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Application Summary

Competition Details

Competition Title:	Textbook Transformation Grants, Round Fifteen (Fall 2019 - Fall 2020)
Category:	University System of Georgia
Award Cycle:	Round 15
Submission Deadline:	09/16/2019 at 11:59 PM

Application Information

Submitted By:	Hossain Shahriar
Application ID:	3596
Application Title:	484
Date Submitted:	09/17/2019 at 8:30 AM

Personal Details

Institution Name(s):	Kennesaw State University
Applicant First Name:	Hossain
Applicant Last Name:	Shahriar
Applicant Email Address:	hshahria@kennesaw.edu
Applicant Phone Number:	470-578-3866
Primary Appointment Title:	Associate Professor & BSIT/BASIT Coordinator
Submitter First Name:	Hossain
Submitter Last Name:	Shahriar
Submitter Email Address:	hshahria@kennesaw.edu
Submitter Phone Number:	470-578-3866
Submitter Title:	Associate Professor & BSIT/BASIT Coordinator

Application Details

Proposal Title

484

Requested Amount of Funding

30000

Priority Category (if applicable)

Scaling Up OER

Final Semester:

Fall 2020

Course Title(s)

Electronic Health Record Systems;Clinical Processes & Workflows: Analysis and Redesign;Health Information Security and Privacy;Database Administration;Thesis

Course Number(s)

IT 6513;IT 6523;IT 6533;IT 6733;IT 7999

Team Member 1 Name

Hossain Shahriar

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Lei Li

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Seyedamin Pouriye, spouriye@kennesaw.edu

Sponsor Name

Dr. Rebecca Rutherford

Sponsor Title

Department Chair and Professor of Information Technology

Sponsor Department

Department of Information Technology, Kennesaw State University

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

23.6

Average Number of Sections Affected by Project in One Academic Year

Total Number of Students Affected by Project in One Academic Year

307

Average Number of Students Affected per Summer Semester

62

Average Number of Students Affected per Fall Semester

95

Average Number of Students Affected per Spring Semester

150

Original Required Commercial Materials (title, author, price, and bookstore or retailer URL showing price)

IT 6513- Richard Gartee. Electronic Health Records: Understanding and Using Computerized Medical Records, Second Edition, Pearson; 2016, ISBN-13: 978-0134458786; Price: \$90.0; URL: <https://www.amazon.com/Electronic-Health-Records-Understanding-MyHealthProfessions/dp/0134458788>

IT 6523 - 1) Process Improvement with Electronic Health Records, A Stepwise Approach to Workflow and Process Management, CRC Press, 2012, ISBN: 978-1-43-987233-8; Price: \$79.63; URL- <https://www.amazon.com/Process-Improvement-Electronic-Health-Records/dp/1439872333>; 2) Robert Damelio, The Basics of Process Mapping, 2nd Edition, CRC Press, 2011, ISBN: 978-1563273766; Price: \$20.74; URL- <https://www.amazon.com/Basics-Process-Mapping-Robert-Damelio/dp/1563273764>

IT 6533 – 1) Herzig, Terrell W., Information Security in Healthcare: Managing Risk. HIMSS, ISBN-13: 978-0982107027, 2010; Price: \$77.92; URL: <https://www.amazon.com/Information-Security-Healthcare-Managing-HIMSS/dp/0982107021> 2) Implementing Information Security in Healthcare: Building a Security Program Kindle Edition, by Terrell Herzig (Editor), Tom Walsh (Editor), Lisa Gallagher; Price: \$75.0; URL: <https://www.amazon.com/Implementing-Information-Security-Healthcare-Building-ebook/dp/B00H4P2EG2>

IT 6733 - Database Systems: Design, Implementation, & Management, Carlos Coronel, Steven Morris, 13th Edition CENGAGE, 2019, ISBN-13: 978-1133526797; Price: \$170.0; URL: https://www.amazon.com/Database-Systems-Design-Implementation-Management/dp/1133526799/ref=tmm_hrd_title_0?_encoding=UTF8&qid=&sr=

IT 7999- 1) Research Methods for Information Systems, Ronald S. King, ISBN-13: 978-1936420124; Price: \$84.01; URL: <https://www.amazon.com/Research-Methods-Information-Systems-Ronald/dp/1936420120>
2) Thesis Writing for Master's and Ph.D. Program, Subhash Chandra Parija (Editor), Vikram Kate (Editor), ISBN-9811308896, Springer, 2018; Price: \$112.32; URL: <https://www.amazon.com/Thesis-Writing-Masters-Ph-D-Program/dp/9811308896>

Original Total Cost per Student

\$709.36

Post-Project Cost per Student

\$0

Post-Project Savings per Student

\$709.36

Projected Total Annual Student Savings per Academic Year

\$43,101.16

Using OpenStax Textbook?

No

Project Goals

The Master of Science in Information Technology (MSIT) program currently is the largest department level graduate program at Kennesaw State University with over 290 students in the MSIT and its affiliated graduate certificate programs. Having graduated more than 650 students since 2012, the MSIT program has been a significant contributor to the much-needed IT workforce for the State of Georgia. Moreover, the MSIT program is also an excellent enabler for underrepresented minorities and people who want to change their job fields in the middle of their career, including who have little or no background in computer technologies. In fall 2018, 65% of MSIT students represented ethnic minorities, 39% are female, and around 40% of the students entered MSIT without a background in computing. The high-quality of the curriculum, the flexibility of the offerings and affordability are the main enablers for the success of the MSIT program.

Many thanks to the supports of Affordable Learning Georgia in previous grants, we have transformed 19 out of 27 courses in the MSIT curriculum with no-cost-to-student learning material, and the responses from our students are overwhelmingly positive.

