Affordable Materials Grants, Round 20:

Transformation Grants

(Fall 2021-Fall 2022)

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.
* The only way to submit the official proposal is through the online Google Form. The link to the online application is on the [Round 20 RFP Page](https://www.affordablelearninggeorgia.org/about/rfp_r20).
* The italic text provided below is meant for clarifications and can be deleted.

The Round 20 Kickoff will include an asynchronous training module, required for all team members to complete, followed by the synchronous Kickoff Meeting on December 10, 2021 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

|  |  |
| --- | --- |
| Requested information | Answer |
| Institution(s) | Georgia Southern University |
| Applicant name | Christine Whitlock |
| Applicant email | cwhitlock@georgiasouthern.edu |
| Applicant position/title | Professor of Chemistry and Biochemistry |
| Submitter name | Shainaz Landge |
| Submitter email | slandge@georgiasouthern.edu |
| Submitter position/title | Assistant Professor of Chemistry and Biochemistry |

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 | Christine Whitlock (Project Lead) | cwhitlock@georgiasouthern.edu |
| Team member 2 | Shainaz Landge (Project Lead) | slandge@georgiasouthern.edu |
| Team member 3 | Karelle Aiken | kaiken@georgiasouthern.edu |
| Team member 4 | Abid Shaikh | malnu@georgiasouthern.edu |
| Team member 5 | [Gwendolyn Carroll](mailto:gdcarroll@georgiasouthern.edu) | gdcarroll@georgiasouthern.edu |
| Team member 6 | Dawn Cannon-Rech (Library Liaison) | dcannonrech@georgiasouthern.edu |

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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| --- |
| Jeffrey Mortimore ([jmortimore@georgiasouthern.edu](mailto:jmortimore@georgiasouthern.edu)) - Library Liaison Deborah Walker ([dwalker@georgiasouthern.edu](mailto:dwalker@georgiasouthern.edu)) The Faculty Center |

# Project Information

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| --- | --- |
| Requested information | Answer |
| Priority Category / Categories | *Collaborative Projects with Professional Support*  *Student Participation in Materials Evaluation and/or Development*  *Department Scaling Projects* |
| Requested Total Amount of Funding | ***$30,000*** |
| Final Semester of Project | *Fall 2022* |
| Using an OpenStax Textbook? | *No* |

# Impact Data

## Course 1

|  |  |  |
| --- | --- | --- |
| Row # | Requested information | Answer |
| N/A | Course title and number | Organic Chemistry I  (CHEM 3401) |
| N/A | Course instructors | Karelle Aiken  John DiCesare  Shainaz Landge  Rafael Quirino  Hans Schanz  Abid Shaikh  Christine Whitlock |
| 1 | Average number of students enrolled per section | 48 |
| 2 | Average number of affected course sections scheduled in a summer semester | 1 |
| 3 | Average number of affected course sections scheduled in a fall semester | 4 |
| 4 | Average number of affected course sections scheduled in a spring semester | 3 |
| 5 | Total number of course sections scheduled in an academic year | 8 |
| 6 | Total number of student section enrollments per academic year | 384 |
| 7 | Original required commercial materials | WileyPlus Homework System  $45 per semester (negotiated discount price)  ISBN # 978-0558805401 |
| 8 | Original cost per student section enrollment | $45 |
| 9 | Average post-project cost per student section enrollment | $0 |
| 10 | Average post-project savings per student section enrollment | $45 |
| 11 | Projected total annual student savings per academic year | $17,280 |

