Affordable Materials Grants, Round 21:

Continuous Improvement Grants

(Spring 2022-Spring 2023)

Proposal Form and Narrative

# Applicant and Team Information

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| --- | --- |
| Requested information | Answer |
| Institution | Georgia Gwinnett College |
| Applicant name | Tonya DeGeorge |
| Applicant email  | tdegeorge@ggc.edu |
| Applicant position/title | Instructor of Mathematics |
| Submitter name  | Helen McDaniel |
| Submitter email  | hmcdanie@ggc.edu |
| Submitter position/title | Program Coordinator, Office of Research and Sponsored Programs |

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.

|  |  |  |
| --- | --- | --- |
| Team member | Name | Email address |
| Team member 1 | Tonya DeGeorge | tdegeorge@ggc.edu  |
| Team member 2 | Katherine Pinzon | kpinzon@ggc.edu  |
| Team member 3 | Joshua Roberts | jroberts7@ggc.edu  |
| Team member 4 |  |  |
| Team member 5 |  |  |

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 Name: Continuous Improvement of Calculus I**

# Project Information

| Requested information | Answer |
| --- | --- |
| Type of Project | *Creation of ancillaries for existing OER courses* |
| Requested Amount of Funding*$10,000 maximum total award per grant* | *$6,000* |
| Course Titles and Course Numbers | MATH 2200 Calculus I |
| Final Semester of Project | *Spring 2023* |
| Currently Existing Resource(s) to be Revised/Ancillaries Created | Title: Calculus I Guided Notes to accompany OpenStax Calculus textbook<https://alg.manifoldapp.org/projects/openstax-calculus-i-ancillary-materials/resources> \*Note: the primary goal of this continuation grant is to create ancillary materials to accompany the guided notes and homework shown in the link above. Revisions will be made if necessary. |
| Priority: | Professional Support from Staff |

# **Project Goals**

The goal of this project is to expand the work done on the Round 18 ALG grant, “Low-Cost Transformation of Calculus” (Dr. Katherine Pinzon) where the team adopted an OER text and created guided notes with embedded video examples, answer keys, and an online homework template using Edfinity (final report submitted December 2021). The team piloted the materials in their own classrooms and students were asked to complete a survey on their experiences on the course. Based on our student surveys in our pilot sections (63 total), many students commented that they appreciate our attempts to provide alternative materials to help them with cost of materials (despite the time it took students to get used to materials and the online homework system with limited help aids). In rating the overall quality of the materials of the course (and comparing it to other mathematics courses), students responded with Somewhat Worse (7.94%), About the Same (36.51%), Somewhat Better (25.40%), and Much Better (30.16%). Although, overall student opinions of the materials were positive, some students also indicated that “examples for problems were not always provided, which would have helped me.” Although we tried to get faculty input, many faculty were hesitant in adopting a new system during a global pandemic. Yet, as instructors implementing this work into our classrooms and speaking with other faculty about their concerns, we realized that additional resources would be needed to enhance the value of the work and make the adoption easier for both faculty and students. In doing so, we intend to create lecture videos that align with our guided notes (to help faculty regardless of the modality of their classes) and ancillary materials faculty can use in their classrooms to help aid in student learning and engagement. Videos in the prior grant only provided students and faculty with examples of problems related to the concept in the notes. The lecture videos we intend to create in this grant will be more concept-based, describing the content, and relating it to examples given in the text and videos previously provided. These lecture videos will be linked to the guided notes. Teaching resources and supplementary materials will include activities such as Desmos, GeoGebra applets, Quizizz problem sets, escape room google slides, etc. that are intended to help students engage with content and enhance student interest. These resources will be made available on the OpenALG site (and the Github repository) and accompany the guided notes that currently exist.

# **Action Plan**

**Tasks needed to complete the project:**

This continuous improvement grant is meant to build upon the work done from a previous grant. The team will meet bimonthly to keep with the schedule and maintain a consistent voice (formatting, mathematical language, etc.) across all tasks outlined below.

*Concept Lecture Videos*

Using the free OpenStax textbook and previously created notes as a guide, the team will create short concept videos for each section of the book. The videos will be hosted on YouTube and listed as public. The created videos will include a link back to the appropriate sections of the textbook. Each member of the team will create videos for specific sections of the book to align with the guided notes.

