

Application Details

Manage Application: Textbook Transformation Grants: Round Ten

Award Cycle: Round 10

Internal Submission Deadline: Friday, September 29, 2017

Application Title: 333

Application ID: 001881

Submitter First Name: Patcharin

Submitter Last Name: Marion

Submitter Title: Associate Professor of Mathematics

Submitter Email Address: tragoonsirisakp@fvsu.edu

Submitter Phone Number: 478-825-6199

Submitter Campus Role: Proposal Investigator (Primary or additional)

Applicant First Name: Patcharin

Applicant Last Name: Marion

Co-Applicant Name(s): --

Applicant Email Address: tragoonsirisakp@fvsu.edu

Applicant Phone Number: 478-825-6199

Primary Appointment Title: Associate Professor of Mathematics

Institution Name(s): Fort Valley State University

Submission Date: Monday, October 2, 2017

Proposal Title: 333

Proposal Category: No-Cost-to-Students Learning Materials

Are you using an OpenStax textbook?: Yes

Final Semester of Instruction: Fall 2018

Team Members (Name, Title, Department, Institutions if different, and email address for each):

Dr. Patcharin T. Marion, Associate Professor of Mathematics, Department of Mathematics and Computer Science, Fort Valley State University, tragoonsirisakp@fvsu.edu

Dr. Shadreck Chitsonga, Associate Professor of Mathematics, Department of Mathematics and Computer Science, Fort Valley State University, chitsongas@fvsu.edu

Sponsor, (Name, Title, Department, Institution):

Dr. Dawit Aberra, Department Chair, Department of Mathematics and Computer Science, Fort Valley State University

Course Names, Course Numbers and Semesters Offered:

Elementary Statistics; MATH 2113; Fall, Spring, Summer

Calculus III; MATH 2174; Fall, Spring or Summer

List the original course materials for students (including title, whether optional or required, & cost for each item):	Elementary Statistics (MATH 2113): Elementary Statistics with Excel; M. F. Triola; Addison/Wesley 2014. This book is packaged with MyStatLab which is required. The cost at the bookstore to the students is \$216. Calculus III (MATH 2174): Calculus for Scientists & Engineers: Early Transcendental; W. L. Briggs & L. Cochran; Pearson 2010. This book is packaged with MyMathLab which is required. The cost at the bookstore to the students is \$326.
---	--

Average Number of Students per Course Section:	30
---	----

Number of Course Sections Affected by Implementation in Academic Year:	7
---	---

Average Number of Course Sections Per Semester:

Statistics: 2

Calculus III: 1

Total Number of Students Affected by Implementation in Academic Year:	210
--	-----

Requested Amount of Funding:	\$10,800
-------------------------------------	----------

Original per Student Cost: MATH 2113: \$216 per student; MATH 2174: \$326 per student

Post-Proposal Projected Student Cost: MATH 2113: \$0.00 per student; MATH 2174: \$0.00 per student

Projected Per Student Savings: MATH 2113: \$216 per student; MATH 2174: \$326 per student

Projected Total Annual Student Savings: \$51,960

Project Goals:

It happens often that students do not have the required textbook right at the beginning of semester. Some students cannot afford the textbooks because they are expensive, or some students need to wait for the financial aid to buy the textbook. The main goal of this project is to save students money on textbooks by replacing the current textbooks with the free OpenStax textbooks. At Fort Valley State University, Calculus I and II courses have been developed recently to incorporate the use of free materials that are delivered on the D2L platform. Students have been very impressed with the new design of these two courses. In Calculus III, we are still using the high-cost textbook and MyMathLab (MML) which is \$326, and students have also requested us to do the no-cost material for them. Therefore, we plan to redesign our Calculus III by using the OpenStax Calculus Volume III (by Gilbert Strang and Edwin “Jed” Herman). In Elementary Statistics, students are also still using the high-cost materials. Therefore, we will develop the no-cost material for the Elementary Statistic course as well. We will adopt the OpenStax Introductory Statistics (by Barbara Illowsky and Susan Dean). We also plan to save students money on online homework systems by replacing MML with the free online practice problems in the Brightspace by D2L platform. The project is anticipated to redesign the courses by developing the course content that meets the needs of our students. All the necessary materials will be free for students and included in D2L. With this plan, we expect that the cost savings will have an impact on the students’ learning, and also increase the students’ success.