## Course 2

|  |  |  |
| --- | --- | --- |
| Row # | Requested information | Answer |
| N/A | Course title and number | Organic Chemistry II  (CHEM 3402) |
| N/A | Course instructor | Karelle Aiken  John DiCesare  Shainaz Landge  Rafael Quirino  Hans Schanz  Abid Shaikh  Christine Whitlock |
| 1 | Average number of students enrolled per section | 48 |
| 2 | Average number of course sections scheduled in a summer semester | 1 |
| 3 | Average number of course sections scheduled in a fall semester | 2 |
| 4 | Average number of course sections scheduled in a spring semester | 3 |
| 5 | Total number of course sections scheduled in an academic year | 6 |
| 6 | Total number of student section enrollments per academic year | 288 |
| 7 | Original required commercial materials | WileyPlus Homework System  $45 per semester (negotiated discount price)  ISBN # 978-0558805401 |
| 8 | Original cost per student section enrollment | $45 |
| 9 | Average post-project cost per student section enrollment | $0 |
| 10 | Average post-project savings per student section enrollment | $45 |
| 11 | Projected total annual student savings per academic year | $12,960 |

# Narrative Section

## 1. Project Goals

As the largest regional university in southeast Georgia, Georgia Southern University (GSU) serves nearly 27,000 students at the Statesboro and Armstrong campuses. Any positive change in teaching and learning will have a huge impact on the success of the overall student body. At GSU and across the country, the huge cost students have to pay for the course materials affects student life and overall student success. Students, too often do not purchase these materials, because they are expensive and thus can miss valuable learning opportunities. Inaccessibility of the materials, can lead students to come to class unprepared, and thus less engaged in the course material. This can successively follow systematic failures. Having a low- or no-cost option for students will guarantee that each student has access to the critical learning materials needed for these challenging courses. Free access to materials will alleviate strain and will boost student engagement. Finally, the positive mindset and good study habits formed by this culture will lead to improved student learning gains.

Lowering the cost of student expenses will not only benefit our large population of low-income students, but also help each Chemistry, Biochemistry, and Biology major taking these courses. With 151 degree programs, the university recently ranked #2 in affordable colleges in Georgia[[1]](#footnote-1) and #5 nationally for producing African-American graduates in Physical Sciences.[[2]](#footnote-2) The Department of Chemistry and Biochemistry offers American Chemical Society (ACS) certified degrees in Chemistry and Biochemistry and will soon offer an American Society for Biochemistry and Molecular Biology (ASBMB) certified degree in Biochemistry. With over 400 majors, the department regularly ranks nationally in the top 25 producers of ACS certified BS degrees in Chemistry.

This project proposes to develop free online open-educational resources (OER) material to replace the costly online homework system students are required to purchase in the Organic Chemistry I and II (CHEM 3401 and 3402) courses. Our goal is to also provide ancillary lightboard lecture videos tailored to the course needs. All developed materials will not only be shared in the department, but also be updated annually on the Galileo OER commons platform. Undergraduate students will be included in the complete evaluation of the project. These student participants will be paid to collect and report student and faculty assessment data.

**Project Goals:**

1) Develop online homework assignments for all chapters in Organic Chemistry I and II to be administered in the course learning management system.

2) Produce supplemental lightboard videos for all chapters in Organic Chemistry I and II.

2) Align the available new open-educational resources with the course objectives.

3) Assess the newly developed material to measure its effectiveness in student satisfaction, faculty satisfaction, student performance, and student retention.

The primary pedagogical transformation expected with this change is the introduction of free online homework exercises and lightboard videos. All faculty members teaching the course will have the freedom of incorporating the material as they see fit.

## 2. Statement of Transformation

Organic Chemistry I (CHEM 3401) and Organic Chemistry II (CHEM 3402) introduce the fundamental concepts of organic chemistry: its structure and bonding of carbon-containing compounds, nomenclature of organic compounds, stereochemistry, spectroscopic techniques and organic mechanisms utilizing various functional groups. It is a two-course sequence that is required for Chemistry, Biology, and Biochemistry majors, among others. A minimum grade of C is required in CHEM 3401 to progress to the Organic Chemistry II course and subsequent courses.

The lecture and the lab sections of all chemistry courses are linked and primarily taught by the same instructor. This allows the alignment of the content and reinforced lecture content in the laboratory.

