Affordable Materials Grants, Round 20:

Transformation Grants

(Fall 2021-Fall 2022)

Proposal Form and Narrative

# Applicant and Team Information

| Requested information | Answer |
| --- | --- |
| Institution(s) | University of West Georgia |
| Applicant name | Jim Bellon |
| Applicant email | [jbellon@westga.edu](mailto:jbellon@westga.edu) |
| Applicant position/title | Senior Lecturer |
| Submitter name |  |
| Submitter email |  |
| Submitter position/title |  |

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 | undergraduate TBD |  |
| Team member 2 |  |  |
| Team member 3 |  |  |
| Team member 4 |  |  |
| Team member 5 |  |  |
| Team member 6 |  |  |

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

|  |
| --- |

# Project Information

| Requested information | Answer |
| --- | --- |
| Priority Category / Categories  *.* | *Priority categories:*   * *Departmental Scaling Projects* * *Student Participation in Materials Creation* |
| Requested Total Amount of Funding  *$30,000 maximum total award per grant* | *$6,280* |
| Final Semester of Project | *All Transformation Grants for Round 20 end in Fall 2022.* |
| Using OpenStax Textbook?  *This is to indicate to OpenStax that they can provide additional support and resources to your team during the adoption process.* | *No* |

# Impact Data

Please fill in the data below with impact data in below with one course (all sections) in each table, and only include courses and instructors that are specifically part of the scope of this grant proposal. Add or remove tables as needed. **Please only put a single averaged or totaled (as appropriate) number in each box. Do not put ranges or mathematical equations in any of these boxes.** If the materials used by different instructors in a course vary drastically, it is possible to enter one course per instructor.

For a multi-course project, if a significant amount of students are assumed to take courses in a sequence and only one textbook is used for these courses, please take this into account in your total *(i.e. only include that book in the first course they would purchase it for OR adjust the number of students affected. Please explain in the notes section if making such adjustments).*

## Course 1

| Row # | Requested information | Answer |
| --- | --- | --- |
| N/A | Course title and number | Math 1401 Elementary Statistics |
| N/A | Course instructors | Jim Bellon |
| 1 | Average number of students enrolled per section | 28 |
| 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 | 5 |
| 4 | Average number of affected course sections scheduled in a spring semester | 7 |
| 5 | Total number of course sections scheduled in an academic year  *Add up rows 2-4.* | 13 |
| 6 | Total number of student section enrollments per academic year  *Multiply row 1 and row 5.* | 364 |
| 7 | Original required commercial materials  *Include each title, author, price for a new copy purchased from either your campus bookstore, the publisher, or Amazon, and a URL to the book showing the price.* | Discovering Statistics 3rd ed. By Daniel Larose, $266.99  macmillanlearning.com/college/ us/product/Discovering-Statistics/ p/1464142009 |
| 8 | Original cost per student section enrollment  *Add up the cost of all materials in row 7.* | $266.99 |
| 9 | Average post-project cost per student section enrollment | 0 |
| 10 | Average post-project savings per student section enrollment  *Subtract row 9 from row 8.* | $266.99 |
| 11 | Projected total annual student savings per academic year  *Multiply row 10 and row 6.* | $97,184.36 |

# Narrative Section

## 1. Project Goals

Nearly every semester, I notice that several of my statistics students come to class unprepared. I assign readings from the textbook that we review and discuss in class. When asked why they did not do the readings, the most common answer is they did not have the textbook yet because they could not afford it.

On the other hand, even the students who have read the text seem to not have any solid foundation in the topics. Their comments are mostly that the text is too formal and overwhelming. Both of these aspects cause the pace of the class to slow down and many students to struggle with understanding the concepts in a timely manner.

I have been able to partially solve this by putting together note packets that give a concise summary of the topics in language that students find easy to read. Having a full set of quality free resources would help statistics students succeed at a much higher rate.

My goal is to decrease the financial burden for students and increase their learning and success rate in the Elementary Statistics course, by creating a free and student-oriented textbook and corresponding online exercise resources.

I will get feedback from students in my classes as well as from other sections of Math 1401. Students will be asked to provide detailed evaluation of materials for readability, comprehension, relevance of data and give their suggestions for changes to content and topics to use for data sets that match their interests.

This will allow students to have this free electronic textbook and free access to online exercises on the first day of class and possibly earlier. Then students can have more equitable access to materials regardless of their economic status.

## 2. Statement of Transformation

MATH 1401 Elementary Statistics is a core course as well as a gateway course into the social sciences, health sciences, and nursing. Many students have trouble achieving high grades or sometimes even just passing this course the first time through. We have a large number who retake the course or switch to other majors where this course is not needed. For the calendar year 2019 (most recent pre-covid data), the DWF rate was 22.3%.

