

2019 PROVOST'S LEARNING INNOVATIONS GRANTS CALL FOR PROPOSALS

The **Provost's Learning Innovations Grants** (PLIG) program was developed to broaden and enrich the learning experience of RIT students by funding faculty-initiated projects that enhance student learning. Managed by the Innovative Learning Institute (ILI), this program has been designed to:

- Better support dissemination of individual faculty learning to the wider faculty population
- Integrate funding with Institute priorities
- Support the scholarship of teaching and learning

I. ELIGIBILITY

All full-time RIT faculty (tenured, tenure-track, visiting, lecturers, etc.) are eligible to apply.

II. GRANT TYPES

There are two types of grants—Exploration and Focus—for PLIG 2019. Full details are available on the [Grants Types](#) page of the PLIG website (www.rit.edu/plig).

III. USE OF GRANT FUNDS

Provost's Learning Innovations Grants for 2019 may range from \$1,000-\$5,000.

Examples of the use of PLIG funds include:

- Course release (reasonable, actual replacement costs for faculty members removed from teaching)
- Development of new technology-based learning tools and/or environments
- Technologies or equipment required that are not normally provided by the department/college
- Resources for research design and consultation, data collection and aggregation, instrument development and/or purchase, secure data storage, data analysis, and report generation
- Travel to support research activity and/or meet with potential funding sources

IV. PLIG TIMELINE AND TASKS

The grant timeline assumes that most recipients will use the Spring 2019 and/or Summer 2019 term(s) to plan and develop their PLIG-funded project for delivery or implementation during the Fall 2019, Spring 2020, and/or Summer 2020 term(s). The full [timeline](#), including grantee tasks, is available on the PLIG website.

V. SELECTION COMMITTEE AND EVALUATION CRITERIA

Applications for PLIG funds are evaluated by the [PLIG selection committee](#) according to the following criteria:

- *Utility* (solves a defined problem; has potential to benefit many courses/faculty)
- *Creativity* (is a novel approach or application; represents a new paradigm)
- *Efficacy* (uses an evidence-based approach; impact to student learning and/or the student experience can be demonstrated)

The criteria are further defined, illustrated, and explained in the [Proposal Evaluation](#) section of the PLIG website.

VI. QUESTIONS

Please email plig@rit.edu with any questions about the PLIG process.

(Examples of previously funded projects are available in the [Previous Awards](#) section of the PLIG website).

2019 PROVOST'S LEARNING INNOVATIONS GRANTS

APPLICATION

INSTRUCTIONS

1. Complete this Application Form and save as "Lastname_Firstname_APP" (*using your name*).
2. Ask your Department Head to complete the Department Head Certification, scan and save as, "Lastname_Firstname_SIG" (*using your name*).
3. Email all documents to plig@rit.edu, **no later than 11:59pm ET, January 21, 2019**.

If you have any questions about completing this application, please contact Michael Starenko at 585-475-5035 or mssetc@rit.edu.

APPLICANT INFORMATION

This application is for a (please select *one* type of grant):

- Exploration Grant
- Focus Grant – Active Learning Across All Course Modes

Principal Applicant Name: Lisa Greenwood

Faculty Title: Assistant Professor Email: llgcem@rit.edu Phone: 475-2026
(Full-time only)

College: CET Department: CETEMS

Department Head Name: Maureen Valentine Email: msvite@rit.edu

Others involved in the project (if any): n/a

Project Name: Enhancing Understanding of Sustainability Challenges: A Case-based Active Learning Approach

Total Funds Requested (*as calculated on the budget worksheet on the next page*): \$4633.00
(requests of \$1,000 to \$5,000 will be considered)

BUDGET

Complete the table below to calculate your budget

- The total shown on this worksheet must match the “Total funds requested” in the Applicant Information section on page 1 of this application form.
- If awarded, additional funds will be provided to cover any benefits and ITS expenses associated with the salary budget requested.
- Note that any equipment or other materials purchased with grant funds are the property of your department and revert to the department after your project is completed

Personnel	Purpose/Justification	Amount
Full-time Faculty/Staff		
Lisa Greenwood, academic year	Equivalent of 1 week/40 hours academic year salary for case review and adaptation, activity development, assessment, and reporting, across two courses.	2270.00
Adjuncts, Part-time Faculty/Staff, Summer Salary		
Lisa Greenwood, summer salary	Equivalent of .75 week/30 hours summer salary for case review and adaptation, activity development, and assessment	1703.00
Student Workers, Graduate Assistants		
Graduate Assistant(s)	40 hours assisting with literature and case review, development and testing of activities	560.00
Personnel Total		\$ 4533.00
Equipment	Purpose/Justification	Amount
Equipment Total		\$ 0.00
Travel	Purpose/Justification	Amount
Travel Total		\$ 0.00
Other (Specify)	Purpose/Justification	Amount
Subscription to databases and repositories, or direct purchase of case studies or simulation materials that can be related to and adapted for ESHS	Provides access to existing cases that can be adapted for the classroom.	100.00

RIT

	Other Total	\$ 100.00
	Total Award Requested	4633.00

STATEMENT OF UTILITY (two pages maximum)

Using the evaluation criteria outlined in the [Proposal Evaluation](#) section of the PLIG website, please provide an overview of the project you are proposing, including:

- Project objectives
- An explanation of the teaching/learning problem(s) it is designed to address
- An explanation of the significance of the project to student outcomes and/or the student experience.
- A brief description of how the project integrates with activity already underway at RIT in a priority area and/or how this approach has been successfully used at RIT already.