*Teaching Resources*

Using the textbook content and examples, the team will curate and create teaching resources that demonstrate the major themes from the textbook sections.  These resources will include activities such as applets, escape rooms, Desmos activities, and Quizizz. The teaching resources will be available on the OpenALG site (and the Github repository). Each member of the team will create teaching resources for specific sections of the textbook to accompany the guided notes.

*Revisions*

As the team creates lecture videos and other supplementary materials, they will revise and make any necessary changes to the guided notes and the Edfinity online homework templates that were created from a previous grant.

**Plans for open licensing.**

All materials (guided notes, answer keys, video lectures, video examples, applet, and teaching resources) created under the grant will continue to be freely available and licensed under CCBY. Any pre-existing ancillary materials that the team incorporates will likewise be freely available under a similar license.

**Plans for accessibility for visually impaired students.**

The project team has and will continue to work with Ms. Christine Robinson, GGC Technical Trainer/Writer and design specialist; to ensure that materials developed are ADA and 508 compliant; thereby making certain that we provide reasonable accessibility to people with disabilities to our web content and electronic and information technology.

The guided notes (created in previous grant) are in Word format and pass Word’s accessibility check. The videos will have closed captioning. The applets via Geogebra and Desmos will follow accessibility guidelines at <https://wiki.geogebra.org/en/Accessibility>; they are touch enabled for large screen tablets.

**Other platforms in addition to the repository to host created materials.**

The guided notes are stored on the github.io website. The applets and activities will be hosted on their designated platforms with shared collections and links to these collections housed on github.io. The videos will be linked in the notes and hosted on YouTube.com. The materials will also be available through the ALG repository, OpenALG.

**Roles of each member.**

Team member Tonya DeGeorge, Instructor of Mathematics, will serve as project manager, subject matter expert, instructional designer, and instructor of record. Ms. DeGeorge is working on her Ph.D. in Mathematics Education and is a valuable resource for research in the Scholarship of Teaching and Learning (SoTL). She will assist in developing lecture videos, ancillary materials/active learning assignments and implement them into her classroom (approximately 20-30 hours for creation of lecture videos and approximately 15 hours for ancillary materials). In addition, she will provide answer keys to instructor guides and activities (approximately 15 hours). She will coordinate efforts to obtain IRB approval, help administer consent forms and surveys, and collect and analyze data (approximately 10 hours).

Team member Joshua Roberts, Associate Professor of Mathematics, will coordinate production of audio-visual ancillary material and serve as subject matter expert, and instructional designer. Dr. Roberts was a Mathematical Association of America Project NExT Fellow and, as a Fellow, developed expertise on the production of videos and video notes for students in many courses. He will assist in creating lecture videos that align with guided notes created in the previous grant and developing ancillary materials and making sure it aligns with the course topics (approximately 20-30 hours for creation of lecture videos and approximately 15 hours for ancillary materials). He will coordinate efforts to produce concept videos on all major topics of the courses advising the team on best practices for the implementation of this type of OER. He will also maintain the GitHub repository of materials and ensure all materials are available (approximately 10 hours).

Team member Katherine Pinzon, Professor of Mathematics, will lead the evaluation effort and will serve as a subject matter expert, instructional designer, and instructor of record.  She has extensive experience with surveys and assessment data analysis from serving as Principal Investigator for Course-Embedded Research Experience (CURE) grants and PI and CoPI for other Affordable Learning Georgia grants. She will assist Ms. DeGeorge more extensively in her evaluation efforts. She will also assist in developing lecture videos and ancillary materials/active learning assignments that align with course topics (approximately 20-30 hours for creation of lecture videos and approximately 15 hours for ancillary materials). She will work to ensure all materials are accessible for students (approximately 10 hours).

# **Timeline**

Kickoff (March 25, 2022) and Project Implementation: Spring 2022

* An initial meeting will be held to develop protocols and a more detailed schedule of expectations.
* The team members will use Spring 2022 semester to identify, gather, and map existing OER videos and teaching resources.
* PIs will develop plans for material templates that meet accessibility guidelines and curation of relevant resources onto the Github repository for initial dissemination. Preliminary material will be selected and prepared by the end of Summer 2022 for small-scale piloting in MATH 2200 in Fall 2022.