The IT department has been further continuing the effort no-cost-to-student learning materials to implement the entire MST degree program with zero cost for students. In this project, we propose to continue our department-wide effort to replace the textbooks used in five more MSIT courses with no-cost-to-student learning materials. Our proposed project is aligned with Zero Cost Degree Program (OER IT Degree), an effort potentially be the first in the nation and in the state of Georgia. We believe the impact of the proposed project will be significant given the scale of the MSIT program.

In summary, the objectives of the proposed project are listed as follows.

- Make the MSIT program more affordable by eliminating the textbooks used in five MSIT courses,
- In the near future, convert the entire program as a Zero Cost Degree Program. By doing so, the MSIT program can better support the career-changing students and further boost female and minority participation.
- Develop free, up-to-date, and well-designed learning material for the five proposed MSIT courses.
- Teach the proposed courses using the developed learning materials and validate those materials to offer equal or better learning effectiveness as the textbooks do.
- Develop a sustainability plan to ensure the no-cost learning material will be continuously maintained and used in future course offerings.

Year 2020 Enrollment & Cost Saving Prediction

Course, Offer Frequency, Sections to be offered, Avg. enrollment per section, Total enrollment, Textbook cost, Total Saving

IT 6513	2 times every year	2	30	60	\$90.00	\$5,400.00
IT 6523	2 times every year	2	30	60	\$100.37	\$6,022.20
IT 6533	2 times every year	1	25	25	\$152.92	\$3,823.00
IT 6733	3 times every year	5	30	150	\$170.00	\$25,500.00
IT 7999	3 times every year	3	4	12	\$196.33	\$2,355.96
Total				307	\$709.62	\$43,101.16

Note: 1) the projected

Note: 1) the projected average enrollment per section is based on three factors: past enrollment in 2018 and 2019, MSIT permanent course schedule and the assumption of 10% increase in enrollment in 2020. 2) The IT 6513, IT 6523, IT 6533 courses are part of the HIT Graduate Certificate program, while IT 6733 is part of Data Analytics Graduate Certificate program to impact potentially more students beyond the degree program. 3) IT 7999 is the thesis course that is taken six credit hours total in two semesters by the enrolled students. 4) The total savings for the courses are calculated based on the projection that no-cost learning material will be used starting in Spring 2020, Summer 2020 and Fall 2020.

Statement of Transformation

The quality of the MSIT curriculum is one of the main reasons that makes the program very successful. Given the dynamic and fast-changing nature of information technology, we need to continually update our courses or create new courses to stay in the cutting edge of technology and competition. Unfortunately, the traditional textbook model will not work very well for the IT courses: they are not only expensive but also could become outdated after getting published. The instructors of courses have to constantly add new material to their courses in addition to what's covered in the textbook. The no-cost-learning-material model fits much better for the IT courses.

As a matter of fact, the Department of Information Technology has been a big proponent of no-cost-learning material since round one of ALG. The faculty of IT department has transformed 40 IT courses at both undergraduate and graduate level with the support of ALG. Several of our ALG awards, e.g., round 2 award #119, round 8 award #302, round 10 award #334, round 11, award #365, round 13, award #422, are coordinated at the department level. These efforts have resulted in saving of approximately \$412,147 on text book cost for 2,760 students each year pursuing MSIT degree program. Moreover, the responses for those renovated with no-cost-learning-material courses have been overwhelmingly positive from the students. The positive responses from the students, our past successes, and the nature of the IT discipline make a perfect storm for us to continue transforming more IT courses using no-cost learning material.

Having a number of ALG grants successfully completed and currently two close to completion, the IT department is in a position to convert the BSIT and MSIT degrees as OER Degrees (Open Educational Resources, i.e., Zero Cost of Learning Material Degree). As part of this initiative, one of the priorities is to replace the traditional textbooks being used in a few remaining courses within MSIT degree program with free and open learning resources.

This project aims to replace the textbooks used in the five proposed MSIT courses with no-cost-to-students learning materials that offer equal or higher educational effectiveness. We believe the proposed transformation is an economical and viable solution to address the challenges imposed by the traditional textbook model.

Firstly, the learning materials for the proposed MSIT courses are widely and readily available online today, and many of these resources are publicly accessible, free of charge, or with an open license to use [1] [2]. These materials include open and free tutorials, books, videos, labs, software, and services.

For example, IT 6523 Clinical Workflow Analysis and Redesign is currently using two textbooks – “Process Improvement with EHRs, a stepwise approach to workflow and process management, 2012, and “The basics of process mapping,” 2011. Two books are adopted because book the former book teaches students how to apply workflow and process management principles in electronic health records (EHR) system workflow and process redesign, and the latter book explains how relationship maps, cross-functional process maps, and flowcharts can be used as a set of tools to examine the EHR processes.

These two textbooks provide a foundation for the business process analysis, management, and improvement. However, the concepts introduced in the books can be substituted with free online materials, such as business process map introduction by SmartDraw [3], and free and open-source flowchart software available online [4].

While the textbooks introduce the concepts thoroughly, they do not provide hands-on with software tools for process visualization and analysis. We have found open and free online tools that can be introduced to the students [5], such as PetriNet for clinical workflow modeling [6], Disco [7] and Prom6x [8] for process mining.

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. We are already using online contents as supplemental materials to the textbook. For example, we have utilized open-source resources for redeveloping information security courses with the latest open-source tools and systems (e.g., [9, 10]). We have tried out a few tools mentioned above in the course IT 6523 and got encouraging preliminary teaching results. The IT students are interested in the hands-on experience and enjoy the free and open-source tools.

