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Application Summary

Competition Details

Competition Title:	Textbook Transformation Grants, Round Twelve (Fall 2018-2019)
Category:	University System of Georgia
Award Cycle:	Round 12
Submission Deadline:	09/13/2018 at 11:59 PM

Application Information

Submitted By:	Meng Han
Appplication ID:	2602
Application Title:	386
Date Submitted:	09/11/2018 at 8:28 AM

Personal Details

Institution Name(s):	Kennesaw State University
Applicant First Name:	Meng
Applicant Last Name:	Han
Applicant Email Address:	mhan9@kennesaw.edu
Applicant Phone Number:	470-578-3801
Primary Appointment Title:	Assistant Professor
Submitter First Name:	Meng
Submitter Last Name:	Han
Submitter Email Address:	mhan9@kennesaw.edu
Submitter Phone Number:	470-578-3801
Submitter Title:	Assistant Professor

Application Details

Proposal Title
386

Final Semester of Project
Fall 2019

Requested Amount of Funding
$10800

Type of Grant

No-or-Low-Cost-to-Students Learning Materials

Course Title(s)
Advanced Web Development, Introduction to Web Development

Course Number(s)
IT 4203, IT3203

Team Member 1 Name
Meng Han

Team Member 1 Email
mhan9@kennesaw.edu

Team Member 2 Name
Guangzhi Zheng

Team Member 2 Email
gzheng@kennesaw.edu

Team Member 3 Name

Team Member 3 Email

Team Member 4 Name

Team Member 4 Email

Additional Team Members (Name and email address for each)

Sponsor Name
Rebecca Rutherfoord

Sponsor Title
Department Chair, Professor

Sponsor Department
Department of Information Technology

Original Required Commercial Materials (title, author, price)

- IT 4203: **Title**: JavaScript and jQuery: Interactive Front-End Web Development Hardcover Publisher: Wiley; 1 edition (July 21, 2014). ISBN-13: 978-1118871652.**Author**: Jon Duckett.**Price**: $52.00**Title**: Developing Responsive Web Applications with AJAX and jQuery. Publisher: Packt Publishing (August 25, 2014). ISBN-13: 978-1783286379.**Author**: Sandeep Kumar Patel.**Price**: $39.99**Title**: Single Page Web Applications: JavaScript end-to-end. Publisher: Manning Publications; 1 edition (September 30, 2013). ISBN-13: 978-1617290756.**Authors**: Michael Mikowski and Josh Powell.**Price**: $44.99
- IT 3203: **Title**: Programming the World Wide Web, Seventh Edition, Addison Wesley, 2013. ISBN-13: 9780132665810.**Author**: Sebesta, Robert W.**Price**: $150.00

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

35

Average Number of Sections Affected by Project in One Academic Year
8

Total Number of Students Affected by Project in One Academic Year
280

Average Number of Students Affected per Summer Semester
30

Average Number of Students Affected per Fall Semester
160

Average Number of Students Affected per Spring Semester
90

Original Total Cost per Student
$287

Post-Project Cost per Student
$0

Post-Project Savings per Student
$287

Projected Total Annual Student Savings per Academic Year
$45,980

Using OpenStax Textbook?
No

Project Goals
In this project, we propose to transform the two advanced web development courses into those using no-cost-to-students learning materials. This project not only aims to reduce the financial burden imposed by the high cost of textbooks but also strives to develop free and open-access learning materials that offer equivalent or better educational effectiveness than traditional textbooks.

Statement of Transformation

According to the study of the textbook cost of our advanced web development course, the textbooks used in the two proposed advanced web development-related IT courses are expensive. In fact, most textbooks used in IT web courses are costly.

The IT 4203 is an advanced web course concentrating on a very specific and unique topic based on a project driven approach. In order to deliver course content, multiple textbooks need to be used, which impose inconvenience and cost burden on students. In the meantime, the course IT 3203 is a pre-required course, which provides the specific preparation for the advanced topics.

In addition, due to the emerging evolving nature of the technology field, the textbooks used in the proposed courses are updated frequently, which negatively decreases their resale value. The goal of our transformation is to replace the textbook used in the proposed courses with no-cost-to-students learning materials that offer equal or higher educational effectiveness.

