

Table of Contents

Song, Inseok - #3377 - 459	1
Letter of Support	6
Proposal Narrative	7

Application Summary

Competition Details

Competition Title:	Textbook Transformation Grants, Round Fourteen (2019-2020)
Category:	University System of Georgia
Award Cycle:	Round 14
Submission Deadline:	04/09/2019 at 11:59 PM

Application Information

Submitted By:	Inseok Song
Application ID:	3377
Application Title:	459
Date Submitted:	04/09/2019 at 8:25 AM

Personal Details

Institution Name(s):	University of Georgia
Applicant First Name:	Inseok
Applicant Last Name:	Song
Applicant Email Address:	song@uga.edu
Applicant Phone Number:	706-542-7518
Primary Appointment Title:	Associate Professor
Submitter First Name:	
Submitter Last Name:	
Submitter Email Address:	
Submitter Phone Number:	
Submitter Title:	

Application Details

Proposal Title

459

Final Semester of Project

Summer 2020

Requested Amount of Funding

20800

Type of Grant

Specific Core Curriculum Courses

Course Title(s)

Astronomy of the Solar System

Course Number(s)

ASTR 1010

Team Member 1 Name

Tara Cotten

Team Member 1 Email

tara@physast.uga.edu

Team Member 2 Name

Loris Magnani

Team Member 2 Email

loris@physast.uga.edu

Team Member 3 Name

J.P. Caillault

Team Member 3 Email

jpc@physast.uga.edu

Team Member 4 Name

Team Member 4 Email

Additional Team Members (Name and email address for each)

Sponsor Name

Phillip Stancil

Sponsor Title

Professor of Physics and Head

Sponsor Department

Physics & Astronomy

Original Required Commercial Materials (title, author, price)

Universe 10th Ed. (ISBN-13: 978-1-319-04238-7)

Freedman et al.

\$210

Average Number of Students per Course Section Affected by Project in One Academic Year

210

Average Number of Sections Affected by Project in One Academic Year

1

Total Number of Students Affected by Project in One Academic Year

327

Average Number of Students Affected per Summer Semester

N/A (not offered in summer)

Average Number of Students Affected per Fall Semester

235

Average Number of Students Affected per Spring Semester

92

Original Total Cost per Student

\$210

Post-Project Cost per Student

\$0

Post-Project Savings per Student

\$210

Projected Total Annual Student Savings per Academic Year

\$68,670

Using OpenStax Textbook?

Yes

Project Goals

ASTR 1010 (Astronomy of the Solar System) is one of USG Core Curriculum courses. In every academic year, more than 300 students are taking this course during Fall and Spring semesters. With the Round 14 Textbook Transformation Grants, we plan to achieve following goals.

- Adopt an open textbook from OpenStax ("Astronomy" ISBN-10: 1-947172-24-7)
- Develop a test bank based on the adopted new OpenStax textbook
- Using the test bank, develop an online homework and/or quiz system and deploy it through eLearning Commons (eLC)
- Redesign lecture notes based on the newly adopted textbook
- Assess the effect of no-cost textbook on student learning

Statement of Transformation

ASTR 1010 – Astronomy of the Solar System is one of popular science courses for non-science majors at the University of Georgia. It is a well-known fact that textbooks are expensive and the current textbook for ASTR 1010 at the University of Georgia is no exception. In a 2018 survey conducted by Morning Consult for Cengage to 1,651 current and former college students, 41% of students replied that textbooks (and other course materials) had “somewhat of an impact” on their financial situation and 46% said that it had “a big impact”. Not only the financial sacrifices, the high textbook cost can impact on student’s educational plan because 17% of students in the aforementioned survey changed their major because of the high cost of textbooks.

By adopting an open source, no-cost textbook from OpenStax for ASTR 1010, we plan to transform the ASTR 1010 course. Typically, four investigators listed in this proposal have been rotating in teaching the course over past several years. Although one textbook is usually selected by all instructors, details of the course structure (topics, homework, quiz, and exam) has been varied from one instructor to another. Taking the adoption of the OpenStax textbook as a motivation, we plan to transform ASTR 1010 to be more accessible to students with no-cost open textbook and with a more coherent course structure across instructors. A new set of lecture notes, online quizzes, and homework will be developed and eventually deployed through UGA’s eLearning Commons (UGA’s implementation of Desire to Learn). The new course structure may increase the enrollment to the course.