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. As instructors, one of the key roles we play is to select, organize, and deliver from the vast amount of information available from the web and open-source resources to fit with the classroom learners background. In particular, we are developing hands-on labs and assignments with tools and methods so that students are well prepared for the job market and pursuing advanced courses like database administrator. For example, there are books and manuals (e.g., [11] [12]), on how to become a database administrator (IT6733), but they either are outdated [Mullins] or may not be directly applied to classroom students for effective hands-on learning [12]. Further, for better career preparation, students need exposure to multiple database systems (e.g., MSSQL server, Oracle). IT 6733 – Database Administration covers data administration and management, backup/recovery, security, access control, performance monitoring, and tuning, data warehousing, data mining, online analytical processing for both MS SQL 2019 and Oracle 18c. One textbook is usually not enough to cover all resources, and the books rarely come with interactive practice materials. The web provides plenty of choices of vendor documentation and manuals, but they are not packaged to teach students fundamental concepts and then apply the knowledge using an application: they are focused on vocational training. Moreover, most of the

academic textbooks lack application concepts.

Fourthly, developing and assembling a set of learning materials ourselves allow us to better align the course contents not only with the outcomes of each course but also with the outcomes of the MSIT program. For example, IT 7999 is a Thesis course in which students work in a research topic systematically for two semesters under the guidance of a faculty advisor. Given the applied nature of IT field, thesis students can work on a wide range of topics such as quantitative (survey-based) research, qualitative research, action research, as well as design research (development based). Technical writing is also important part of the thesis. Two textbooks would be needed to cover the learning outcomes of the course. Using the materials compiled by the instructor will better serve the students in the class.

Lastly, our project team is well prepared for the proposed transformation. The disadvantages 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 IT fields, but also are proficient educators who on average have more than ten 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 review the developed no-cost-to-student learning materials periodically. All courses in the department are reviewed every three years as part of the continuous improvement process. In addition, all of the team members have successfully completed many ALG grants, to name a few, round 2 award #119, round 8 award #302, round 10 award #334, round 11 award #365, round 13 award#422, award#429.

In summary, the faculties at IT department have transformed 20 MSIT courses using no-cost-to-student learning materials which are very well received by the students. 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.

References

- [1] Li, L., Peltsverger, S. B., Colyar, N. N., Rutherford, R., Zheng, G., Li, Z. (2016). Transformation At Scale: The Experience Of Developing No Cost Learning Material For Database-Related Courses. 19th Annual Conference of the Southern Association for Information Systems. aisel.aisnet.org/sais2016/9/
- [2] Rutherford, R., Peltsverger, S. B., Li, L., Zheng, G., Rutherford, J. (2016). Transforming IT Education with No-Cost Learning Materials. SIGITE'16. ACM Special Interest Group for IT Education.
- [3] SmartDraw, <https://www.smartdraw.com/business-process-mapping/>
- [4] Flowchart tools, <https://merabheja.com/best-free-tools-for-creating-flowcharts/>
- [5] Predictive Analytics, <https://www.predictiveanalyticstoday.com/top-free-flowchart-software/>
- [6] Petrinet Model, <https://www.ehrscience.com/category/tutorials/petri-nets-in-clinical-modeling/>
- [7] Disco tool, Accessed from <https://pdfs.semanticscholar.org/56b5/96c0762224d612a2cbf9b873423a12ff5b6b.pdf>
- [8] Prom6x, <http://www.promtools.org/doku.php?id=gettingstarted:installation>
- [9] H. Shahriar. (2018), Ethical Hacking for Effective Defense (Modules, Labs, and Lectures), <https://oer.galileo.usg.edu/compsci-ancillary/9/>
- [10] Shahriar, H., Peltsverger, S. (2018). Open Education Resource for Information Security Courses, USG Teaching and Learning Conference. <https://sched.co/DvNV>
- [11] Database Administration: The Complete Guide to Practices and Procedures, Craig S. Mullins. Addison-Wesley ISBN: 0-201-74129-6
- [12] Peasland, B. (2019). Oracle DBA mentor: Succeeding as an Oracle database administrator.

Transformation Action Plan

Built on our previous experience of developing no-cost-to student learning material, our team of investigators plans to carry out following activities to transform the five proposed MSIT courses.

- Research on existing resources including ALG website for publicly available learning material that could be re-used or adapted.
- Research and identify no-cost readings for each of the learning modules in each course. The reading list includes both required 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 are no cost to students to replace the ones in the textbooks.
- Develop test banks to replace the ones in the textbooks if necessary.
- Update the syllabus to include major resources and no-cost materials.
- Re-develop the proposed courses in our learning management system, D2L Brightspace.
- The developed course material will be organized based on the template provided by ALG and will be made available to the public for adoption

The responsibilities of each investigator are listed as follows.

- Dr. Hossain Shahriar, project Lead, subject matter expert, developer and instructor of record for IT 6513: Electronic Health Record Systems.
- Dr. Chi Zhang, subject matter expert, developer and instructor of record for IT 6523: Clinical Processes & Workflows: Analysis and Redesign.
- Dr. Shirley Tian, subject matter expert, developer and instructor of record for IT 6533: Health Information Security and Privacy.
- Dr. Seyedamin Pouriyeh, subject matter expert, developer and instructor of record for IT 6533: Health Information Security and Privacy.
- Dr. Svetlana Peltsverger, subject matter expert, developer and instructor of record for IT 6733: Database Administration.
- Dr. Lei Li, subject matter expert, developer and instructor of record for IT 7999: Thesis.

Quantitative & Qualitative Measures

We plan to assess the effectiveness of our transformation efforts in the following ways.

1. Student performance data comparison. The course pass rate, average GPA, and Drop/Withdraw/Fail rate are used as a measurement of students' performance. We will only use aggregated data in the analysis and final report. So, no IRB approval is needed. The performance data will be collected after the no-cost learning material is implemented for a proposed course, which is referred as the current performance data. For each of the measurement, we plan to conduct two levels of analysis.