Statement of Transformation:

We intend to transform our institutional Elementary Statistics and Calculus III courses from high-cost textbooks to no-cost textbooks. In addition, we will create additional course content such as online practice problems and videos. All the students will have full access to these materials.

The primary stakeholders are the students who are reliant on financial aid. Many students have complained in the past that they could not afford the textbook or they had to wait for the financial aid to get book vouchers. Even with the book voucher, students still find the textbook expensive. This project will have a great impact on reducing the financial burden on students. Furthermore, students will be able to access all course materials (including syllabus, textbook, homework problems, etc.) on the first day of class. We expect this plan will help impact the

students' success in a positive way. Another benefit of this plan is that it will improve the retention rate of the department and institution as well.

For the courses with more than one section, they will be taught more uniformly. This will ensure that all students are being taught the same content and at the same standard. Our faculty will also benefit from the new design. For example, most of the course materials will be uploaded in D2L in advance. This will reduce the amount of time our faculty will spend on preparation.

Transformation Action Plan:

The ALG team consists of Dr. Shadreck Chitsonga and Dr. Patcharin T. Marion. Both faculty members are qualified to teach Elementary Statistics and Calculus III. Dr. Chitsonga was instrumental in introducing the course work leading to a concentration of a minor in Statistics at Fort Valley State University. He is also the coordinator for Statistics. Dr. Marion has taught Calculus I, II, and III for several years, and she is the Calculus coordinator for the department.

As an initial step of the Action Plans, we have already selected the OpenStax textbooks, Introductory Statistics and Calculus Volume 3. We plan to use the D2L which comes at no cost to the students in the transformation.

The next step is to redesign the syllabi to be aligned with the OpenStax textbook. After that, we will organize the courses and materials (including outline, note, open-source textbook, video, practice problems, etc.) which will be embedded in the D2L.

Dr. Chitsonga will be responsible for reviewing and redesigning the syllabus and course content for the Elementary Statistics course in the D2L.

Dr. Marion will be responsible for reviewing and redesigning the syllabus and course content for the Calculus III course in the D2L.

Quantitative & Qualitative Measures: The quantitative and qualitative data will be collected and analyzed to measure the impact on students' success and experience. The quantitative data will come from the pre- and post-tests, final examinations, and final grades. Our data will be collected from two groups, one with using free OpenStax materials, and the other from using purchased materials. We will use the pre- and post-test results to compare the differences, if any, between the two groups. For the multiple-section course, one section will serve as pilot course with no-cost materials, and the other section will have the students purchase the textbook and MML. For the single-section course, we will compare the data from the current semester (using free materials) to the past semester (using purchased materials). We will then analyze all the data to see if there are any advantages or benefits for the students in the courses using free materials compared to those using purchased materials. The qualitative data will come from a survey that we will conduct in two groups. At the end of the first semester of using the free materials, we will conduct surveys to see if the feedback from the students in both classes (one in the pilot course using free OpenStax, and the other using purchased materials). For the single-section course, we will compare the conducted surveys from the current semester (using free materials) to the past semester (using purchased materials).

Timeline:

November 6, 2017: Both team members will attend the Kickoff Meeting.

November 2017 to December 2017: The course objectives will be matched with the content in the OpenStax textbooks, and the syllabi and course schedules will be modified accordingly.

January 2018 to March 2018: Both team members will get the BrightSpace training as a team. For the single-section courses, the pre-tests from the students who are using the current (purchased) textbook will be administered in this Spring semester.

April 2018 to May 2018: The survey to students concerning the use of the current (purchased) course materials will be collected. For the single-section course, the post-tests from the

students using the current (purchased) textbook will be administered in this Spring semester.

May 2018 to July 2018: The homework problems will be typed and uploaded into the D2L. The creation of all the materials will be completed and uploaded into the D2L.

August 2018 to December 2018: Elementary Statistics and Calculus III courses will be piloted using the new (no-cost) materials. Some adjustments will take place if needed. The pre- and post-tests from the students using the new materials will be administered. The survey to students concerning the use of the new course materials will be collected at the end of this Fall semester.

December 2018: The data from both courses will be analyzed to evaluate the efficiency of the open-source materials.

