Affordable Materials Grants, Round 21:

Continuous Improvement Grants

(Spring 2022-Spring 2023)

Proposal Form and Narrative

# Notes

* The proposal form and narrative .docx file is for offline drafting and for our review processes. Submitters must use the online Google Form for proposal submission, including uploading this document.
* The only way to submit the official proposal is through the Google Form. The link to the online application is on the [Round 21 RFP Page](https://www.affordablelearninggeorgia.org/about/rfp_r21).
* The italic text provided below is meant for clarifications and can be deleted.

The Round 21 Kickoff will include an asynchronous training module, required for all team members to complete, followed by the synchronous Kickoff Meeting on March 25, 2022 from 1pm-4pm. At least two team members from each awarded team (unless the award is for one individual) are required to attend the synchronous Kickoff Meeting.

# Applicant and Team Information

*The* ***applicant*** *is the proposed Project Lead for the grant project. The* ***submitter*** *is the person submitting the application (which may be a Grants Officer or Administrator). The submitter will often be the applicant—if so, just leave the submitter blank.*

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| --- | --- |
| Requested information | Answer |
| Institution | Georgia State University |
| Applicant name | Shelby Frost |
| Applicant email | [sfrost@gsu.edu](mailto:sfrost@gsu.edu) |
| Applicant position/title | Clinical Associate Professor |
| Submitter name | Shelby Frost |
| Submitter email | [sfrost@gsu.edu](mailto:sfrost@gsu.edu) |
| Submitter position/title | Clinical Associate Professor |

Please provide the first/last names and email addresses of all team members within the proposed project. Include the applicant (Project Lead) in this list. Do not include prefixes or suffixes such as Ms., Dr., Ph.D., etc.

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| --- | --- | --- |
| Team member | Name | Email address |
| Team member 1 | Shelby Frost | sfrost@gsu.edu |
| Team member 2 | Todd Swarthout | swarthout@gsu.edu |
| Team member 3 | Mya Eveland | meveland@gsu.edu |
| Team member 4 | Amy Eremionkhale | aeremionkhale@gsu.edu |
| Team member 5 | Graduate Assistant | TBD |

If you have any more team members to add, please enter their names and email addresses in the text box below.

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# Project Information

| Requested information | Answer |
| --- | --- |
| Type of Project | * *Revision of open educational resources (OER) used in existing courses* * *Replacement of current OER in courses with new/better OER* |
| Requested Amount of Funding  *$10,000 maximum total award per grant* | *$10,000* |
| Course Titles and Course Numbers | Principles of Microeconomics ECON 2106 |
| Final Semester of Project | * Spring 2023 |
| Currently Existing Resource(s) to be Revised/Ancillaries Created  *Please provide a title and web address (URL) to each of the currently existing resources that you are revising, creating new ancillary materials for, or replacing. If replacing, please include a title and web address (URL) to the new OER as well.* | We redesigned our ECON 2106 using all OER content and new online interactive tools which we created ourselves. We culled existing OER resources (such as OpenStax, and videos at YouTube), and created some of our own content. We want to refine and improve the current materials. Currently, examples of our new online interactive tools are available here: <https://excen.gsu.edu/swarthout/teaching_apps_on_icollege/>. |

# Project Goals

*The primary goal of this project is to continue the work we started last year, with some funds from a* [*Transformation Grant in Round 19 (proposal 585)*](https://www.affordablelearninggeorgia.org/about/r19_grantees)*. Our goals in that grant proposal included:*

Goal 1 is to eliminate the cost of learning materials for the course, and thereby reduce students’ financial burdens. As currently taught, the textbook costs $75 for six months of access to an ebook and adaptive learning platform (Connect). This is a substantial sum for any student, but especially ours: almost 60% qualify for Pell grants. By replacing that textbook with no-cost materials, the proposed transformation will save GSU students close to $200,000 per academic year.