- Compare the current performance data to a preset goal. For example, 80 % is the aimed passing rate as the courses involved are graduate courses. A letter grade of B or better will be considered as a passing grade.
- Compare the current performance data to those from past offerings where the textbooks were used. The student performance data from the sections last taught using the textbooks will be used as the baseline.

2. Student survey on developed no-cost learning material. We will develop an anonymous web-based survey to collect students' feedback on the no-cost learning material. The survey will need the approval from the IRB board of Kennesaw State University before it can be distributed to the students. The proposed survey will be totally anonymous and voluntary and introduce minimum risk to the participants. As a result, the survey will qualify for the expedited review based on our previous experience. All proposed courses will use the same survey, and the survey will be distributed at the end of implementation semester for a proposed course. The proposed survey 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 measures such as open-ended questions for comments and suggestions.

3. Official student course evaluation from the university. The student course evaluation can also provide some insights on the effectiveness of no-cost learning material used in the proposed MSIT courses.

Timeline

1. 11/01/2019. Complete gathering of baseline data.
2. 12/01/2019. Complete the development of the web-based student survey and submit it for IRB approval.
3. 01/07/2020. a). Student survey is approved by IRB. b). Complete course level materials redesign (mainly course syllabus) for IT 6513, IT 6523, IT 6533, IT 6733, and IT 7999. c). Complete the project progress report.
4. 5/15/2020. a). Complete the module level development including reading, lecture notes, video, exams, labs, and assignments for IT 6513, IT 6733, IT 7999. b). Update the D2L Brightspace course sites are updated using the developed no-cost learning material for IT 6513, IT 6733, IT 7999.
5. 07/15/2020. Complete the module level development including reading, lecture notes, video, exams, labs, and assignments for IT 6523, IT 6533.
6. 07/30/2020. a). Complete course offering for IT 6513, IT 6733, and IT 7999, complete survey collection. b). Update the D2L Brightspace course sites are updated using the developed no-cost learning material for IT 6523 and IT 6533. c). Complete project progress report.
7. 12/01/2020. a). Complete the course offering for IT 6523 and IT 6533. b). Complete the survey data collection for IT 6523 and IT 6533.
8. 12/15/2020. Compile and submit final project report

Budget

The budget information for this project is listed as follows.

1. Individual Expense

- Dr. Hosssain Shahriar, project Lead, developer and instructor of record for IT 6513, \$5000 for professional development.
- Dr. Chi Zhang, developer and instructor of record for IT 6523, \$5000 for summer salary.
- Dr. Svetlana Peltsverger, developer and instructor of record for IT 6733, \$5000 for professional development.
- Dr. Lei Li, developer and instructor of record for IT 7999, \$5000 for professional development.
- Dr. Shirley Tian, developer and instructor of record for IT 6533, \$2500 for professional development.
- Dr. Seyedamin Pouriyeh, developer and instructor of record for IT 6533, \$2500 for professional development
- Subtotal: \$25,000.

2. Travel Expense: \$2500. \$800 is reserved for two team members attend the Kickoff Meeting at Middle Georgia State University in Macon, GA. \$1700 is budgeted for attending another conference.

3. Equipment (computers and tablets): \$2500

Total Budget requested: \$30,000

Sustainability Plan

The IT department at Kennesaw State University implements a course architect system for all courses. A faculty who is assigned to a course as the course architect, is responsible for the content of the course and teaches the course regularly. All of our investigators are a course architect for the proposed courses. Our team member 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 architect, our team member will also make sure a course is continuously taught using developed no-cost learning material in the future semesters even the course might have a different instructor.

Moreover, the developed course content is not only available at the learning management system but also archived at the department server. It is also our department policy that there are at least two faculty who regularly teach a course. This further ensures the developed learning material will be continuously used and updated even there is a personnel turnover.

The IT department also has well-established course continual improvement plan. Each course is assessed each semester after being taught, and a course will be formally evaluated and updated every three years or earlier if the need arises. A course architect is in charge of those assessment efforts. Thus, we are committed to continuously update 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 have strong support from our Department Chair and the Dean of our colleges which further ensure 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 16, 2019

ALG Grant Committee University System of GA
Dear Colleagues:

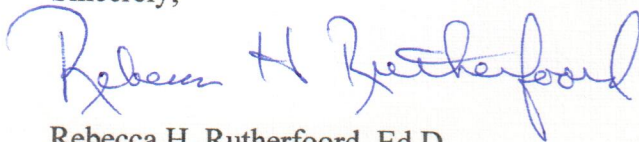
This letter is in support of the Proposal "Large Scale No-Cost Textbook Resources Towards Zero Cost MSIT Degree Program at KSU" submitted from Kennesaw State University, Information Technology department faculty. As Department Chair for Information Technology, I clearly see the need for bringing down 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 faculty in the Information Technology Department at Kennesaw State University have successfully carried out an ALG rounds #1, #2, #5, #8, #10, #11, #12, #13 and #14. 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 master's students take courses online as well as in-class. Creating the no-cost format for the five MSIT 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 previous 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 previous 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. Rutherford, 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 Fifteen (Fall 2019 – Fall 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 will on the [Round 15 RFP Page](#) in July 2019.
- The italic text provided below 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	Hossain Shahriar
Applicant Email	hshahria@kennesaw.edu
Applicant Phone #	470-578-3866
Applicant Position/Title	Associate Professor & BSIT/BASIT Coordinator
Submitter Name	Hossain Shahriar
Submitter Email	hshahria@kennesaw.edu
Submitter Phone #	470-578-3866
Submitter Position	Associate Professor & BSIT/BASIT Coordinator

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	Hossain Shahriar	hshahria@kennesaw.edu
Team Member 2	Lei Li	Lli13@kennesaw.edu
Team Member 3	Svetlana Peltsverger	speltsve@kennesaw.edu
Team Member 4	Chi Zhang	czhang4@kennesaw.edu
Team Member 5	Shirley Tian	xtian2@kennesaw.edu
Team Member 6	Syedamin Pouriyeh	spouriye@kennesaw.edu
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.