Budget:

\$5,000 : Compensation for Dr. Patcharin Marion

\$5,000 : Compensation for Dr. Shadreck Chitsonga

\$800 : Travel and overall project expenses

Sustainability Plan:

Elementary Statistics and Calculus are offered each semester throughout the year. The department's full adoption of these transformed courses will ensure that they are to be reviewed annually for improvement and sustainability. Additional funding will be sought to broaden the free textbook resources to other courses (for example, Introduction to Linear Algebra) in the department.



September 21, 2017

Affordable Learning Textbook Transformation Grant
Review Committee

Dear Committee Members:

Smaller colleges, community colleges, and Historically Black Colleges and Universities are often the vehicles for the growth and development of many first generation minority populations in their pursuit to meet their dreams. Such students need a better way to engage fully with mathematics as essential part of their profession. I am pleased to lend my full support for this proposal for its merits and because I believe Dr. Patcharin Marion and Dr. Shadreck Chitsonga are well qualified to accomplish the goals of the proposal.

Fort Valley State University provides instruction, research and extension services consistent with the mission of the University System of Georgia for all segments of the population to achieve their personal and professional goals. The average enrollment at FVSU has been around 3,500 students with approximately 95% being African Americans. The campus, situated in the city of Fort Valley, spans over 1,375 acres and is the second largest campus in land-area within the University System of Georgia.

The Department of Mathematics and Computer Science offers programs of study leading to the Bachelor of Science degrees, with majors in Mathematics, Computer Science, and Computer Information Systems. Additionally, the department offers minor concentrations in these same areas, as well as statistics and nuclear engineering. In collaboration with the school of Education, the department also offers courses leading to undergraduate and graduate degrees in Education with concentration in Mathematics. The department also participates in several 3+2 dual degree programs, in conjunction with FVSU's Cooperative Development Energy Program (CDEP). Through CDEP dual degree program, students obtain a B.S. degree in Mathematics from FVSU and a second B.S. degree in engineering, geosciences or health physics, from Georgia Tech (GT), the University of Nevada Las Vegas (UNLV), Penn State University (PSU), the University of Texas-Austin (UT-Austin), the University of Texas Pan American (UTPA), and the University of Arkansas (UARK). Achievement gaps in mathematics continue to persist and many students are left behind in their pursuit of a better life because of their financial challenges.

Our Mathematics program, which was ranked top in the nation for producing African-American math graduates by Diverse Magazine (2011, 2014 and 2015), is well prepared to adopt the

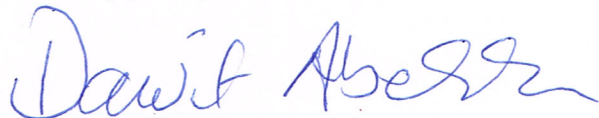
transformed courses. We have the smart technology and laboratories available to facilitate student support for the on-line, free text resources. Both Dr. Marion and Dr. Chitsonga have worked on Affordable Learning Grants before.

Dr. Chitsonga was a team member of a funded initiative that resulted in a no-cost, instructional approach to Precalculus. This team saves students enrolled in College Algebra and Precalculus classes in excess of \$100,000 per semester in textbook costs. Most recently, Dr. Chitsonga worked with other faculty to produce instructional videos and modules for classroom instruction.

Dr. Marion has a history of successful course transformation initiatives as evidenced by the Calculus I and II modules produced for use in the department. Currently, the modules are being piloted in the calculus I and II classes. Furthermore, students in these calculus classes are using free-online textbooks that have been adopted recently. The overarching goal is to create modules and adopt free-online textbooks for all the three levels of calculus (I, II and III). The multi-section nature of the selected courses guarantees sustainability of the proposed program.

I am excited about the potential financial savings this project would offer our students.

Sincerely yours,



Dawit Aberra, Ph. D.
Chair, Department of Mathematics and Computer Science

Affordable Learning Georgia Textbook Transformation Grants

Round Ten

For Implementations beginning Summer Semester 2017

Running Through Spring Semester 2018

Proposal Form and Narrative

- *The proposal form and narrative .docx file is for offline drafting and review. Submitters must use the InfoReady Review online form for proposal submission.*
- **Note: The only way to submit the proposal is through the online form in Georgia Tech’s InfoReady Review at:**
<https://gatech.infoready4.com/#competitionDetail/1757803> _
- *If you are copying and pasting into InfoReady Review from this form, first convert the file to **plain text** and copy/paste from the plain text file.*
 - o *In Word, go to File > Save As... > and change the file format to “Plain Text (.txt).”*
 - o *Copy and paste from the .txt file.*
 - o *Be sure to save both copies in case you are asked to resubmit.*
- *Microsoft Word Document formatting pasted into InfoReady Review will render the reviewer copy unreadable. **If you paste Word-formatted tables into InfoReady Review, you may be asked to resubmit your application if time permits.***
- *Italicized text is provided for your assistance; please do not keep the italicized text in your submitted proposal. Proposals that do not follow the instructions may be returned.*