Goal 2 is to increase students’ timely access to course materials and thereby improve student success. Due to the cost of textbooks generally, many students forgo purchasing them, or wait too long to do so. This impedes their ability to complete assignments, score well on quizzes/tests, succeed in the course, and, more generally, succeed in higher education (which, of course, affects their post-education life). With access to all learning materials from day one of the course, we expect the proportion of students who earn Ds, Fs, or Ws to decrease.

Goal 3 is to create a set of manipulatives and games that allow students to engage with graphs and experiments to enhance student learning of difficult economics concepts. Currently the department relies on applications in the McGraw-Hill Connect platform to generate, visualize and manipulate graphs of key concepts. This proposal aims to use the coding expertise of a research scientist in our Experimental Economics Center (ExCEN) to build manipulatives for this course so that students have high-quality, technology-enabled learning materials without the cost of a textbook. In addition, the team will supplement the manipulatives with games that allow students (individually or in groups) to discover the concept of equilibrium in markets (supply and demand), the tragedy of the commons with common pool resources and free-riding on voluntary provision of public goods (classic problem solving in economics and political science), and auctions (useful for understanding aspects of environmental policy, human behavior, and finance). Once the games and manipulatives are built, they will be hosted on a website that USG institutions and others can use for principles courses in economics. In addition, we also hope to develop SCORM packages of these manipulatives that can be downloaded from a website for integration with common LMS systems.

*We have achieved many of the stated goals but believe there is more work to be done. We have a new ECON 2106 course using OER resources, so students have immediate access to all course materials at no additional cost, starting on the first day of class. We greatly exceeded the number of manipulatives we proposed in the previous grant – we built over 100 new online interactive tools, fully integrated into iCollege (D2L/Brightspace), GSU’s learning management system (LMS). There was quite a learning curve to get the new SCORM packages up and running effectively, as we were the first to do so at GSU. We piloted the new ECON 2106 course in multiple sections in fall 2021 and are doing so again (with some updated materials) in spring 2022. Early results are encouraging. Students seem to love the new tools we built. However, it has not been completely error-free, so we want to make more enhancements and testing before we scale it up further. With additional funding, we could increase the quality of the course before scaling up to all sections.*

# Action Plan

*We seek funding to continue to enhance the manipulatives we already developed, and to develop new ones to integrate in ECON 2106 by Fall 2022 to supplement the curated OER (textbooks or otherwise) that will replace the current McGraw-Hill textbook and Connect platform which other sections (not in the current pilot) are using. The project team consists of three subject matter experts, an instructional designer, and a graduate assistant. Shelby Frost (Clinical Associate Professor), Amy Eremionkhale (Clinical Assistant Professor) and Todd Swarthout (Assistant Research Faculty) are economics faculty, and Mya Eveland is our college’s instructional designer. These four will be assisted by a graduate student to help with coding the manipulatives, review the course from a student’s perspective, and gather/analyze all data for course assessment. We expect the three faculty to spend a minimum of 100 hours each over summer 2022 to identify/improve/develop additional OER content and write additional assessments (Shelby Frost & Amy Eremionkhale) and improve/develop additional manipulatives/games (Todd Swarthout).[[1]](#footnote-2) Our instructional designer will manage the project, ensure that the learning framework is pedagogically sound, and create/arrange all content in D2L/Brightspace to meet accessibility standards (100 hours). The graduate student will help with coding the manipulatives, review sections of the course as they are revised to evaluate the quality of the student experience and course design and collect/analyze data for course assessment during Fall 2022 and Spring 2023 (100 hours). The action plan from our previous proposal included:*

Step 1 is to develop a course framework that identifies the course goal, learning objectives, content, products, and assessments. While the course goal and learning objectives largely are established by the department, the bulk of the work at this stage is to determine what OER learning materials need to be curated and what manipulatives need to be built to support effective learning. This process will include examining past assessments to identify concepts that students fail to demonstrate proficiency, as well as review current McGraw-Hill analytics to see which textbook manipulatives students are engaging with the most. Once we have a good understanding of learning gaps and features of current resources that students use, we will have a framework for identifying OER and building manipulatives/games.