Dr. Rebecca Rutherford, Department Chair and Professor of Information Technology, Department of Information Technology, Kennesaw State University
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Project Information and Impact Data

Priority Category / Categories	<i>Large Scale Transformation - Department wide transformation</i>
Requested Amount of Funding	\$30,000
Course Names and Course Numbers	IT 6513: Electronic Health Record Systems IT 6523: Clinical Processes & Workflows: Analysis and Redesign IT 6533: Health Information Security and Privacy IT 6733: Database Administration IT 7999: Thesis
Final Semester of Project	<i>Fall 2020</i>
Average Number of Students Per Course Section Affected by Project	23.6
Average Number of Sections Affected by Project in One Academic Year	13
Total Number of Students Affected by Project in One Academic Year	307
Average	62

Number of Students Affected per Summer Semester	
Average Number of Students Affected per Fall Semester	95
Average Number of Students Affected per Spring Semester	150
Original Required Commercial Materials	<p>IT 6513- Richard Gartee. <i>Electronic Health Records: Understanding and Using Computerized Medical Records</i>, Second Edition, Pearson; 2016, ISBN-13: 978-0134458786; Price: \$90.0; URL: https://www.amazon.com/Electronic-Health-Records-Understanding-MyHealthProfessions/dp/0134458788</p> <p>IT 6523 - 1) <i>Process Improvement with Electronic Health Records, A Stepwise Approach to Workflow and Process Management</i>, CRC Press, 2012, ISBN: 978-1-43-987233-8; Price: \$79.63; URL- https://www.amazon.com/Process-Improvement-Electronic-Health-Records/dp/1439872333; 2) Robert Damelio, <i>The Basics of Process Mapping</i>, 2nd Edition, CRC Press, 2011, ISBN: 978-1563273766; Price: \$20.74; URL- https://www.amazon.com/Basics-Process-Mapping-Robert-Damelio/dp/1563273764</p> <p>IT 6533 – 1) Herzig, Terrell W., <i>Information Security in Healthcare: Managing Risk</i>. HIMSS, ISBN-13: 978-0982107027, 2010; Price: \$77.92; URL: https://www.amazon.com/Information-Security-Healthcare-Managing-HIMSS/dp/0982107021 2) <i>Implementing Information Security in Healthcare: Building a Security Program</i> Kindle Edition, by Terrell Herzig (Editor), Tom Walsh (Editor), Lisa Gallagher; Price: \$75.0; URL: https://www.amazon.com/Implementing-Information-Security-Healthcare-Building-ebook/dp/B00H4P2EG2</p> <p>IT 6733 - <i>Database Systems: Design, Implementation, & Management</i>, Carlos Coronel, Steven Morris, 13th Edition CENGAGE, 2019, ISBN-13: 978-1133526797; Price: \$170.0; URL: https://www.amazon.com/Database-Systems-Design-Implementation-Management/dp/1133526799/ref=tmm_hrd_title_0?encoding=UTF8&qid=&sr=</p> <p>IT 7999- 1) <i>Research Methods for Information Systems</i>, Ronald S. King, ISBN-13: 978-1936420124; Price: \$84.01; URL:</p>

	https://www.amazon.com/Research-Methods-Information-Systems-Ronald/dp/1936420120 2) <i>Thesis Writing for Master's and Ph.D. Program</i> , Subhash Chandra Parija (Editor), Vikram Kate (Editor), ISBN- 9811308896, Springer, 2018; Price: \$112.32 ; URL: https://www.amazon.com/Thesis-Writing-Masters-Ph-D-Program/dp/9811308896
Total Price of Original Required Materials Per Student	\$709.36
Post-Project Cost Per Student	\$0
Post-Project Savings Per Student	\$709.36
Projected Total Annual Student Savings Per Academic Year	\$43,101.16 (please refer to the Enrollment and Cost Saving Prediction Table in Project Goals section on how the total savings is calculated)
Using OpenStax Textbook?	No

Narrative Section

1. Project Goals

Goals for a Textbook Transformation Grant project go beyond just cost savings. Include goals for student savings, student success, materials creation, and pedagogical transformation here.

The Master of Science in Information Technology (MSIT) program currently is the largest department level graduate program at Kennesaw State University with over 290 students in the MSIT and its affiliated graduate certificate programs. Having graduated more than 650 students since 2012, the MSIT program has been a significant contributor to the much-needed IT workforce for the State of Georgia. Moreover, the MSIT program is also an excellent enabler for underrepresented minorities and people who want to change their job fields in the middle of their career, including who have little or no background in computer technologies. In fall 2018, 65% of MSIT students represented ethnic minorities, 39% are female, and around 40% of the students entered MSIT without a background in computing. The high-quality of the curriculum, the

flexibility of the offerings and affordability are the main enablers for the success of the MSIT program.

Many thanks to the supports of Affordable Learning Georgia in previous grants, we have transformed 19 out of 27 courses in the MSIT curriculum with no-cost-to-student learning material, and the responses from our students are overwhelmingly positive.

The IT department has been further continuing the effort no-cost-to-student learning materials to implement the entire MST degree program with zero cost for students. In this project, we propose to continue our department-wide effort to replace the textbooks used in five more MSIT courses with no-cost-to-student learning materials. Our proposed project is aligned with Zero Cost Degree Program (OER IT Degree), an effort potentially be the first in the nation and in the state of Georgia. We believe the impact of the proposed project will be significant given the scale of the MSIT program.