Project Background and Associated Teaching/Learning Issues

The Environmental Sustainability, Health and Safety (ESHS) Seminar and Principles courses, ESHS 100 and ESHS 150, provide an introduction to the ESHS disciplines for freshmen in the ESHS program in RIT's College of Engineering Technology (CET). Students should emerge from these courses with an understanding of basic ESHS concepts; related issues in industry, society, and the environment; and how these concepts and issues relate to the roles and functions of environmental, sustainability, health, and safety professionals in society. Yet based on assessment as well as course feedback in previous semesters, some students are not able to fully internalize the major concepts that are embedded in the courses, and have difficulty grasping the role of the ESHS professional as well as how industry interacts in society regarding ESHS issues. Consequently, students' ability to apply the concepts outside of course discussions is limited.

This project involves redesigning the ESHS 100 and 150 courses to incorporate active, inductive, and problem-based learning, consistent with RIT's and CET's efforts to enhance the student experience. Prince and Felder maintain that students are more motivated to learn when they perceive a need for certain knowledge.¹ Part of the problem for ESHS 100 and 150 students is that, as freshmen, they have little to no experience with practical applications of ESHS on which to ground the concepts we cover in class. The proposed approach is aimed at closing this gap via changes in course design and structure to incorporate inductive teaching and active, problem-based learning.

Project Objectives and Significance for the Student Experience

This project employs an established approach supported by research in engineering education to enhance the student experience through active and inductive teaching and learning. This will enable students to better engage with course material and connect it to professional practice. The project objectives are as follows:

- Enhance student understanding of and ability to think critically about global issues that make ESHS management necessary, and how ESHS professionals are positioned in the workplace and in society to address them.
- Enhance student understanding and application of ESHS concepts through a more inductive and collaborative approach to teaching and learning, such that students are actively engaged in their own learning process, with the instructor as well as with each other.
- Enable active learning through a combination of online and classroom interactions.

Project Integration with RIT Activities

This project will adapt and apply a problem-based, active learning approach in the context of environmental sustainability, health and safety management, at the undergraduate level. This is consistent with the PLIG 2019

¹ Prince, M. J., & Felder, R. M. (2006). Inductive teaching and learning methods: Definitions, comparisons, and research bases. *Journal of engineering education*, 95(2), 123-138.

area of focus on Active Learning Across All Course Modes. Student engagement in class activities will be designed to enhance their understanding through working in groups, stakeholder role-playing, and application of course concepts in relation to real issues in the ESHS disciplines. Online and face-to-face interaction will be incorporated into course modules, and this can be easily adapted to flipped as well as entirely online formats, through the use of Mycourses groups and discussion features.

In addition, this project is consistent with CET initiatives to incorporate problem-based learning in the classroom. A workshop with Dr. Michael Prince was held last summer to introduce PBL to CET faculty, and faculty have been encouraged to apply active learning and PBL across their courses.

STATEMENT OF CREATIVITY (three paragraphs maximum)

Provide a brief description of how this is a novel approach, or a new application of an existing mode or model of teaching and learning, and/or research about how teaching and learning represents a new paradigm.

Courses in engineering and science are typically taught deductively, through transmission of information from instructor to student, followed by practice problems or assignments to reinforce what was covered in readings and lectures. PBL flips the approach from deductive to inductive, so that students are motivated to seek out a deeper understanding of the concepts they need to address the problem. PBL is an active learning approach that connects learning to real world problems, and provides a context on which students can tether their knowledge and internalize course concepts.

STATEMENT OF EFFICACY (two pages maximum)

Provide a brief description of the experiment/research design, methodology, and methods of data collection and analysis you will use to gauge efficacy.

The current teaching and learning approach in these courses is largely transmissionist: students are presented with reading assignments and lectures, and then complete weekly assignments and quizzes, and engage in classroom discussions related to course topics. Course modules will be restructured and partially redesigned, taking an active, problem-based learning approach in relation to key concepts and issues. Each module will include a learning activity such as a problem-based case study analysis, a simulation, or a debate covering multiple perspectives on a course-related topic. Students will work in teams online and/or outside of class to prepare for the activity, and will engage in the classroom to carry out the activity and apply course concepts toward “real world” challenges and issues related to environmental sustainability, health and safety.

Brame² describes active learning as “activities that students do to construct knowledge and understanding,” and maintains that students link these activities to learning through metacognition. This approach motivates students to think about their own learning through an inductive approach, peer-to peer interaction, and post-activity reflection.