Step 2 is curating OER materials for each learning objective and course topic. Texts may be articles, chapters, textbooks, or another type of publication (e.g., government reports, newspaper articles).[[2]](#footnote-3) To select between texts, we will take into account ALG’s evaluation criteria: clarity, comprehensibility, readability, content accuracy and technical accuracy, adaptability, appropriateness, and accessibility. We will only consider texts that are open access (i.e., free to everyone) or available as unlimited e-versions via the GSU library (e.g., articles available via Galileo). In addition to texts, we will seek out digital educational content, including websites, audio files, videos, and more. With the support of our instructional designer and multimedia team in the Center for Excellence in Teaching, Learning, and Online Education (CETLOE), we will also produce original content in the forms of audio recordings, video productions, PowerPoints, and other materials as learning content as needed.

Step 3 is building the manipulatives and games to supplement the OER content for economics concepts that students struggle to learn via text, illustration, or video alone. [Some manipulatives exist in the public domain](https://demonstrations.wolfram.com/topic.html?topic=Microeconomics&limit=20) already, but these: 1) do not integrate easily into an LMS to use in assessments; and, 2) cannot be modified to adjust the inputs or designs to the graphs without using their platforms. Similarly, [experimental games have already been developed by ExCEN](https://econport.org/econport/request?page=web_experiments), but the software is outdated and does not integrate with D2L/Brightspace. To be able to build these manipulatives and games in an OER environment and with the functionality to integrate with an LMS for assessment, will replace the value that textbook publishers offer to the course with their interactive platforms.

Step 4 is to build a “master” course in our LMS (D2L/Brightspace) to use across all sections of ECON 2106. Our instructional designer will organize and build the course using best practices for online, asynchronous delivery but create a facilitation guide that modifies how the learning activities and assessments are deployed if the course is taught as hybrid or face-to-face (classroom). As sections of the course are completed, the graduate assistant will review them for learning quality and evaluate assessment alignment with course objectives and learning content. Lastly, a member of the undergraduate curriculum committee in the department will use a modified Quality Matters rubric to assess the course for quality online delivery.

With those steps complete, we will make our no-cost content publicly available in the form that makes it most accessible and sustainable. We aim to consult the ALG team before starting the project for guidance on the requirements to create GALILEO Open Learning Materials and license them through Creative Commons. Whatever the best platform, we anticipate also making the course available as a D2L or Canvas package upon request.

*We made great progress on those stated steps. We completely redesigned the course, with a new learning framework – reexamining all course goals, student learning outcomes, and assessments. We built a highly engaging course with course materials available to students at no monetary cost. We piloted it in multiple sections of ECON 2106 in fall 2021 and are doing so again (with some updated materials) in spring 2022. Results from fall 2021 are encouraging.*

*The new manipulatives are highly randomized activities which are automatically graded and recorded in the LMS’s gradebook as students complete them. Some of the new manipulatives provide excellent formative practice with useful feedback and others provide robust assessment. We can improve some of the tools by adding more feedback, and we need to investigate some issues about how well the new tools are communicating with the LMS – sometimes, it’s not perfect and we need more time to continue to troubleshoot that. Now that these tools have been developed for the LMS used by GSU, we want to work on making them available for use in other LMS systems, as well as outside of any LMS. Currently, we have them* [*available online*](https://excen.gsu.edu/swarthout/teaching_apps_on_icollege/) *at an external website, but we want to make that look better for sharing more widely. We seek help from ALG for best practices for such endeavors.*

# Timeline

*March 25, 2022: Kickoff Meeting*

*May-July 2022: Select additional OER and develop new videos/supplementary learning content or improve those already developed for course build; Update assessments; Develop new manipulatives/games and make improvements to current manipulatives; Update course in D2L/Brightspace; Assess sections as completed (graduate assistant) and fully built (undergraduate committee review).*