Submitter Name	Patcharin T. Marion
Submitter Title	Associate Professor of Mathematics
Submitter Email	tragoonsirisakp@fvsu.edu
Submitter	(478) 825-6199

Phone Number	
Submitter Campus Role	Proposal Investigator (Primary or additional)
Applicant Name	Patcharin T. Marion
Applicant Email	tragoonsirisakp@fvsu.edu
Applicant Phone Number	(478) 825-6199
Primary Appointment Title	Associate Professor of Mathematics
Institution Name(s)	Fort Valley State University
Team Members	<p>Dr. Patcharin T. Marion, Associate Professor of Mathematics, Department of Mathematics and Computer Science, Fort Valley State University, tragoonsirisakp@fvsu.edu</p> <p>Dr. Shadreck Chitsonga, Associate Professor of Mathematics, Department of Mathematics and Computer Science, Fort Valley State University, chitsongas@fvsu.edu</p>
Sponsor, Title, Department, Institution	Dr. Dawit Aberra, Department Chair, Department of Mathematics and Computer Science, Fort Valley State University
Proposal Title	Redesigning Calculus and Statistics courses to incorporate the use of no-cost materials
Course Names, Course Numbers and Semesters Offered	<p>Elementary Statistics; MATH 2113; Fall, Spring, Summer</p> <p>Calculus III; MATH 2174; Fall, Spring or Summer</p>

Final Semester of Instruction	Fall 2018				
Average Number of Students Per Course Section	30	Number of Course Sections Affected by Implementation in Academic Year	7	Total Number of Students Affected by Implementation in Academic Year	210
Average Number of Course Sections Per Semester	<i>Statistics: 2</i> <i>Calculus III: 1</i>				
Award Category (pick one)	<input checked="" type="checkbox"/> No-or-Low-Cost-to-Students Learning Materials <input type="checkbox"/> Specific Core Curriculum Courses				
Are you planning on using an OpenStax textbook?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No				
List the original course materials for students (including title, whether optional or required, & cost for each item)	<p>Elementary Statistics (MATH 2113): Elementary Statistics with Excel; M. F. Triola; Addison/Wesley 2014. This book is packaged with MyStatLab which is required. The cost at the bookstore to the students is \$216.</p> <p>Calculus III (MATH 2174): Calculus for Scientists & Engineers: Early Transcendental; W. L. Briggs & L. Cochran; Pearson 2010. This book is packaged with MyMathLab which is required. The cost at the bookstore to the students is \$326.</p>				
Requested Amount of Funding	\$10,800				

Original Per Student Cost	MATH 2113: \$216 per student MATH 2174: \$326 per student
Post-Proposal Projected Per Student Cost	MATH 2113: \$0.00 per student MATH 2174: \$0.00 per student
Projected Per Student Savings	MATH 2113: \$216 per student MATH 2174: \$326 per student
Projected Total Annual Student Savings	\$51,960

NARRATIVE

1.1 PROJECT GOALS

List the goals you are trying to achieve with the transformation, including goals for student savings, student success, materials creation, and pedagogical transformation.

It happens often that students do not have the required textbook right at the beginning of semester. Some students cannot afford the textbooks because they are expensive, or some students need to wait for the financial aid to buy the textbook. The main goal of this project is to save students money on textbooks by replacing the current textbooks with the free OpenStax textbooks. At Fort Valley State University, Calculus I and II courses have been developed recently to incorporate the use of free materials that are delivered on the D2L platform. Students have been very impressed with the new design of these two courses. In Calculus III, we are still using the high-cost textbook and MyMathLab (MML) which is \$326, and students have also requested us to do the no-cost material for them. Therefore, we plan to redesign our Calculus III by using the OpenStax Calculus Volume III (by Gilbert Strang and Edwin “Jed” Herman). In Elementary Statistics, students are also still using the high-cost materials. Therefore, we will develop the no-cost material for the Elementary Statistic course as well. We will adopt the OpenStax Introductory Statistics (by Barbara Illowsky and Susan Dean). We also plan to save students money on online homework systems by replacing MML with the free online practice problems in the Brightspace by D2L platform. The project is anticipated to redesign the courses by developing the course content that meets the needs of our students. All the necessary materials will be free for students and included in D2L. With this plan, we expect that the cost savings will have an impact on the students’ learning, and also increase the students’ success.