The proposed transformation is an economic and viable solution for the following reasons:

- Firstly, the advanced web development-related learning materials are widely and readily available on the World Wide Web today and many of these resources are publicly accessible, free, or with an open license to use. These materials include open and free tutorials, books, videos, labs, test banks, software, and services. For example, the majority of the web development-related topics are strongly supported by the open source communities especially from the community of W3C.
- Secondly, Web content can better reflect the latest trends and industrial development than the traditional textbooks as technology is changing rapidly. So is the content of Web resources. Many textbooks may become outdated at the moment they are published. As a matter of fact, many faculties have to use contents from the Web as supplemental materials to the textbook. For example, the HTML 5 and CSS standards are referred frequently in both two courses.
- The two advanced IT web courses include hands-on labs where software and tools get updated frequently and the current set of textbooks are not on par with the rapid updates. Current textbooks used in the proposed courses contain links to tools or websites which may no longer be available or supported. As soon as a new version of a tool or software package is released, the instructions in a textbook become obsolete. Therefore, we need to include the latest and available open source tools to prepare hands-on labs.
- Thirdly, the materials from the Web are generally more interactive. The interactive content will not only engage the students but also improve their learning experience. For example, a student can better learn how a CSS tag works through an animation or a video than a printed diagram in a textbook.
- Fourthly, developing and assembling a set of learning materials by ourselves allows us to better align the course contents not only with the outcomes of each course but also with the outcomes of our Information Technology program.
- Furthermore, our team members are well prepared for the proposed transformation. The downsides of using Web resources are that they are often disorganized, may contain inaccurate information, may be changed or deleted without notices. However, our team members are not only subject matter experts in the advanced web development fields, but also are proficient educators who on average have over 7 years of teaching experience. We will select, organize and integrate resources from the Web and transform the information into instructional sound learning materials for the proposed courses. We also created a sustainable plan to periodically review the developed no-cost-to-student learning material. All courses in the department are reviewed every three years as part of the continuous improvement process.
- In addition, Dr. Zheng successfully participated four rounds of ALG grants (round 1 award #42, round 2 #119, and round 10 #334, round 11 #365) while Dr. Han severed as the PI for the ALG grant round 10 #334. As part of a department effort, we had transformed more than 10 IT courses into courses using no-cost-to-student learning material. Those courses were very well received by our students and saved our students more than $200,000 in textbook cost. Building on our previous success and lessons learned we are well positioned to continue transformation efforts and further increase the cost-saving benefits to the students in our program.

Impact of the Transformation

The impact of our transformation efforts will be profound. Under our estimates, more than 300 students will benefit

from the no-cost learning material each year. The proposed project is expected to save students approximately $45,980 in textbook cost each year. Because of the cost savings from not having to buy textbooks, students may be able to take a few more courses each year and graduate sooner. Having a series of mobile and network courses adopting no-cost-to-student material not only offers better and more consistent learning experience for students but also makes our nationally renowned IT programs more affordable. As a result, we could recruit more students and produce more qualified IT professionals that the State of Georgia needs. Developing no-cost-to-student materials can help us better align course content with its learning outcomes and the outcomes of our program, which will create positive impacts in terms of curriculum development. Moreover, the learning materials developed in this proposal will be made available to the public and can be easily adopted by other programs or intuitions who want to lower the cost of education to their students. Lastly, we believe that our experience gained in this transformation project could be beneficial to the academic community. We presented our previous ALG grant experience in two national educational conferences: Southern Association for Information Systems Conference (SAIS 2016) and ACM Special Interests Group in IT Education (SIGITE 2016). We also hosted a panel to discuss the not-cost-to-student learning material in SIGITE 2016, SIGITE 2017, and will host another panel in the 15th Annual Open Education Conference in October 2018. Our presence in the national conferences greatly increased the academic community's awareness of no-cost-to-student learning material and stimulated intriguing discussions among our following educators. We plan to continue doing so in IT academic society with the proposed transformation efforts. In summary, we believe the proposed project will have a positive impact on students' retention, progression, and graduation at program, department and institution level.