Through our previous ALG grant (Round 14), the costly textbook was successfully replaced with OER resources. We have saved $81,600 for both the courses for students per year. The only cost remaining for students in the lecture portions of the courses is the mandatory online homework system, which costs $90 per year; this is the discounted price offered by Wiley to Georgia Southern University (GSU) only. The current price offered to the other colleges and universities is $140 per year.

The laboratory portions of the courses are being treated separately. The laboratory techniques book was replaced with an OER lab techniques book through another ALG grant (Round 16). We have saved $ 42,878 annually towards the lab techniques book.

**We propose to reduce the required cost for course materials from $90 per year to $0 by developing free online homework exercises to be available through the course management system (folio) for the organic chemistry sequence. To strengthen student learning, supplementary lightboard videos will also be developed by the team members. The proposed changes will result in a net savings for students of $30,240 per year.**

The homework exercises and videos will be formatted to help students follow along the fast-paced lectures. They will have a detailed outline of the textbook material used from the OER website in-line with the lectures. The structured outline will also be provided for students as well to take notes during the lectures and reading. An example of the light board video can be found at the following [link](https://academics.georgiasouthern.edu/cte/home/teaching_services/lightboard/). These editable materials will be shared with all of the instructors who will be responsible to share or utilize according to their needs on the provided learning management system.

The Statesboro campus of our department includes seven organic chemistry faculty members who work together as a committee to make any decisions regarding changes or new implementation. Two of these organic chemistry faculty members comprise the lead team members for this study.

**Student impact**: With complete and free availability to the homework and supplementary material, the students will take advantage of the opportunity and thus be able to achieve higher student learning gains.

**Department and College impact**: The guarantee that all students have required materials will positively impact the learning culture of our department. Faculty members will encourage more online reading and practice problems. The supplementary materials will aid team members in making a smooth transition to online resources in a systematic transformation. All the team members and the leaders in this project are part of the organic chemistry committee in the Statesboro campus of the department and hence will be involved and aware of each part of the implementation process.

**University Impact**: Diverse delivery of instructions, Inclusive teaching practices and inexpensive access to the course materials for all of the students taking Organic Chemistry I and II is expected to increase student success, which will be clearly seen at the university level in terms of retention, progression and graduation rates.

## 3. Action Plan

Implementation of this project will involve more than half of the faculty members teaching organic chemistry at the Statesboro campus. The roles of the team members and efforts are mentioned below.

**Project lead: Dr. Christine Whitlock** will be responsible for identifying, aligning, preparing, adapting, and assessing all new homework materials for Organic Chemistry II (CHEM 3402). She will be a lead contact for the team members, the Faculty Center, the COSM library liaisons, and any other organic faculty members and students. She will oversee the development of new materials for the CHEM 3401 and CHEM 3402 courses with the help of team members. She will also align the new resources and assessment instruments with the textbook and student learning outcomes.

**Project lead: Dr. Shainaz Landge** will be responsible for identifying, aligning, preparing, adapting, and assessing all new lightboard videos for Organic Chemistry II (CHEM 3402). She will be a lead contact for the team members, the Faculty Center, the COSM library liaisons, and any other organic faculty members and students. She will oversee the development of new materials for the CHEM 3401 and CHEM 3402 courses with the help of team members. She will also align the new resources and assessment instruments with the textbook and student learning outcomes.

**Team Member: Dr. Abid Shaikh** will be responsible for identifying, aligning, preparing, adapting, and assessing all new lightboard videos for Organic Chemistry I (CHEM 3401).

**Team Member: Dr. Karelle Aiken** will be responsible for identifying, aligning, preparing, adapting, and assessing all new homework materials for Organic Chemistry I (CHEM 3401).

All of the organic chemistry faculty members at the Statesboro campus will aid in implementing the course material and participate in the assessment of this project.