*August-December 2022: Pilot updated course in multiple sections taught by Shelby Frost and Amy Eremionkhale; Review mid-term survey for course adjustments; Review SEI and other end of course measures to compare to sections taught with McGraw-Hill in fall 2022 and spring 2023.*

*January 2023: Make adjustments to OER course. Write and submit ALG Fall 2022 semester status report.*

*January-May 2023: Launch next phase of OER course and compare to McGraw-Hill version through random assignment of students enrolled in online sections (if approved by GSU IRB); Analyze performance data across sections; Write and submit ALG final report.*

*June 2023 and after: Refine course for future semesters; develop facilitation guide for teaching across all sections regardless of modality; Apply for Creative Commons license and move materials to USG’s OER sharing platform.*

# Budget

*The requested budget is $10,000. This total breaks down as follows:*

*Summer 2022:*

1. *Shelby Frost (faculty) $2,000*
2. *Amy Eremionkhale (faculty) $2,000*
3. *Todd Swarthout (faculty) $2,000*

*Spring 2022-2023:*

1. *Instructional Design & Project Management $2,000*

*Project Assistance & Assessment (Summer 2022-Spring 2023)*

1. *Graduate Assistant $2,000*

# Creative Commons Terms

*I understand that any new materials or revisions created with Affordable Learning Georgia funding will, by default, be made available to the public under a Creative Commons Attribution License (CC-BY), with exceptions for modifications of pre-existing resources with a more restrictive license.*

# Accessibility Terms

*I understand that any new materials or revisions created with Affordable Learning Georgia funding must be developed in compliance with the specific accessibility standards defined in the Request for Proposals.*

# Letter of Support

*The Department Chair from the corresponding project, or the Department Chair’s direct report such as the Dean or Provost, must provide a signed Letter of Support for the project. This letter should acknowledge the following:*

* *The department will provide support for fund disbursement in correspondence with the Grants/Business Office.*
* *The department approves of the work on the proposal by the applicant(s).*
* *The department acknowledges the sustainability of these affordable resources after the grant work is complete.*

*In the case of multi-institutional affiliations, all participants’ institutions must provide a letter of support.*

*Please provide the name and title of the department chair (or other administrator) who provided you with the Letter of Support.*

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| *Sally Wallace, Dean of Andrew Young School of Policy Studies and Professor of Economics\**  *Dean Wallace’s letter of support will be submitted as soon as possible, but she is definitely on board with this.* |

# Grants or Business Office Acknowledgment Form

*Institutional Grants/Business Offices will be responsible for fund disbursement, often in correspondence with the Department Chair, including expense and travel reimbursement. All applicants will need to provide a signed Acknowledgement Form, the template for which is linked on the RFP page, stating that the Grants/Business Office knows about the applicant’s intent to apply for an Affordable Materials Grant. Either the Department Chair or the Project Lead can work with the Grants/Business Office to get this signed form.*

*In the case of multi-institutional affiliations, all participants’ institutions must provide this form.*

*Please provide the name and title of the grants or business office representative who provided you with the acknowledgement form.*

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| *Angela Stover, Business Manager I, Department of Economics*  *Joseph J. McLeod, MHA, Managing Institutional Officer, Office of Sponsored Proposals & Awards, GSU Research Services & Administration\**  *\*Mr. McLeod’s letter of acknowledgement will be submitted after the proposal is vetted through OPSA.* |

1. Faculty will teach and be involved with the assessment of the course during Fall 2022 and Spring 2023, but these hours will be performed under their teaching and service responsibilities. [↑](#footnote-ref-2)
2. Many OER sites have principles of economics textbooks that can be used for this course (e.g., [OpenStax](https://openstax.org/details/books/principles-microeconomics-2e), [Lumen OER](https://lumenlearning.com/courses/microeconomics/), [Saylor Academy](https://learn.saylor.org/course/view.php?id=8), etc.) These sources and others will be reviewed and adopted as they align with course learning objectives. [↑](#footnote-ref-3)