1.2 STATEMENT OF TRANSFORMATION

- *Describe the transformation.*
- *Identify stakeholders affected by the transformation.*
- *Describe the impact of this transformation on stakeholders and course success.*
- *Describe the transformative impact on the course, program, department, institutions, access institution, and/or multiple courses.*

We intend to transform our institutional Elementary Statistics and Calculus III courses from high-cost textbooks to no-cost textbooks. In addition, we will create additional course content such as online practice problems and videos. All the students will have full access to these materials.

The primary stakeholders are the students who are reliant on financial aid. Many students have complained in the past that they could not afford the textbook or they had to wait for the financial aid to get book vouchers. Even with the book voucher, students still find the textbook expensive. This project will have a great impact on reducing the financial burden on students. Furthermore, students will be able to access all course materials (including syllabus, textbook, homework problems, etc.) on the first day of class. We expect this plan will help impact the students' success in a positive way. Another benefit of this plan is that it will improve the retention rate of the department and institution as well.

For the courses with more than one section, they will be taught more uniformly. This will ensure that all students are being taught the same content and at the same standard. Our faculty will also benefit from the new design. For example, most of the course materials will be uploaded in D2L in advance. This will reduce the amount of time our faculty will spend on preparation.

1.3 TRANSFORMATION ACTION PLAN

Action plans must address:

- *The identification, review, selection, and adoption/adaptation/creation of the new course materials.*
- *The course and syllabus instructional design/redesign necessary for the transformation.*
- *The activities expected from each team member and their role(s): subject matter experts, instructional designer, librarian, instructor of record, et al.*
- *The plan for providing open access to the new materials.*

The ALG team consists of Dr. Shadreck Chitsonga and Dr. Patcharin T. Marion. Both faculty members are qualified to teach Elementary Statistics and Calculus III. Dr. Chitsonga was instrumental in introducing the course work leading to a concentration of a minor in Statistics at Fort Valley State University. He is also the coordinator for Statistics. Dr. Marion has taught Calculus I, II, and III for several years, and she is the Calculus coordinator for the department.

As an initial step of the Action Plans, we have already selected the OpenStax textbooks, Introductory Statistics and Calculus Volume 3. We plan to use the D2L which comes at no cost to the students in the transformation.

The next step is to redesign the syllabi to be aligned with the OpenStax textbook. After that, we will organize the courses and materials (including outline, note, open-source textbook, video, practice problems, etc.) which will be embedded in the D2L.

Dr. Chitsonga will be responsible for reviewing and redesigning the syllabus and course content for the Elementary Statistics course in the D2L.

Dr. Marion will be responsible for reviewing and redesigning the syllabus and course content for the Calculus III course in the D2L.

1.4 QUANTITATIVE AND QUALITATIVE MEASURES

- *The quantitative and qualitative measures of impact on student success and experience. The quantitative and qualitative data collected will be utilized in your final report as well as within ALG program communications.*
- *It is important to identify how the data is to be analyzed for each data source. In specific, the action plan must address the project's quantitative impact on student success (items such as Learning Objective success, Drop, Fail, Withdraw (DFW) delta rate, and any other critical factors) to measure impact on student experience.*
- *Qualitative measures can include student feedback through surveys, interviews, focus groups, or other means.*

The quantitative and qualitative data will be collected and analyzed to measure the impact on students' success and experience.

The quantitative data will come from the pre- and post-tests, final examinations, and final grades. Our data will be collected from two groups, one with using free OpenStax materials, and the other from using purchased materials. We will use the pre- and post-test results to compare the differences, if any, between the two groups. For the multiple-section course, one section will serve as pilot course with no-cost materials, and the other section will have the students purchase the textbook and MML. For the single-section course, we will compare the data from the current semester (using free materials) to the past semester (using purchased materials). We will then analyze all the data to see if there are any advantages or benefits for the students in the courses using free materials compared to those using purchased materials.

