing the Library into the Classroom: Capitalizing on the Contributions that Research Librarians Play in Assisting Student Research.

Reference librarians are an under-utilized resources for helping students with their research. This project seeks to expand on my past collaboration with librarians by producing three, short instructional videos regarding distinct research tasks and compliment those videos with learning modules. The learning modules will offer students an opportunity to apply the research skills covered in the videos and permit instructors a chance to assess students' competencies. The project aligns with the CLAS' goal to increase self-directed student learning and Falvey's 'goal to effectively support students' research endeavors.

2018 – KREUZER, Marcus, Ph.D., Political Science

Curriculum Mapping for Programmatic Assessment and ePortfolio Development - This proposal would support the development of a curriculum map for the Graduate Studies in Communication Program. Curriculum mapping is the process of assessing the alignment of student learning objectives with instructional activities in individual courses. I plan to revisit our program-level learning objectives, identify and articulate additional objectives through a grounded, interpretive analysis of course syllabi, and synthesize those objectives to produce an updated list to be shared with our graduate faculty. The proposal will enhance programmatic assessment in the short-term (the comprehensive curriculum map will inform graduate program assessment goals in the coming year and help identify new assessment opportunities) and in the long-term (contributing to the development of ePortfolios for the graduate program). The project will have an indirect impact on student learning through increased faculty awareness of how their individual courses serve the graduate programs as a whole, hopefully creating a more coherent educational experience for our students.

2018 – KSIAZEK, Thomas, Ph.D., Communication

Data Science and Visualization – I will design a new graduate course on Data Science and Visualization. This course would meet the rapid demand from employers that our graduate students in Applied Statistics have sufficient data processing skills in addition to the strong analytical skills that we currently teach. This course meets specific university goals as well as recently agreed upon departmental priorities and would help position Villanova as a leader in data science education in the Greater Philadelphia area.

2018 – POSNER, Michael, Ph.D., Mathematics and Statistics

The Child & Child Engagement: Play as Practice - This project will enrich students' learning with creative and innovative pedagogical strategies, such as the bug-in-the-ear technique and creative arts, to teach childhood studies. We employ a playful pedagogy, which requires students to re-conceptualize what counts as learning. This project will accomplish a second goal of creating a multidisciplinary course on childhood studies. This course, along with our conception of creative teaching strategies, fills an identified need at Villanova for courses on children and childhood.

2018 - SKRLAC LO, Rachel, Ph.D. and YEE, Terence, Ph.D., Education and Counseling

A Hybrid Flipped Classroom Model in Introductory Data Mining Course: A Blend of Lecture and Flipped Learning - Flipped classroom approaches have received increasing attention recently. Despite popular enthusiasm for flipped classrooms, there has been a mixed response and some criticism of this approach on loss of interaction and student motivation. Thus, I propose to employ a hybrid flipped instructional model for an introductory data mining course, a blend of lecture with flipped learning. This hybrid model will promote a learner-centered classroom environment, while preserving the most effective elements of flipped learning format.

2018 – ZHANG, Yimin, Ph.D., Mathematics and Statistics

M. LOUISE FITZPATRICK COLLEGE OF NURSING

Bridging the Classroom-Clinical Gap: Using a Structured Clinical Reasoning Model to Develop Clinical Judgment Skills – The aim of this project is to enhance students' critical reasoning and ability to synthesize and apply nursing concepts to clinical situations. The Clinical Judgment Measurement Model will be utilized to help students identify the necessary steps in making a safe clinical judgment and to develop case studies to guide the students through problem-based learning to enhance both understanding and application of the course material.

2021 – MACKENZIE-GREENLE, Meredith, Ph.D., RN, ANP-BC, CNE, M. Louise Fitzpatrick College of Nursing

INTERDISCIPLINARY PROJECTS

Bridging Nursing and Biology: A Semester-Long, Cross-Course Unfolding Case-Study to Improve Student Engagement - The goal of this project is to maximize student motivation and engagement with complex course material related to epidemiology, global and public health. Using an unfolding case study design, students will analyze novel data in real time, communicate their findings to other students effectively, make decisions that influence health outcomes, consider the ethical implications of decisions, and gain an understanding of how their work can have widespread public health impact alongside other disciplines.

2019 – BREWER, Christine, MSW, MSN, RN, M. Louise Fitzpatrick College of Nursing and RIVARD, Rebecca, Ph.D., Biology

Reinventing a Foundational Course: A Communication-in-the Disciplines Approach to Improving Communication Competence Among Mechanical Engineers - COM1101, required for mechanical engineers, will be redesigned to enhance students' ability to collaborate effectively in teams, and to develop, design, and deliver technical presentations in professional settings. The course will be anchored in contemporary and classical rhetorical principles and follow a Communication-in- the-Disciplines approach, which argues that communication pedagogy must be discipline-specific. We propose to develop instructional materials (including case studies) reflecting authentic engineering communication, and to design new assessment tools (including digital feedback technology).

2018 – BOWEN, Sheryl, Ph.D., Communication and KARLSSON, Jens, Ph.D., Mechanical Engineering



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