The COSM library liaisons (Dawn Cannon-Rech and Jeffrey Mortimore) will assist in training, identifying and distributing the newly created resource material as modules by uploading on common resources GALILEO OER website. We will also receive help from the Interim Director of “The Faculty Center” (Deborah Walker) which hosts the light board video platform. The instructional designer in the Faculty Center will help to edit and brand (GSU) the lightboard videos. The undergraduate students will be helping the team leaders in terms of data collection.

## 4. Quantitative and Qualitative Measures

All the Organic Chemistry courses taught at the Statesboro campus during the Fall 2022 semester will participate in this transformation as well as in assessment study. After implementation of the course materials, the assessment study will target the students as well the Organic Chemistry instructors. The team leaders, Dr. Christine Whitlock (Chair and member) and Shainaz Landge (member), are part of the departmental assessment committee as well. They will help the assessment personnel to develop the necessary tools and collect the data focusing on student satisfaction, performance, course level retention, and faculty satisfaction.

**Student satisfaction**: An available or adapted student satisfaction survey similar to our study using open educational resources ([*Understanding Students’ Satisfaction with OERs as Course Materials*](https://kb.osu.edu/bitstream/handle/1811/81907/Jaggars_Folk_Mullins_PMM_2018_preprint.pdf?sequence=1&isAllowed=y)) will be utilized to assess student perception of the access, quality, and usefulness of the newly created required course materials.[[3]](#footnote-3)

The students will be asked to compare the transition between the previously used hardbound textbook to the available online free material.

Preliminary questions which will be included are:

1) Was this a smooth and systematic transition?

2) Was the study material useful in terms of adoption, use, access, financial costs etc.?

3) What additional required materials will be useful for the future incoming students?

4) What creative changes could be made in the required, generated materials to increase student engagement?

5) Do students prefer the faculty-created homework and supplementary materials over the publisher versions?

**Faculty satisfaction:** The level of overall faculty satisfaction will be measured with a survey similar or adapted to one developed at the University of Wyoming and University of Mississippi[[4]](#footnote-4) All faculty members teaching Organic Chemistry will be questioned about student-, instructor-, and institution-related factors. Questions will be adapted to compare the consistency and implementation of the newly-added material with the previous course material.

**Student performance**: The overall student performance will be measured periodically throughout the semester with exam grades and the final grades. Midterm assessment will be conducted in all the classes which have implemented the course materials. Organic Chemistry II utilizes the ACS standardized exam for the final exam, and the scores from the previous semesters to the semester using OER material will be compared. The DFW percentage grades and withdrawals will also be compared with previous semesters to check the effectiveness of the change on student performance.

**Course-level retention**: After implementation and assessment of the materials in Fall 2022, necessary changes will be made and adapted in spring 2023 - after the project timeline. Spring 2023 will also be used to measure the students’ long-term retention both in the courses and in their majors.

Proper attention will be given to the above generated qualitative and quantitative assessment tools to check their reliability, incorporation during the semester, and alignment to the material.

IRB (Institutional Review Board) approval will be sought in the summer of 2022 before implementing the materials in the course and gathering the data from the student. The students will be asked to sign the consent form before collecting any data.

## 5. Timeline

**Spring 2022**

* Team members will meet to discuss the timeline and expected outcomes.
* Course objectives, learning outcomes, and existing assignments will be reviewed for CHEM 3401 and CHEM 3402. Time will be spent reviewing current course lecture notes. The format of the homework exercises and lightboard videos will be established.

**Summer 2022**

* The online homework exercises will be developed and aligned with our learning objectives.
* All lightboard videos will be recorded and aligned with our learning objectives.
* Findings will be shared with all the team members.
* New materials will be finalized for both courses by team leads and members.
* Assessment personnel will help in developing instruments (surveys) to assess the newly curated materials.

**July 2022**

* The guides and links to all course materials will be made available to faculty members through the Folio online learning platform (folio - learning management system).