The instructor will first present the students with a problem to be solved or situation to be addressed in relation to the ESHS module concepts and principles. Course materials and resources will then be provided online along with the opportunity to explore them in the classroom, enabling students to take an active role in their learning process and seek out the information they need to understand the problem and successfully complete the activity. Following completion, teams will debrief to discuss the experience and reflect on what they learned in the process.

The effectiveness of the course redesign will be assessed based on student grades on relevant module assignments and relevant questions on the final exam, as well as student feedback on course evaluations.

- 80% of students should achieve a grade of at least 80% on relevant module assignments and final exam questions, based on a rubric designed to evaluate understanding and application of knowledge.
- The class averages for relevant questions on the final exam can be compared to the class average for similar questions from the previous year for the courses. Effectiveness can be evaluated based on demonstrated improvement, as a measure of the positive or negative effect on the average.
- Course evaluation feedback will be reviewed regarding the student experience and connection to the course material. Effectiveness can additionally be evaluated based on results indicated for enhanced understanding, and helpful feedback.

² Brame, C., (2016). Active learning. Vanderbilt University Center for Teaching. Retrieved January 30, 2019 from <https://cft.vanderbilt.edu/active-learning/>.

ADDITIONAL CONSIDERATIONS

Please address these questions, if needed.

Will your project require assistance for extensive or unusual media, multimedia, simulation, and/or software development? If so, please explain?

n/a

All courses offered by RIT must be accessible to students with disabilities, according to Section 504 of the Rehabilitation Act of 1973 and Title II of the Americans with Disabilities Act of 1990 (rit.edu/studentaffairs/disabilityservices/info). Is your proposed teaching approach accessible to all students, with reasonable accommodation? If not, please explain.

The proposed approach is accessible to all students, with reasonable accommodation.

RIT abides by the Family Educational Rights and Privacy Act of 1974 (FERPA), which prohibits instructors from making students' identities, course work, and educational records public without their consent (rit.edu/xVzNE). Will any data gathering or sharing for your project raise any FERPA issues? If so, please explain.

n/a

DISSEMINATION AGREEMENT

By completing this grant application, I agree to provide the materials and services described here, in support of disseminating what is learned from this project to the RIT community.

I also agree to return all/a portion of the funds that I receive for this project to RIT if I fail to complete or provide the materials described here:

- Full Project Plan (*including roles and responsibilities, milestone dates, and pertinent project details*)
- Preliminary Findings report (*may include experiment/study design, lessons learned, initial data collection, and/or literature review summary*)
- Participation in an ILI/TLS Preliminary Findings Roundtable dissemination event (*share and discuss your preliminary findings with your PLIG cohort*)
- Final Summary of Findings (*including data collection, lessons learned, implications for further study, and which may be in the form of an article abstract, conference presentation outline, or short report*)
- Final budget accounting (*reconciliation of budget provided with your application and the actual project expenses*)
- Participation in an ILI/TLS PLIG Showcase dissemination event (*present a poster or other display at the annual Showcase*)

By submitting this application, I accept this agreement. LG (*applicant, please initial here*)

TIMELINE AND TASKS

Please indicate any variances to the planned PLIG 2019 schedule as described in the above Dissemination Agreement and the reasons for this variance. *If you do not intend to deviate from the schedule, you may leave this section blank.*

Task	Date	Proposed Variance and Reason
Full Project Plan submitted to TLS	August 16, 2019	
Preliminary Findings report submitted to TLS	January 10, 2020	
Participation in an ILI/TLS Preliminary Findings Roundtable dissemination event	February, 2020	
Summary of Final Findings report submitted to TLS	August 21, 2020	
Final Budget Accounting report submitted to TLS	August 21, 2020	
Participation in an ILI/TLS PLIG Showcase dissemination event	November 2020	

DISSEMINATION PLAN (*optional*)

Provide details about the journals, conferences, shows, or other external vehicles with strong potential for dissemination of your results (in addition to the ILI/TLS Preliminary Findings Roundtable and PLIG Showcase dissemination events). Include supporting documentation, such as preliminary interest or acceptance, with your application, if available. *(Please note that special consideration will be given to proposals that have a defined opportunity for external dissemination, such as an academic journal or professional conference.)*

The proposal is aimed at adaptation and application of an innovative mode of teaching and learning, which could be replicated or adapted in other courses. Dissemination beyond PLIG events would include presentation of results within the CETEMS department, as well as in at least one CET scholarship or PBL dissemination event.

Since PBL is currently being implemented in a number of courses in CET, there are also opportunities for collaboration on a journal article (e.g., Journal of Engineering Education) with other faculty in the College of Engineering Technology who are applying related active learning approaches in their respective curricula.

DEPARTMENT HEAD CERTIFICATION

I support this PLIG application and verify that the principal applicant is a full-time faculty member in good standing in my department.

Principal Applicant Name: Lisa Greenwood

Department Head Name (PRINT): Maureen Valentine Email: msvite@rit.edu

Department Head Signature: *M & Valentine* Date: _1/30/19

NOTE: When signed, please scan and email with your Application Form to: plig@rit.edu