**Summer 2022**

* Creation of videos begins. Videos are linked to the guided notes.
* Revision/creation of ancillary materials and applets begins. The PIs will create instructor resources/active learning strategies that align with content in both systems while also addressing the goals and course outcome goals as determined by USG and GGC. Course materials will follow an agreed accessible template so that all members can create materials that align.
* Revision of guided notes begins (if necessary), and the team will make sure they align to all supplementary materials.

**Fall 2022**

* The team members will test OER materials and create and revise the content outlined in the fall, meeting on a biweekly basis to coordinate efforts. Although revisions will be expected, a complete set of resources for each course will be fully curated by the end of Fall 2022 for full implementation in Spring 2023.
* Protocols will be developed for incorporating additional revisions in real time through the life of this project and beyond. IRB approval will be obtained and preliminary feedback from students in the MATH 2200 course will be collected. An evaluation plan and instruments for use will also be developed during this semester.

**Spring 2023**

* The materials will be given to the mathematics faculty for them to use in their courses. Team members will engage with mathematics faculty and encourage input to make any necessary revisions to course materials.
* More evaluation data, as outlined above, will be collected at the end of Spring 2023.   All relevant material will be curated onto Github and open ALG that can be accessed by any GGC faculty as well as any member of the mathematics community. A report will be created and submitted by the end of the grant period. Lastly, PIs expect to work on dissemination efforts by presenting at course coordination, discipline meetings, and conferences, and making resources available to all GGC faculty and those in mathematics.  During this semester, the PIs will aim to create an article to be submitted on the materials and data collected throughout the project.
* A final activity for Spring 2023 will be the completion of the evaluation plan. The final report will be submitted on the date designated by ALG.

# **Budget**

We request $6,000 to complete the project.

Justification:

**A. PERSONNEL INDIVIDUAL AWARDS: $ 6,000**

* Ms. Tonya DeGeorge, project lead. Ms. DeGeorge will lead the creation and curation of the lecture videos for chapters 1, 2, and 5 using the OER textbook and guided notes as a guide. The lecture videos will be hosted on YouTube and divided up into “chapters” using YouTube’s timestamp functionality. Ms. DeGeorge will also create ancillary materials/active learning assignments that align with course topics for chapters 1, 2, and 5. She will coordinate efforts to obtain IRB approval, help administer consent forms and surveys, and collect and analyze data. We request the following:
	+ Pay: $1,569.12
	+ Fringe benefits: $430.88 (Includes FICA Med, FICA SS, and Retirement)
	+ Total: $2,000
* Dr. Katherine Pinzon, co-project lead. Dr. Pinzon will lead the creation and curation of the lecture videos for chapter 3 using the OER textbook and guided notes as a guide. The lecture videos will be hosted on YouTube and divided up into “chapters” using YouTube’s timestamp functionality. Dr. Pinzon will also create ancillary materials/active learning assignments that align with course topics for chapter 3 and will ensure all materials created from the team meet accessibility requirements. We request the following:
	+ Pay: $1,711.01
	+ Fringe benefits: $288.99 (Includes FICA Med, FICA SS, and Retirement)
	+ Total: $2,000
* Dr. Joshua Roberts, co-project lead. Dr. Roberts will lead the creation and curation of the lecture videos for chapter 4 using the OER textbook and guided notes as a guide. The lecture videos will be hosted on YouTube and divided up into “chapters” using YouTube’s timestamp functionality. Dr. Roberts will also create ancillary materials/active learning assignments that align with course topics for chapter 4. He will ensure all materials on available on the ALG manifold and maintain the site. We request the following:
	+ Pay: $1,711.01
	+ Fringe benefits: $288.99 (Includes FICA Med, FICA SS, and Retirement)
	+ Total: $2,000

**C. TOTAL REQUEST: $ $6,000**

# 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

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| Dr. Mohamed Iqbal Jamaloodeen, Ph.D. Professor of Mathematics Chair of Faculty Georgia Gwinnett College |

# Grants or Business Office Acknowledgment Form

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| Dr. Marie Firestone, Associate Director of Office of Research, Sponsored Programs |