Transformation Action Plan

With a coordinated effort, our team of investigators plans the following activities to transform all mobile and network-related courses to completely use no-cost learning materials:

- Research and identify no-cost readings for each of the learning modules in each course. The reading list includes both compulsory readings and optional readings. All of these readings will be publicly accessible, free to use, or openly licensed.
- Research and identify no-cost materials that can be shared across the courses.
- Develop study guides and lecture notes for students' use to review course content and key learning points.
- Adopt or develop all assignments, exercises and lab materials that create no cost to students to replace the ones in the textbooks.
- Develop test banks to replace the ones in the textbooks.
- Adopt open source or no-cost-to-student labware for students to gain hands-on experience.
- Update the syllabus to include major resources and no-cost materials.
- Re-develop the proposed courses in our learning management system, D2L Brightspace.

The responsibilities of each investigator are described as follows:

- **Primary Investigator:** Dr. Meng Han. **Course**: IT 3203.**Responsibilities:** Project lead; Subject matter expert and developer; instructor of record.
- **Primary Investigator:** Dr. Guangzhi Zheng. **Course**: IT 4203.**Responsibilities:** Subject Matter Expert and developer.

All course design with the no-cost materials will be provided through D2L Brightspace and a public website for our students as well the public.

Quantitative & Qualitative Measures

The investigators plan to assess the effectiveness of our proposal in two ways: 1) qualitatively, we will design a survey and gather inputs from the students after they used the no-cost learning material; 2) quantitatively, we will compare students' performance data gathered from sections using traditional textbooks and sections using no-cost learning material.

The investigators will collect student performance data such as passing rates on the two proposed courses between spring 2018 to fall 2018. This data will be used as a baseline for a comparison of student performance in courses with the alternative no cost material. The detailed assessment plan is shown in the Table: Assessment Plan.

For each of the measurement, the investigators are going to conduct two levels of analysis:

1. Comparing them to the preset goals. Generally, 75% is the aimed passing rate for undergraduate courses and 80% for graduate courses.
2. Comparing them to those from past offerings where costly textbooks were used. The investigators will obtain the data from the sections taught in the past 2 years.

Table: Assessment Plan

Source	Description
Student performance measures	This data is from the overall class performance based on the grading of student works. Metrics include: - Class average, grades distribution, the pass rate for each grading item. - Overall letter grades distribution, pass rate, withdraw rate, and fail rate. Percentage of students meeting or exceeding learning outcomes
Specific survey on no-cost learning materials.	The survey will be distributed at the end of the semester to collect student feedback. It consists of a mixture of quantitative and qualitative measures including: - Student perception and attitude toward no-cost materials - Quantitative ratings of the no-cost materials used in this course Qualitative comments and suggestions
Student evaluation of the instructor	Formal student evaluation of the instructor can also provide information about teaching effectiveness using no-cost materials. This evaluation is based on standardized forms for every course.

Timeline

The major milestones of the proposal are illustrated as follows:

- 11/01/2018 Complete baseline gathering of statistics
- 12/31/2018 Complete course level materials redesign, which includes syllabus and schedule for both courses.Complete project progress report for IT 3203/4203.
- 08/01/2019 Complete the development of no-cost materials include all reading, lecture notes, video clips, exercises, labs, and assignments materials for IT 3203 and IT 4203.Develop a survey on the effectiveness of the no-cost materials for course IT 3203 and IT 4203.
- 12/05/2019 Complete the course offering for IT 3203 and IT 4203.Complete the survey data collection for all offered courses.Complete student evaluation for all offered courses.
- 12/15/2019 Complete assessment data collection and analysis for the whole project.Deliver the final status report.Complete the final report.

Budget

The major development will be in summer 2019. Funding will compensate for the team member's work and activities. For each proposed course, course developers will spend approximately 80 hours in total to develop the no-cost learning material. The instructor of records will spend 20 hours in course assessment. The role of each PIs with the corresponding compensations and other budget details are listed as follows:

- Dr. Meng Han Role: IT 3203 developer & instructorInvestigators compensation: $5,000
- Dr. Guangzhi Zheng Role: IT 3203 developer & instructorInvestigators compensation: $5,000
- Travel & Other Expense: $800. $800 is budgeted for two team members to attend the Kickoff Meeting at Middle Georgia State University in Macon, GA.
-

  Total Budget: $10,800. Only open source software or free software will be used in this project. Thus, there is no additional spending on software or equipment purchasing.