**Fall 2022**

* New materials will be implemented in all courses (CHEM 3401 and 3402; 8 sections) and evaluated. They will be simultaneously reviewed, edited, and incorporated.
* Feedback for online homework and lightboard videos from the students and faculty will be collected and discussed with the involved team members.
* The final report will be prepared and shared with the Textbook Transformation Grants committee.

**Spring 2023 (after project timeline)**

* Results will be collected and disseminated in STEM Learning and Teaching conferences (OpenEd, USG teaching and Learning, SoTL conference, SERMACS), as well as a regional Chemistry conference and peer-reviewed publications. The supplementary material will be linked with the libguides as modules on the GSU library webpage and on Galileo open end resources platform.

## 6. Budget

**Dr. Christine Whitlock, $5000**

Dr. Whitlock will need time during the summer term to coordinate team members, create homework exercises for CHEM 3402, align online homework for CHEM 3401 and 3402, create assessment tools, oversee the development of all materials, and disseminate new materials to colleagues.

**Dr. Shainaz Landge, $5000**

Dr. Landge will need time during the summer term to coordinate team members, create lightboard videos for CHEM 3402, align videos for CHEM 3401 and 3402, create assessment tools, oversee the development of all materials, and disseminate new materials to colleagues.

**Dr. Karelle Aiken, $5000**

Dr. Aiken will need time during the summer to develop, edit, and revise homework exercises for CHEM 3401.

**Dr. Abid Shaikh, $5000**

Dr. Shaikh will need time during the summer to review, record, and edit lightboard videos for CHEM 3401.

**Dr. Gwendolyn Carroll, $5000**

Dr. Carroll will help in developing the instruments and help us collect the data for the developed materials which will result in peer reviewed publications and presentations.

**Undergraduate Stipends, $1600**

Two undergraduate students will be hired to collect, tabulate, and report all assessment data. These students will have access to survey responses and student performance data. They will be paid $10 per hour for a total of 80 hours each.

**Travel, $2000**

Funds will be used for travel to attend USG or STEM or Scholarship of Teaching and Learning conference.

**Materials, $1400**

Funds will be used to purchase a tabletop lightboard system and supplies through Revolution Lightboards. The system will be used to record and edit videos, which will be provided to all organic instructors. These videos will supplement the homework exercises built within this project.

[Tabletop Lightboard System, 35”](https://revolutionlightboards.com/collections/lightboards/products/tabletop-lightboard-system-small-35) (plus shipping) $1184

[Webcam with Microphone](https://smile.amazon.com/Logitech-C920x-Pro-HD-Webcam/dp/B085TFF7M1/ref=sr_1_3?crid=12N5DE1IK8LS8&keywords=webcam%2Bwith%2Bmicrophone&qid=1637608234&qsid=144-1529027-1386017&sprefix=webcam%2Caps%2C247&sr=8-3&sres=B085TFF7M1%2CB088TSR6YJ%2CB083QM78TV%2CB088D3Y2YC%2CB08FXZJSXV%2CB08BHX7GYY%2CB08931JJLV%2CB084ZJFNKN%2CB07M6Y7355%2CB01N5UOYC4%2CB01LXCDPPK%2CB01DPNPJ72%2CB088PYJB6H%2CB08FT236TM%2CB09B9RWZMN%2CB088D92L8L&srpt=CAMCORDER&th=1) 65

[Dry Erase Neon Markers](https://smile.amazon.com/1752226-Markers-Bullet-Assorted-5-Count/dp/B0033AGVVG/ref=sr_1_2?crid=2KQ0D1XAYNHAZ&keywords=expo+neon+dry+erase+markers+for+glass&qid=1637608352&qsid=144-1529027-1386017&sprefix=expo+neon%2Caps%2C173&sr=8-2&sres=B0033AGVVG%2CB015TAUG4K%2CB008DQXN48%2CB0892W6F5J%2CB07DVG2F94%2CB00I8OBAOU%2CB00WT4813I%2CB079VY7WCP%2CB07ZZDH251%2CB073WVZ5RR%2CB07W4NV6C4%2CB00PV1L1RE%2CB00006IFIM%2CB005BXLPJG%2CB07FPVX1FW%2CB00MTVPMD8%2CB08ZZ3WQ2P%2CB00006JNK2%2CB00I8OB91O%2CB08D9DLDG8&srpt=MARKING_PEN) x 10 93