In summary, the objectives of the proposed project are listed as follows.

- Make the MSIT program more affordable by eliminating the textbooks used in five MSIT courses
- In the near future, convert the entire program as a Zero Cost Degree Program. By doing so, the MSIT program can better support the career-changing students and further boost female and minority participation.
- Develop free, up-to-date, and well-designed learning material for the five proposed MSIT courses.
- Teach the proposed courses using the developed learning materials and validate those materials to offer equal or better learning effectiveness as the textbooks do.
- Develop a sustainability plan to ensure the no-cost learning material will be continuously maintained and used in future course offerings.

Year 2020 Enrollment & Cost Saving Prediction

Course, Offer Frequency, Sections to be offered, Avg. enrollment per section, Total enrollment, Textbook cost, Total Saving

IT 6513	2 times every year	2	30	60	\$90.00	\$5,400.00
IT 6523	2 times every year	2	30	60	\$100.37	\$6,022.20
IT 6533	2 times every year	1	25	25	\$152.92	\$3,823.00
IT 6733	3 times every year	5	30	150	\$170.00	\$25,500.00
IT 7999	3 times every year	3	4	12	\$196.33	\$2,355.96
Total				307	\$709.62	\$43,101.16

Note: 1) the projected average enrollment per section is based on three factors: past enrollment in 2018 and 2019, MSIT permanent course schedule and the assumption of 10% increase in enrollment in 2020. 2) The IT 6513, IT 6523, IT 6533 courses are part of the HIT Graduate Certificate program, while IT 6733 is part of Data Analytics Graduate Certificate program to impact potentially more students beyond the degree program. 3) IT 7999 is the thesis course that

is taken six credit hours total in two semesters by the enrolled students. 4) The total savings for the courses are calculated based on the projection that no-cost learning material will be used starting in Spring 2020, Summer 2020 and Fall 2020.

2. Statement of Transformation

Textbook Transformation Grants are awarded to teams focused on creating impactful changes. This section allows teams to describe why the project should be awarded. Include the following:

- *A description of the current state of the course, department, and/or institution if relevant.*
- *An overall description of the project and how it will impact the course, department, and institution as described previously. Include references to scholarly literature to support the claims of your impact if possible.*

The quality of the MSIT curriculum is one of the main reasons that makes the program very successful. Given the dynamic and fast-changing nature of information technology, we need to continually update our courses or create new courses to stay in the cutting edge of technology and competition. Unfortunately, the traditional textbook model will not work very well for the IT courses: they are not only expensive but also could become outdated after getting published. The instructors of courses have to constantly add new material to their courses in addition to what's covered in the textbook. The no-cost-learning-material model fits much better for the IT courses. As a matter of fact, the Department of Information Technology has been a big proponent of no-cost-learning material since round one of ALG. The faculty of IT department has transformed 40 IT courses at both undergraduate and graduate level with the support of ALG. Several of our ALG awards, e.g., round 2 award #119, round 8 award #302, round 10 award #334, round 11, award #365, round 13, award #422, are coordinated at the department level. These efforts have resulted in saving of approximately \$412,147 on text book cost for 2,760 students each year pursuing MSIT degree program. Moreover, the responses for those renovated with no-cost-learning-material courses have been overwhelmingly positive from the students. The positive responses from the students, our past successes, and the nature of the IT discipline make a perfect storm for us to continue transforming more IT courses using no-cost learning material. Having a number of ALG grants successfully completed and currently two close to completion, the IT department is in a position to convert the BSIT and MSIT degrees as OER Degrees (Open Educational Resources, i.e., Zero Cost of Learning Material Degree). As part of this initiative, one of the priorities is to replace the traditional textbooks being used in a few remaining courses within MSIT degree program with free and open learning resources.

This project aims to replace the textbooks used in the five proposed MSIT courses with no-cost-to-students learning materials that offer equal or higher educational effectiveness. We believe the proposed transformation is an economical and viable solution to address the challenges imposed by the traditional textbook model.

Firstly, the learning materials for the proposed MSIT courses are widely and readily available online today, and many of these resources are publicly accessible, free of charge, or with an open license to use [1] [2]. These materials include open and free tutorials, books, videos, labs, software, and services.

For example, IT 6523 Clinical Workflow Analysis and Redesign is currently using two textbooks – “Process Improvement with EHRs, a stepwise approach to workflow and process management, 2012, and “The basics of process mapping,” 2011. Two books are adopted because book the

former book teaches students how to apply workflow and process management principles in electronic health records (EHR) system workflow and process redesign, and the latter book explains how relationship maps, cross-functional process maps, and flowcharts can be used as a set of tools to examine the EHR processes.

These two textbooks provide a foundation for the business process analysis, management, and improvement. However, the concepts introduced in the books can be substituted with free online materials, such as business process map introduction by SmartDraw [3], and free and open-source flowchart software available online [4].

While the textbooks introduce the concepts thoroughly, they do not provide hands-on with software tools for process visualization and analysis. We have found open and free online tools that can be introduced to the students [5], such as PetriNet for clinical workflow modeling [6], Disco [7] and Prom6x [8] for process mining.

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. We are already using online contents as supplemental materials to the textbook. For example, we have utilized open-source resources for redevelopping information security courses with the latest open-source tools and systems (e.g., [9, 10]). We have tried out a few tools mentioned above in the course IT 6523 and got encouraging preliminary teaching results. The IT students are interested in the hands-on experience and enjoy the free and open-source tools.