Transformation Action Plan

There are three objectives in this transformation action plan: (1) the adoption of an OpenStax Astronomy textbook, (2) the development of lecture notes, and (3) the development of homework/assessment materials.

At the start of the project, four investigators will meet once a week to review the content of the OpenStax Astronomy textbook (ISBN-10: 1-947172-24-7) to create an overall course structure. Once a set of specific topics to be included is determined, each investigator will perform following tasks.

- Inseok Song : Overseeing the overall progress and coordinate the eLC integration of homework and assessment (quizzes and exams) material.
- Loris Magnani & J.P. Caillault : Redesigning lecture notes
- Tara Cotten : Development of homework & assessment materials

Quantitative & Qualitative Measures

Quantitative and qualitative measures will involve three sets of data: (1) student drop/fail/withdraw rates, (2) students’ course evaluation ratings, and (3) student survey. Data from (1) and (2) categories will be compared against data from earlier semesters (i.e., before the transformation of the course with the OpenStax textbook). The comparison will provide a basis for an analysis of any changing in the students’ perception on the course before and after the course transformation.

We will carry out a student survey in 2020 Spring about the satisfaction level with the new textbook and learning materials. The survey questions will include both open-ended questions and rating-scale questions (i.e., Likert Scale questions) and it will provide both quantitative and qualitative data.

Timeline

[2019 Summer]

- Weekly meeting to discuss about the content of the OpenStax textbook and create the final set of topics aligned with student learning outcomes
- Redesign lecture notes
- Development of homework/assessment materials

[2019 Fall]

- Official adaptation of the new textbook for ASTR 1010.
- Trial use of newly developed homework/assessment materials
- Finalize the deployment of lecture notes and other learning materials through eLC

[2020 Spring]

- 2nd offering of ASTR 1010
- Implement any necessary modifications identified during the 2019 Fall semester
- Carry out a student survey

[2020 Summer]

- Analyze collected data on the impact of the course transformation
- Preparation and submission of the final report

Budget

Dr. Inseok Song will oversee the project and handles the implementation of the redesigned lecture notes and homework/assessment into the eLC system. \$5,000 is requested for 2020 summer salary support and fringe.

Drs. Loris Magnani and J.P. Caillault will review the content of the OpenStax textbook and identify topics to be included (or developed) in the final course structure. \$5,000 is requested for each for summer salary support and fringe.

Dr. Tara Cotten is responsible to review the OpenStax test bank and develop a new set of questions when necessary. \$5,000 is requested for 2019 Fall salary and fringe.

Two or more members will attend the kick-off event and \$800 is requested for travel.

Sustainability Plan

The transformed ASTR 1010 course will be offered in every fall and spring semesters as has been in the past. The newly adopted OpenStax textbook, redesigned lecture notes, homework, and assessment materials will be incorporated into the University of Georgia's eLC environment. The content of eLC course materials will be shared among all ASTR 1010 instructors hence the great possibility of future sustainability. Furthermore, this transformation is a department-wide transformation and the listed four investigators in this proposal represent the whole group of instructors in the department for ASTR 1010. In each semester when ASTR 1010 is offered, the teaching instructor will update materials when necessary. This periodic update and modification will promote the long-term commitment of the new course structure.

Acknowledgment

Grant Acceptance

[Acknowledged] I understand and acknowledge that acceptance of Affordable Learning Georgia grant funding constitutes a commitment to comply with the required activities listed in the RFP and that my submitted proposal will serve as the statement of work that must be completed by my project team. I further understand and acknowledge that failure to complete the deliverables in the statement of work may result in termination of the agreement and funding.



UNIVERSITY OF
GEORGIA

Department of Physics
and Astronomy

Franklin College of Arts and Sciences

April 8, 2019

To Whom It May Concern:

I support the application for the Affordable Learning Georgia Textbook Transformation Grant (Round 14) by Drs. Inseok Song, Loris Magnani, J.P. Caillault, and Tara Cotten.