Sustainability Plan

The IT department of KSU implements a course coordination system for all courses. Each course is assigned to a faculty as the course coordinator who is responsible for the content of the course and teaches the course regularly. Both of the two investigators are course architecture for the corresponding courses (please see table 3). Our team members will develop the no-cost-to-student learning material for the proposed courses and teach the courses for the first time using the new no-cost. As a course coordinator, our team members will also make sure a no-cost is continuously taught using the developed no-cost learning material in the future semesters even the course might have a different instructor.

The PI Dr. Han is the coordinator for both IT 4203 and IT 3203. Dr. Zheng had been the course IT 4203 coordinator and instructor for the past 4 years. We will work closely together to maintain these two courses.

The IT department of KSU also of well established continuous course improvement plan. Each course is assessed each semester after being taught, and a course will for and updated every three years. A course coordinator is in charge of the assessment work. Thus, we are committed to continuously updating the no-cost learning material in the proposed courses based on research, assessment results and feedback from students and alumni. As shown in the support letter, our transformation efforts also have strong support from our department chair which further ensures the sustainability of our transformation efforts.

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.

KENNESAW STATE UNIVERSITY
College of Computing and Software Engineering
Information Technology

September 7, 2018

ALG Grant Committee University System of GA

Dear Colleagues:

This letter is in support of the proposal "Advanced Web Innovation: Developing No-Cost-to-Student Learning Materials for Advanced Web Development Topics and Courses" submitted from Kennesaw State University, Information Technology department faculties. As Department Chair for Information Technology, I clearly see the need for bringing down costs for our students. The ALG grants assist faculty to prepare no-cost courses that allow students to take courses without the monetary burden of expensive textbooks.

Several faculties in the Information Technology Department at Kennesaw State University have successfully carried out one ALG grant for database courses, security course, and mobile courses, etc (round 1 #42, round 2 #119, round 8 #302, round 10 #334, and round 11 #365). in the curriculum. The current proposal addresses mobile and network related courses in the IT curriculum. The savings already realized from the previous ALG grant encouraged our faculty to develop this new ALG grant proposal to help our students save even more money.

I strongly support this proposal. This is a very sustainable proposal as we have a large Information Technology degree program. Many of our students take courses online as well as in-class. Creating the no-cost for the textbook version of our mobile and network courses will allow students for many years to realize savings from not buying textbooks for these courses.

This is a very solid proposal. All faculty participating in the past ALG grants completed their courses and offered them successfully. I believe that this new ALG proposal will have the same student satisfaction and success that the past ALG grants did. This new proposal will have an even larger monetary impact on our students than the previous grants. Thank you for your consideration of this proposal.

Sincerely,

Rebecca H. Rutherfoord, Ed.D.
Interim Assistant Dean of the College of Computing & Software Engineering,
Department Chair for Information Technology, Professor of Information Technology
brutherf@kennesaw.edu

Textbook Transformation Grants, Round Twelve (Fall 2018-2019)

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 12 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)	Kennesaw State University
Applicant Name	Meng Han
Applicant Email	mhan9@kennesaw.edu
Applicant Phone #	470-578-3801
Applicant Position/Title	Assistant 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	Guangzhi Zheng	gzheng@kennesaw.edu
Team Member 2	Meng Han	mhan9@kennesaw.edu

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

N/A

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

*Department Chair*Rebecca Rutherfoord, Professor *Department of Information Technology*

Project Information and Impact Data

Title of Grant Project	Advanced Web Innovation: Developing No-Cost-to-Student Learning Materials for Advanced Web Development Topics and Courses
Type of Grant	*"No-or-Low-Cost-to-Students Learning Materials," "Specific Core Curriculum Courses," "Scaling Up OER," or "Gateways to Completion."*
Requested Amount of Funding	$10,800
Course Names and Course Numbers	IT 4203 - Adv Web Development IT 3203 - Intro to Web Development
Final Semester of Project	*Fall 2019*
Average Number of Students Per Course Section Affected by Project	35
Average Number of Sections Affected by Project in One Academic Year	8
Total Number of Students Affected by Project in One Academic Year	280
Average Number of Students Affected per Summer Semester	*30*
Average Number of Students Affected per Fall Semester	160
Average Number of Students Affected per Spring Semester	90
Title/Author of Original Required Materials	*Table 1*
Original Total Cost Per Student	*$287*
Post-Project Cost Per Student	*0*
Post-Project Savings Per Student	*$287*
Projected Total Annual Student Savings Per Academic Year	$45,980
Using OpenStax Textbook?	*No.*