[Dry Erase Erasers](https://smile.amazon.com/IHPUKIDI-Magnetic-Whiteboard-Chalkboard-Classroom/dp/B08TBGP64Z/ref=sr_1_1_sspa?keywords=dry%2Berase%2Berasers&qid=1637608557&sr=8-1-spons&spLa=ZW5jcnlwdGVkUXVhbGlmaWVyPUEySUFKWDFEOU5VQktIJmVuY3J5cHRlZElkPUEwMjM0NDAzMUpROUhUR1dWS0RXNCZlbmNyeXB0ZWRBZElkPUEwOTMxNTU2UFJPQkhYTFRRRVRYJndpZGdldE5hbWU9c3BfYXRmJmFjdGlvbj1jbGlja1JlZGlyZWN0JmRvTm90TG9nQ2xpY2s9dHJ1ZQ&th=1) x 4 58

## 7. Sustainability Plan

All Organic Chemistry lecture courses at the Statesboro campus use the same OER online textbook and online homework system. The selection of all these materials is determined by the committee which consists of all the team members who are also part of this proposal. Thus, maintaining the continuity and/or updating of the course material is ensured throughout the Organic Chemistry sequence for years to come. The project leaders will guarantee that the material is up-to-date to current standards and applicable in future semesters. The leads will also be responsible for uploading the new materials on OER Commons along with hosting a library guide (libguides) at GSU library website hence providing sustainable solutions. In the future, we plan to have an entirely online platform for students in Organic Chemistry, which can be easily accessible through libguides to students and the faculty members. After successful implementation of the materials, the data collected will be disseminated on various local, regional and national conferences focused on teaching and learning (USG, STEM, SoTL), and chemical education (American Chemical Society) conferences. The team members also plan to disseminate the results in the peer-reviewed journals such as Journal of Chemical Education or International Journal of Scholarship of Teaching and Learning (IJSoTL).

# Creative Commons Terms

*I understand that any new materials or revisions created with ALG 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. Will Lynch**  **Chair and Professor of Chemistry & Biochemistry**  **Georgia Southern University** |

# *Text, letter Description automatically generated*

# Grants or Business Office Acknowledgment Form

|  |
| --- |
| **Dr. Laura Regassa**  **Director, Research Services**  **Georgia Southern University** |

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1. “2018 Most Affordable Colleges in Georgia.” (2018). Retrieved from https://www.collegeaffordabilityguide.org/schools/georgia/ [↑](#footnote-ref-1)
2. “Top 100 Degree Producers,” (2017). Retrieved from https://diverseeducation.com/top100/. [↑](#footnote-ref-2)
3. Reference - Shanna Smith Jaggars, Amanda L. Folk, David Mullins, (2018) ["Understanding students’ satisfaction with OERs as course materials"](https://www.emeraldinsight.com/doi/abs/10.1108/PMM-12-2017-0059), Performance Measurement and Metrics, Vol. 19 Issue: 1, pp.66-74, <https://doi.org/10.1108/PMM-12-2017-0059> [↑](#footnote-ref-3)
4. Bolliger, D. U.; Wasilik, O. “Factors influencing faculty satisfaction with online teaching and learning in higher education.” *Distance Education,*Vol. 30, No. 1, May 2009, 103–116.; Young, B. “[Assessing faculty perceptions and use of open education resources (OERs)](https://scholar.google.com/scholar?oi=bibs&cluster=8207204149225900414&btnI=1&hl=en).” Sustainable community: Association of College and Research Libraries; ACLR-2015, 40-48. [↑](#footnote-ref-4)