Adopting a no-cost OpenStax Astronomy textbook for ASTR 1010 (Astronomy of the Solar System) will greatly reduce the cost to students taking this course and it is expected to contribute to an overall enhanced student performance through higher retention and success rates in the course. I understand that the updated course materials (redesigned lecture notes, homework, and assessment materials) will be shared among all ASTR 1010 instructors in the department and those materials will be deployed in the University's eLC system. Therefore, I expect the transformed ASTR 1010 course will be maintainable in future semesters.

Sincerely,

Phillip C. Stancil
Professor and Head
Fellow, American Physical Society
Vice-chair, Laboratory Astrophysics Division,
American Astronomical Society
Athens, GA 30602-2451
706-542-2485; 404-434-7958 (cell)
stancil@physast.uga.edu



Textbook Transformation Grants, Round Fourteen
(Summer 2019 –Summer 2020)
Proposal Form and Narrative

Notes

- The proposal form and narrative .docx file is for offline drafting and review. Submitters must use the InfoReady Review online form for proposal submission.
- The only way to submit the official proposal is through the online form in Georgia Tech’s InfoReady Review. The link to the online application is on the [Round 14 RFP Page](#).
- The italic text we provide is meant for clarifications and can be deleted.

Applicant, Team, and Sponsor 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, leave the submitter fields blank.

Institution(s)	University of Georgia
Applicant Name	Inseok Song
Applicant Email	song@uga.edu
Applicant Phone #	706-542-7518
Applicant Position/Title	Associate Professor
Submitter Name	
Submitter Email	
Submitter Phone #	
Submitter Position	

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.

	Name	Email Address
Team Member 1	Inseok Song	song@uga.edu
Team Member 2	Tara Cotten	tara@physast.uga.edu

	Name	Email Address
Team Member 3	Loris Magnani	loris@physast.uga.edu
Team Member 4	J.P. Caillault	jpc@physast.uga.edu
Team Member 5		
Team Member 6		
Team Member 7		
Team Member 8		

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

Please provide the sponsor's name, title, department, and institution. The sponsor is the provider of your Letter of Support.

Phillip Stancil
 Professor of Physics
 Head of the Department of Physics and Astronomy
 (stancil@physast.uga.edu)

Project Information and Impact Data

Title of Grant Project	<i>Adoption of OpenStax Astronomy Textbook</i>
Type of Grant	<i>Specific Core Curriculum Courses</i>
Requested Amount of Funding	\$20,800
Course Names and Course Numbers	ASTR 1010 : Astronomy of the Solar System
Final Semester of Project	<i>Summer 2020</i>

Average Number of Students Per Course Section Affected by Project	210
Average Number of Sections Affected by Project in One Academic Year	1
Total Number of Students Affected by Project in One Academic Year	327 (based on the AY17-18 data)
Average Number of Students Affected per Summer Semester	<i>N/A (not offered in Summer)</i>
Average Number of Students Affected per Fall Semester	235 (2018 Fall)
Average Number of Students Affected per Spring Semester	92 (2018 Spring)
Title/Author of Original Required Materials	<i>Universe 10th Ed. (ISBN-13: 978-1-319-04238-7) By Freedman et al.</i>
Original Total Cost Per Student	<i>\$210</i>
Post-Project Cost Per Student	<i>\$0</i>
Post-Project Savings Per Student	<i>\$210</i>
Projected Total Annual Student Savings Per Academic Year	<i>\$68,670</i>
Using OpenStax Textbook?	<i>Yes</i>

Narrative Section

1. Project Goals

ASTR 1010 (Astronomy of the Solar System) is one of USG Core Curriculum courses. In every academic year, more than 300 students are taking this course during Fall and Spring semesters. With the Round 14 Textbook Transformation Grants, we plan to achieve following goals.

- Adopt an open textbook from OpenStax (“Astronomy” ISBN-10: 1-947172-24-7)
- Develop a test bank based on the adopted new OpenStax textbook
- Using the test bank, develop an online homework and/or quiz system and deploy it through *eLearning Commons* (eLC)
- Redesign lecture notes based on the newly adopted textbook
- Assess the effect of no-cost textbook on student learning

2. Statement of Transformation

ASTR 1010 – Astronomy of the Solar System is one of popular science courses for non-science majors at the University of Georgia. It is a well-known fact that textbooks are expensive and the current textbook for ASTR 1010 at the University of Georgia is no exception. In a 2018 survey conducted by *Morning Consult for Cengage* to 1,651 current and former college students, 41% of students replied that textbooks (and other course materials) had “somewhat of an impact” on their financial situation and 46% said that it had “a big impact”. Not only the financial sacrifices, the high textbook cost can impact on student’s educational plan because 17% of students in the aforementioned survey changed their major because of the high cost of textbooks.