Table 1. Student Enrollment Summary & Projection

Course	Spring 2018	Summer 2018	Fall 2018	Total	Projected 2019 Enrollment	
					Number of Sections	Total Number of students
IT 4203			36	36	1	40
IT 3203	102	31	128	261	6	270
Total	**102**	**31**	**164**	**297**	**7**	**310**

Table 2. Summary of Savings with No-Cost Learning Material

Course	Textbook Used	Cost per Student	Projected Enrollment	Projected Costs
IT 3203	(1) Sebesta, Robert W., *Programming the World Wide Web*, *Seventh Edition*, Addison Wesley, 2013. ISBN-13: 9780132665810.	$150.00	270	$40,500
IT 4203	(1) JavaScript and jQuery: Interactive Front-End Web Development Hardcover Author: Jon Duckett. Publisher: Wiley; 1 edition (July 21, 2014). ISBN-13: 978-1118871652 (2) Developing Responsive Web Applications with AJAX and jQuery. Author: Sandeep Kumar Patel. Publisher: Packt Publishing (August 25, 2014). ISBN-13: 978-1783286379 (3) Single Page Web Applications: JavaScript end-to-end. Authors: Michael Mikowski and Josh Powell. Publisher: Manning Publications; 1 edition (September 30, 2013). ISBN-13: 978-1617290756	$52.00+ $39.99+ $44.99 = $136.98	40	$5,480
	Total:	$287	310	$45,980

Narrative Section

1. Project Goals

In this project, we propose to transform the two advanced web development courses into those using no-cost-to-students learning materials. This project not only aims to reduce the financial burden imposed by high cost of textbooks, but also strives to develop free and open-access learning materials that offer equivalent or better educational effectiveness than traditional textbooks.

2. Statement of Transformation

As shown in the table 2 “Summary of Savings with No-Cost Learning Material”, the textbooks used in the two proposed advanced web development-related IT courses are expensive. In fact, most textbooks used in IT web courses are costly.

The IT 4203 is an advanced web course concentrating on a very specific and unique topic based on a project driven approach. In order to deliver course content, multiple textbooks need to be

used, which impose inconvenience and cost burden on students. In the meantime, the course IT 3203 is a pre-required course, which provides the specific preparation for the advanced topics.

In addition, due to the emerging evolving nature of the technology field, the textbooks used in the proposed courses are updated frequently, which negatively decreases their resale value. The goal of our transformation is to replace the textbook used in the proposed courses with no-cost-to-students learning materials that offer equal or higher educational effectiveness.

The proposed transformation is an economic and viable solution for the following reasons:

- Firstly, the advanced web development-related learning materials are widely and readily available on the World Wide Web today and many of these resources are publicly accessible, free, or with an open license to use. These materials include open and free tutorials, books, videos, labs, test banks, software, and services. For example, the majority of the web development-related topics are strongly supported by the open source communities especially from the community of W3C.
- Secondly, Web content can better reflect the latest trends and industrial development than the traditional textbooks as technology is changing rapidly. So is the content of Web resources. Many textbooks may become outdated at the moment they are published. As a matter of fact, many faculties have to use contents from the Web as supplemental materials to the textbook. For example, the HTML 5 and CSS standards are referred frequently in both two courses.
- The two advanced IT web courses include hands-on labs where software and tools get updated frequently and the current set of textbooks are not on par with the rapid updates. Current textbooks used in the proposed courses contain links to tools or websites which may no longer be available or supported. As soon as a new version of a tool or software package is released, the instructions in a textbook become obsolete. Therefore, we need to include the latest and available open source tools to prepare hands-on labs.