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. As instructors, one of the key roles we play is to select, organize, and deliver from the vast amount of information available from the web and open-source resources to fit with the classroom learners background. In particular, we are developing hands-on labs and assignments with tools and methods so that students are well prepared for the job market and pursuing advanced courses like database administrator. For example, there are books and manuals (e.g., [11] [12]), on how to become a database administrator (IT6733), but they either are outdated [Mullins] or may not be directly applied to classroom students for effective hands-on learning [12]. Further, for better career preparation, students need exposure to multiple database systems (e.g., MSSQL server, Oracle). IT 6733 – Database Administration covers data administration and management, backup/recovery, security, access control, performance monitoring, and tuning, data warehousing, data mining, online analytical processing for both MS SQL 2019 and Oracle 18c. One textbook is usually not enough to cover all resources, and the books rarely come with interactive practice materials. The web provides plenty of choices of vendor documentation and manuals, but they are not packaged to teach students fundamental concepts and then apply the knowledge using an application: they are focused on vocational training. Moreover, most of the academic textbooks lack application concepts.

Fourthly, developing and assembling a set of learning materials ourselves allow us to better align the course contents not only with the outcomes of each course but also with the outcomes of the MSIT program. For example, IT 7999 is a Thesis course in which students work in a research topic systematically for two semesters under the guidance of a faculty advisor. Given the applied nature of IT field, thesis students can work on a wide range of topics such as quantitative (survey-based) research, qualitative research, action research, as well as design research (development based). Technical writing is also important part of the thesis. Two textbooks would

be needed to cover the learning outcomes of the course. Using the materials compiled by the instructor will better serve the students in the class.

Lastly, our project team is well prepared for the proposed transformation. The disadvantages 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 IT fields, but also are proficient educators who on average have more than ten 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 review the developed no-cost-to-student learning materials periodically. All courses in the department are reviewed every three years as part of the continuous improvement process. In addition, all of the team members have successfully completed many ALG grants, to name a few, round 2 award #119, round 8 award #302, round 10 award #334, round 11 award #365, round 13 award#422, award#429.

In summary, the faculties at IT department have transformed 20 MSIT courses using no-cost-to-student learning materials which are very well received by the students. 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.

References

- [1] Li, L., Peltsverger, S. B., Colyar, N. N., Rutherford, R., Zheng, G., Li, Z. (2016). Transformation At Scale: The Experience Of Developing No Cost Learning Material For Database-Related Courses. 19th Annual Conference of the Southern Association for Information Systems. aisel.aisnet.org/sais2016/9/
- [2] Rutherford, R., Peltsverger, S. B., Li, L., Zheng, G., Rutherford, J. (2016). Transforming IT Education with No-Cost Learning Materials. *SIGITE'16*. ACM Special Interest Group for IT Education.
- [3] SmartDraw, <https://www.smartdraw.com/business-process-mapping/>
- [4] Flowchart tools, <https://merabheja.com/best-free-tools-for-creating-flowcharts/>
- [5] Predictive Analytics, <https://www.predictiveanalyticstoday.com/top-free-flowchart-software/>
- [6] Petrinet Model, <https://www.ehrscience.com/category/tutorials/petri-nets-in-clinical-modeling/>
- [7] Disco tool, Accessed from <https://pdfs.semanticscholar.org/56b5/96c0762224d612a2cbf9b873423a12ff5b6b.pdf>
- [8] Prom6x, <http://www.promtools.org/doku.php?id=gettingstarted:installation>
- [9] H. Shahriar. (2018), Ethical Hacking for Effective Defense (Modules, Labs, and Lectures), <https://oer.galileo.usg.edu/compsci-ancillary/9/>
- [10] Shahriar, H., Peltsverger, S. (2018). Open Education Resource for Information Security Courses, USG Teaching and Learning Conference. <https://sched.co/DvNV>
- [11] Database Administration: The Complete Guide to Practices and Procedures, Craig S. Mullins. Addison-Wesley ISBN: 0-201-74129-6
- [12] Peasland, B. (2019). Oracle DBA mentor: Succeeding as an Oracle database administrator.

3. Transformation Action Plan

Textbook Transformation Grant projects can be work-intensive and require project management in order to be successful. This section allows teams to describe how the team will fulfill the goals of the project. Include the following:

- *The activities expected from each team member and their role(s): subject matter experts, instructional designer, librarian, instructor of record, et al.*
 - *The identification, review, selection, and adoption/adaptation/creation of the new course materials.*
 - *A fully prepared application should include a preliminary evaluation of currently existing OER or no/low-cost materials for adoption or modification, or a preliminary plan to create new materials.*
- *Any redesign work necessary for the transformation.*
 - *This includes instructional design, curriculum alignment, accessibility, etc.*
- *The plan for providing open access to the new materials.*
 - *GALILEO Open Learning Materials will host any newly created materials. Please indicate if you are using other platforms in addition to the repository.*

Built on our previous experience of developing no-cost-to student learning material, our team of investigators plans to carry out following activities to transform the five proposed MSIT courses.

- Research on existing resources including ALG website for publicly available learning material that could be re-used or adapted.
- Research and identify no-cost readings for each of the learning modules in each course. The reading list includes both required 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 are no cost to students to replace the ones in the textbooks.
- Develop test banks to replace the ones in the textbooks if necessary.
- Update the syllabus to include major resources and no-cost materials.
- Re-develop the proposed courses in our learning management system, D2L Brightspace.
- The developed course material will be organized based on the template provided by ALG and will be made available to the public for adoption

The responsibilities of each investigator are listed as follows.

- Dr. Hossain Shahriar, project Lead, subject matter expert, developer and instructor of record for IT 6513: Electronic Health Record Systems.
- Dr. Chi Zhang, subject matter expert, developer and instructor of record for IT 6523: Clinical Processes & Workflows: Analysis and Redesign.
- Dr. Shirley Tian, subject matter expert, developer and instructor of record for IT 6533: Health Information Security and Privacy.