By adopting an open source, no-cost textbook from OpenStax for ASTR 1010, we plan to transform the ASTR 1010 course. Typically, four investigators listed in this proposal have been rotating in teaching the course over past several years. Although one textbook is usually selected by all instructors, the detail of course structure (topics, homework, quiz, and exam) has been varied from one instructor to another. Taking the adoption of OpenStax textbook as a motivation, we plan to transform ASTR 1010 to be more accessible to students with no-cost open textbook and with a more coherent course structure across instructors. A new set of lecture notes, online quizzes, and homework will be developed and eventually deployed through UGA’s *eLearning Commons* (UGA’s implementation of Desire to Learn). The new course structure may increase the enrollment to the course.

3. Transformation Action Plan

There are three objectives in this transformation action plan: (1) the adoption of an OpenStax Astronomy textbook, (2) the development of lecture notes, and (3) the development of homework/assessment materials.

At the start of the project, four investigators will meet once a week to review the content of the OpenStax Astronomy textbook (ISBN-10: 1-947172-24-7) to create an overall course structure.

Once a set of specific topics to be included is determined, each investigator will perform following tasks.

- Inseok Song : Overseeing the overall progress and coordinate the eLC integration of homework and assessment (quizzes and exams) material.
- Loris Magnani & J.P. Caillault : Redesigning lecture notes
- Tara Cotten : Development of homework & assessment materials

4. Quantitative and Qualitative Measures

Quantitative and qualitative measures will involve three sets of data: (1) student drop/fail/withdraw rates, (2) students' course evaluation ratings, and (3) student survey. Data in from (1) and (2) categories will be compared against data from earlier semesters (i.e., before the transformation of the course with the OpenStax textbook). The comparison will provide a basis for an analysis of any changing in the students' perception on the course before and after the course transformation.

We will carry out a student survey in 2020 Spring about the satisfaction level with the new textbook and learning materials. The survey questions will include both open-ended questions and rating-scale questions (i.e., Likert Scale questions) and it will provide both quantitative and qualitative data.

5. Timeline

[2019 Summer]

- Weekly meeting to discuss about the content of the OpenStax textbook and create the final set of topics aligned with student learning outcomes
- Redesign lecture notes
- Development of homework/assessment materials

[2019 Fall]

- Official adaptation of the new textbook for ASTR 1010.
- Trial use of newly developed homework/assessment materials
- Finalize the deployment of lecture notes and other learning materials through eLC

[2020 Spring]

- 2nd offering of ASTR 1010
- Implement any necessary modifications identified during the 2019 Fall semester
- Carry out the student survey

[2020 Summer]

- Analyze collected data on the impact of the course transformation
- Preparation and submission of the final report

6. Budget

Dr. Inseok Song will oversee the project and handles the implementation of the redesigned lecture notes and homework/assessment into the eLC system. \$5,000 is requested for 2020 summer salary support and fringe.

Drs. Loris Magnani and J.P. Caillault will review the content of the OpenStax textbook and identify topics to be included (or developed) in the final course structure. \$5,000 is requested for each for summer salary support and fringe.

Dr. Tara Cotten is responsible to review the OpenStax test bank and develop a new set of questions when necessary. \$5,000 is requested for 2019 Fall salary and fringe.

Two or more members will attend the kick-off event and \$800 is requested for travel.

7. Sustainability Plan

The transformed ASTR 1010 course will be offered in every fall and spring semesters as has been in the past. The newly adopted OpenStax textbook, redesigned lecture notes, homework, and assessment materials will be incorporated into the University of Georgia's eLC environment. The content of eLC course materials will be shared among all ASTR 1010 instructors hence the great possibility of future sustainability. Furthermore, this transformation is a department-wide transformation and the listed four investigators in this proposal represent the whole group of instructors in the department for ASTR 1010. In each semester when ASTR 1010 is offered, the teaching instructor will update materials when necessary. This periodic update and modification will promote the long-term commitment of the new course structure.