- Thirdly, the materials from the Web are generally more interactive. The interactive content will not only engage the students, but also improve their learning experience. For example, a student can better learn how a CSS tag works through an animation or a video than a printed diagram in a textbook.
- Fourthly, developing and assembling a set of learning materials by ourselves allows us to better align the course contents not only with the outcomes of each course, but also with the outcomes of our Information Technology program.
- Furthermore, our team members are well prepared for the proposed transformation. The downsides of using Web resources are that they are often disorganized, may contain inaccurate information, may be changed or deleted without notices. However, our team members are not only subject matter experts in the advanced web development fields, but also are proficient educators who on average have over 7 years of teaching experience. We will select, organize and integrate resources from the Web and transform the information into instructional sound learning materials for the proposed courses. We also created a sustainable plan to periodically review the developed

no-cost-to-student learning material. All courses in the department are reviewed every three years as part of the continuous improvement process.

- In addition, Dr. Zheng successfully participated four rounds of ALG grants (round 1 award #42, round 2 #119, and round 10 #334, round 11 #365) while Dr. Han severed as the PI for the ALG grant round 10 #334. As part of a department effort, we had transformed more than 10 IT courses into courses using no-cost-to-student learning material. Those courses were very well received by our students and saved our students more than $200,000 in textbook cost. Building on our previous success and lessons learned, we are well positioned to continue transformation efforts and further increase the cost-saving benefits to the students in our program.

Impact of the Transformation

The impact of our transformation efforts will be profound. Under our estimates, more than 300 students will benefit from the no-cost learning material each year. The proposed project is expected to save students approximately $45,980 in textbook cost each year. Because of the cost savings from not having to buy textbooks, students may be able to take a few more courses each year and graduate sooner. Having a series of mobile and network courses adopting no-cost-to-student material not only offers better and more consistent learning experience for students, but also makes our nationally renowned IT programs more affordable. As a result, we could recruit more students and produce more qualified IT professionals that the State of Georgia needs. Developing no-cost-to-student materials can help us better align course content with its learning outcomes and outcomes of our program, which will create positive impact in terms of curriculum development. Moreover, the learning materials developed in this proposal will be made available to the public and can be easily adopted by other programs or intuitions who want to lower the cost of education to their students. Lastly, we believe that our experience gained in this transformation project could be beneficial to the academic community. We presented our previous ALG grant experience in two national educational conferences: Southern Association for Information Systems Conference (SAIS 2016) and ACM Special Interests Group in IT Education (SIGITE 2016). We also hosted a panel to discuss the not-cost-to-student learning material in SIGITE 2016, SIGITE 2017, and will host another panel in the 15th Annual Open Education Conference in October 2018. Our presence in the national conferences greatly increased the academic community's awareness of no-cost-to-student learning material and stimulated intriguing discussions among our follow educators. We plan to continue doing so in IT academic society with the proposed transformation efforts. In summary, we believe the proposed project will have a positive impact on students' retention, progression, and graduation at program, department and institution level.

3. Transformation Action Plan

With a coordinated effort, our team of investigators plans the following activities to transform all mobile and network-related courses to completely use no-cost learning materials:

- Research and identify no cost readings for each of the learning modules in each course. The reading list includes both compulsory readings and optional readings. All of these readings will be publicly accessible, free to use, or openly licensed.

- Research and identify no cost materials that can be shared across the courses.
- Develop study guides and lecture notes for students' use to review course content and key learning points.
- Adopt or develop all assignments, exercises and lab materials that create no cost to students to replace the ones in the textbooks.
- Develop test banks to replace the ones in the textbooks.
- Adopt open source or no-cost-to-student labware for students to gain hands-on experience.
- Update the syllabus to include major resources and no cost materials.
- Re-develop the proposed courses in our learning management system, D2L Brightspace.

The responsibilities of each investigator are described as follows:

- **Primary Investigator:** Dr. Meng Han.
  - **Course**: IT 3203.
  - **Responsibilities:** Project lead; Subject matter expert and developer; instructor of record.
- **Primary Investigator:** Dr. Guangzhi Zheng.
  - **Course**: IT 4203.
  - **Responsibilities:** Subject Matter Expert and developer.

All course design with the no-cost materials will be provided through D2L Brightspace and a public website for our students as well the public.