One study found that having access to course materials from the first day vs. 14 days into the semester resulted in a 13.5 percentage point difference in grades (“Impact of Student Choice of Content Adoption Delay on Course Outcomes,” Agnihotri, Baker, and Essa, 2017). Therefore, by providing the materials on or before the first day of class, students are more likely to pass and possibly achieve high grades in the course.

The Math Faculty at the University of West Georgia are committed to student success, especially the retention and progression of first year students. Each year approximately 700 students take this course. The current textbook used for the course costs $270 new. We plan to reduce the cost to $0 by creating and providing an open resource text and online problem sets with automatic grading and solutions. Using our own materials will allow for future editing and updating with current and student relevant data sets.

Another study found that online homework platforms increase student grades and confidence with real time scoring (“An Investigation of Online Homework,” Wooten and Dillard-Eggers, 2013). The online exercises that will be provided, will be created using the free [www.myopenmath.com](http://www.myopenmath.com) platform. This will allow students to attempt multiple versions of problems, access help resources, get quick scores and feedback during assignments, and be able to practice all problems again after due dates. Since the problems will be created/modified to match the electronic textbook, they will give students confidence in their being ready for the exams.

## 3. Action Plan

* **PI/Instructional Designer/Content Expert: Jim Bellon**
  + Responsible for planning and creating open textbook content as well as online exercises.
* **Undergraduate student assistant: TBD**
  + assist PI in planning and creating materials, including coding in latex. and editing content.
* Open textbook will be created using Latex software to produce a fully accessible PDF text that will be searchable and have clickable navigation. The text will be an open license under Creative Commons.
* Online exercises will be created using myopenmath.com platform and customized to match the text.

## 4. Quantitative and Qualitative Measures

In the Spring semester 2022, the first draft of materials will be used as supplementary materials in a few sections of MATH 1401, then as primary materials in summer 2022 and fall 2022.

To measure student satisfaction, the classes that use the materials will be surveyed, asking students to compare the new and old materials in spring 2022. For summer and fall 2022, students will be surveyed on their satisfaction with the new materials. Course evaluations will be examined to see any comments in courses using the new materials as well as other courses with existing materials as a comparison.

To measure student performance, grade distributions and common assessment questions on the final exams will be compared between classes using the new vs. existing materials.

To measure course-level retention, DWF rates will be compared between classes using the new vs. existing materials.

## 5. Timeline

Fall 2021, Mr. Bellon will start compiling and editing lecture notes into a comprehensive text and creating matching online exercises. Student surveys will be conducted in MATH 1401 sections to determine student needs and data topics they are interested in. Data will be collected in those topics. Undergraduate student assistant will be hired and “trained”.

Spring 2022, materials will be used which will include relevant data sets based on student interest. The comprehensive text draft will be completed along with matching online exercises. Student surveys will be conducted in regards to the materials. Student assistant will start working on project tasks including adding content, editing, coding, and data collection.

Summer 2022, the text will be edited for accuracy, accessibility, and formatting. The new materials will be used as primary text and exercises and student surveys conducted. Data on student performance, satisfaction and course retention will be collected. Student assistant will continue any hours remaining on the project.

Fall 2022, the new materials will be extended to other instructor sections to pilot further. Data on student performance, satisfaction and course retention will be collected. The materials will be updated as needed.

Spring 2023 and beyond, materials will be updated as needed and new data sets will be introduced as per student surveys.

## 6. Budget

PI-Faculty salary (including fringe) of $5,000, paid half in December 2021 and half in summer 2022.

Undergraduate student assistant total of $1,280. This will be one student paid $10 per hour, averaging 8 hours per week for 16 weeks over spring 2022 semester and possibly into summer 2022.

## 7. Sustainability Plan

Course materials will be updated for errors as well as new and relevant data sets.

If the results are positive, we will seek department approval to use the new materials in all sections of MATH 1401.

Complementary materials will be created for MATH 0096 support for statistics corequisite courses.

The results and materials will be presented at the Innovations in Pedagogy Conference at UWG as well as other conferences as possibilities.

# 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*](https://www.affordablelearninggeorgia.org/about/rfp_r18)*.*

# 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 the use 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.*

| *Dr.* [Timothy Schroer](mailto:tschroer@westga.edu) *Professor of History and*  *Chair, Department of General Education* |
| --- |

# 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.*

| Daryush Ila  Vice President for Innovation & Research |
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