The qualitative data will come from a survey that we will conduct in two groups. At the end of the first semester of using the free materials, we will conduct surveys to see if the feedback from the students in both classes (one in the pilot course using free OpenStax, and the other using purchased materials). For the single-section course, we will compare the conducted surveys from the current semester (using free materials) to the past semester (using purchased materials).

1.5 TIMELINE

This is a timeline of milestone dates for your transformation project through the end of the first semester the transformed course(s) is/are offered to students. Your interim reports will utilize this timeline to indicate if the project is on schedule.

When submitting this timeline in InfoReady Review, be sure to use the Paste from Word button in order to correctly paste a table from Word. Otherwise, the document will be unreadable to reviewers.

November 6, 2017: Both team members will attend the Kickoff Meeting.

November 2017 to December 2017: The course objectives will be matched with the content in the OpenStax textbooks, and the syllabi and course schedules will be modified accordingly.

January 2018 to March 2018: Both team members will get the BrightSpace training as a team. For the single-section courses, the pre-tests from the students who are using the current (purchased) textbook will be administered in this Spring semester.

April 2018 to May 2018: The survey to students concerning the use of the current (purchased) course materials will be collected. For the single-section course, the post-tests from the students using the current (purchased) textbook will be administered in this Spring semester.

May 2018 to July 2018: The homework problems will be typed and uploaded into the D2L. The creation of all the materials will be completed and uploaded into the D2L.

August 2018 to December 2018: Elementary Statistics and Calculus III courses will be piloted using the new (no-cost) materials. Some adjustments will take place if needed. The pre- and post-tests from the students using the new materials will be administered. The survey to students concerning the use of the new course materials will be collected at the end of this Fall semester.

December 2018: The data from both courses will be analyzed to evaluate the efficiency of the open-source materials.

1.6 BUDGET

Include Personnel & Projected Expenses as appropriate for the category.

Proposals must involve teams of at least teams of 2 or more of any of the following: faculty, faculty librarians, instructional designers, subject matter experts, editors, graphic designers, or others as needed. It is required to include the \$800 for overall project expenses and travel in this section.

Two levels of funding are available based on the scale of the project proposed:

Standard-Scale Transformation: Textbook transformation projects within one or more courses or sections with under 500 students enrolled on average per academic year total.

*\$10,800 maximum award
\$5,000 maximum per team member
\$800 for travel and expenses*

Large-Scale Transformation: Textbook transformation projects within one or more courses or sections or department-wide adoptions with 500 or more students enrolled on average per academic year total.

*\$30,000 maximum award
\$5,000 maximum per team member
\$800 for travel and expenses*

*Funding is **not a direct stipend** to the team members, but rather goes **to the institution to cover the team member's time** (salary/release time/overload/replacement coverage), project expenses including related department needs, and travel expenses (up to \$800 is specifically designated for at least two team members to attend the required in-person kickoff meeting).*

The proposing team must coordinate as necessary with their departments and institutional sponsors to determine how to handle the distribution, including amounts, release time/overload/salary/replacement as well as semester(s). This provides the maximum flexibility to the institution and the team in terms of how many people and what types of skills are needed, amount of compensation vs. replacement of teaching load, and timing in terms of semesters of preparatory work vs. semesters of adoption.

\$5,000 : Compensation for Dr. Patcharin Marion
\$5,000 : Compensation for Dr. Shadreck Chitsonga
\$800 : Travel and overall project expenses

1.7 SUSTAINABILITY PLAN

What is your plan for offering the course in the future, including maintenance and updating of course materials?

Elementary Statistics and Calculus are offered each semester throughout the year. The department's full adoption of these transformed courses will ensure that they are to be reviewed annually for improvement and sustainability. Additional funding will be sought to broaden the free textbook resources to other courses (for example, Introduction to Linear Algebra) in the department.

1.8 REFERENCES & ATTACHMENTS

A letter of support must be provided from the sponsoring area (unit, office, department, school, library, campus office of the Vice President for Academic Affairs, etc.) that will be responsible for receipt and distribution of funding. Letters must reference sustainability. In the case of multi-institutional affiliations, all participants' institutions/departments must provide a letter of support.