4. Quantitative and Qualitative Measures

The investigators plan to assess the effectiveness of our proposal in two ways: 1) qualitatively, we will design a survey and gather inputs from the students after they used the no-cost learning material; 2) quantitatively, we will compare students' performance data gathered from sections using traditional textbooks and sections using no-cost learning material.

The investigators will collect student performance data such as passing rates on the two proposed courses between spring 2018 to fall 2018. This data will be used as a baseline for a comparison of student performance in courses with the alternative no cost material. The detailed assessment plan is shown in table 3.

For each of the measurement, the investigators are going to conduct two levels of analysis:

1. Comparing them to the preset goals. Generally, 75% is the aimed passing rate for undergraduate courses and 80% for graduate courses.
2. Comparing them to those from past offerings where costly textbooks were used. The investigators will obtain the data from the sections taught in the past 2 years.

Table 3. Assessment Plan

Source	Description
Student performance measures	This data is from the overall class performance based on the grading of student works. Metrics include: Class average, grades distribution, pass rate for each grading item. Overall letter grades distribution, pass rate, withdraw rate, and fail rate. Percentage of students meeting or exceeding learning outcomes
Specific survey on no-cost learning materials.	The survey will be distributed at the end of the semester to collect student feedback. It consists of a mixture of quantitative and qualitative measures including: Student perception and attitude toward no cost materials Quantitative ratings of the no cost materials used in this course Qualitative comments and suggestions
Student evaluation of the instructor	Formal student evaluation of the instructor can also provide information about teaching effectiveness using no cost materials. This evaluation is based on standardized forms for every course.

5. Timeline

The major milestones of the proposal are illustrated as follows:

- 11/01/2018
  - Complete baseline gathering of statistics
- 12/31/2018
  - Complete course level materials redesign, which includes syllabus and schedule for both courses.
  - Complete project progress report for IT 3203/4203.
- 08/01/2019
  - Complete the development of no cost materials include all reading, lecture notes, video clips, exercises, labs, and assignments materials for IT 3203 and IT 4203.
  - Develop a survey on effectiveness of the no cost materials for course IT 3203 and IT 4203.
- 12/05/2019
  - Complete the course offering for IT 3203 and IT 4203.
  - Complete the survey data collection for all offered courses.
  - Complete student evaluation for all offered courses.
- 12/15/2019
  - Complete assessment data collection and analysis for the whole project.
  - Deliver the final status report.
  - Complete the final report.

6. Budget

The major development will be in summer 2019. Funding will compensate team member's work and activities. For each proposed course, course developers will spend approximately 80 hours in total to develop the no-cost learning material. The instructor of records will spend 20 hours in course assessment. The role for each PIs with the corresponding compensations and other budget details are listed as follows:

- Dr. Meng Han
    - Role :IT 3203 developer & instructor
    - Investigators compensation: $5,000
- Dr. Guangzhi Zheng
    - Role :IT 3203 developer & instructor
    - Investigators compensation: $5,000
- Travel & Other Expense: $800. $800 is budgeted for two team members to attend the Kickoff Meeting at Middle Georgia State University in Macon, GA.
- Total Budget: $10,800. Only open source software or free software will be used in this project. Thus, there is no additional spending on software or equipment purchasing.

7. Sustainability Plan

The IT department of KSU implements a course coordination system for all courses. Each course is assigned to a faculty as the course coordinator who is responsible for the content of the course and teaches the course regularly. Both of the two investigators are course architecture for the corresponding courses (please see table 3). Our team members will develop the no-cost-to-student learning material for the proposed courses and teach the courses for the first time using the new material. As a course coordinator, our team members will also make sure a course is continuously taught using the developed no-cost learning material in the future semesters even the course might have a different instructor.

The PI Dr. Han is the coordinator for both IT 4203 and IT 3203. Dr. Zheng had been the course IT 4203 coordinator and instructor for the past 4 years. We will work closely together to maintain these two courses.

The IT department of KSU also have well established continuous course improvement plan. Each course is assessed each semester after being taught, and a course will be formally evaluated and updated every three years. A course coordinator is in charge of the assessment work. Thus, we are committed to continuously updating the no-cost learning material in the proposed courses

based on research, assessment results and feedback from students and alumni. As shown in the support letter, our transformation efforts also have strong support from our department chair which further ensures the sustainability of our transformation efforts.