- Dr. Seyedamin Pouriyeh, subject matter expert, developer and instructor of record for IT 6533: Health Information Security and Privacy.
- Dr. Svetlana Peltsverger, subject matter expert, developer and instructor of record for IT 6733: Database Administration.
- Dr. Lei Li, subject matter expert, developer and instructor of record for IT 7999: Thesis.

4. Quantitative and Qualitative Measures

All Textbook Transformation Grant projects must measure student satisfaction, student performance, and course-level retention (drop/fail/withdraw rates), but teams and institutions will do this in varied ways. Outstanding applications will include measures beyond the minimum to gain meaningful insights into the impact of the project. Include the following:

- *Each quantitative or qualitative measure to be used, along with a description of the methods and/or tools used to gather and analyze data.*
- *If the team needs IRB (Institutional Review Board) approval, please indicate this here. Each institution's IRB functions differently and teams will need to know how their institution's IRB evaluates and approves of institutional research.*

We plan to assess the effectiveness of our transformation efforts in the following ways.

1. *Student performance data comparison.* The course pass rate, average GPA, and Drop/Withdraw/Fail rate are used as a measurement of students' performance. We will only use aggregated data in the analysis and final report. So, no IRB approval is needed. The performance data will be collected after the no-cost learning material is implemented for a proposed course, which is referred as the current performance data. For each of the measurement, we plan to conduct two levels of analysis.
 - Compare the current performance data to a preset goal. For example, 80 % is the aimed passing rate as the courses involved are graduate courses. A letter grade of B or better will be considered as a passing grade.
 - Compare the current performance data to those from past offerings where the textbooks were used. The student performance data from the sections last taught using the textbooks will be used as the baseline.
2. *Student survey on developed no-cost learning material.* We will develop an anonymous web-based survey to collect students' feedback on the no-cost learning material. The survey will need the approval from the IRB board of Kennesaw State University before it can be distributed to the students. The proposed survey will be totally anonymous and voluntary and introduce minimum risk to the participants. As a result, the survey will qualify for the expedited review based on our previous experience. All proposed courses will use the same survey, and the survey will be distributed at the end of implementation semester for a proposed course. The proposed survey 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 measures such as open-ended questions for comments and suggestions.
3. *Official student course evaluation from the university.* The student course evaluation can also provide some insights on the effectiveness of no-cost learning material used in the proposed MSIT courses.

5. Timeline

This section allows teams to describe how the project will progress from its inception to the final report (submitted at the end of the final semester of the project). Please provide a list of major milestones for the project here, aligning it with the Transformation Action Plan and your selected Final Semester of the project. Do not put this in the form of a table, as it will create issues within InfoReady Review for the official application – a bullet-point list is acceptable.

The major milestones of this proposal are listed as follows.

1. 11/01/2019. Complete gathering of baseline data.
2. 12/01/2019. Complete the development of the web-based student survey and submit it for IRB approval.
3. 01/07/2020. a). Student survey is approved by IRB. b). Complete course level materials redesign (mainly course syllabus) for IT 6513, IT 6523, IT 6533, IT 6733, and IT 7999. c). Complete the project progress report.
4. 5/15/2020. a). Complete the module level development including reading, lecture notes, video, exams, labs, and assignments for IT 6513, IT 6733, IT 7999. b). Update the D2L Brightspace course sites are updated using the developed no-cost learning material for IT 6513, IT 6733, IT 7999.
5. 07/15/2020. Complete the module level development including reading, lecture notes, video, exams, labs, and assignments for IT 6523, IT 6533.
6. 07/30/2020. a). Complete course offering for IT 6513, IT 6733, and IT 7999, complete survey collection. b). Update the D2L Brightspace course sites are updated using the developed no-cost learning material for IT 6523 and IT 6533. c). Complete project progress report.
7. 12/01/2020. a). Complete the course offering for IT 6523 and IT 6533. b). Complete the survey data collection for IT 6523 and IT 6533.
8. 12/15/2020. Compile and submit final project report.

6. Budget

Include overall personnel & projected expenses. Be sure to include the \$800 in travel funding, which is required for all Textbook Transformation Grants. Do not put this in the form of a table, as it will create issues within InfoReady Review for the official application – a bullet-point list is acceptable. Please keep all funding guidelines from the corresponding RFP in mind.

The budget information for this project is listed as follows.

1. Individual Expense

- Dr. Hosssain Shahriar, project Lead, developer and instructor of record for IT 6513, \$5000 for professional development.
- Dr. Chi Zhang, developer and instructor of record for IT 6523, \$5000 for summer salary.
- Dr. Svetlana Peltsverger, developer and instructor of record for IT 6733, \$5000 for professional development.
- Dr. Lei Li, developer and instructor of record for IT 7999, \$5000 for professional development.
- Dr. Shirley Tian, developer and instructor of record for IT 6533, \$2500 for professional development.
- Dr. Seyedamin Pouriyeh, developer and instructor of record for IT 6533, \$2500 for professional development
- Subtotal: \$25,000.
 2. Travel Expense: \$2500. \$800 is reserved for two team members attend the Kickoff Meeting at Middle Georgia State University in Macon, GA. \$1700 is budgeted for attending another conference.
 3. Equipment (computers and tablets): \$2500
 4. Total Budget requested: \$30,000

7. Sustainability Plan

Textbook Transformation Grants should have a lasting impact on the course for years to come. In order for this to happen, a Sustainability Plan needs to be in place after the end of the project. Please include here your plans for offering the course in the future, including:

- *The maintenance and updating of course materials*
- *Any possible expansion of the project to more course sections in the future*
- *Future plans for sharing this work with others through presentations, articles, or other scholarly activities*

The IT department at Kennesaw State University implements a course architect system for all courses. A faculty who is assigned to a course as the course architect, is responsible for the content of the course and teaches the course regularly. All of our investigators are a course architect for the proposed courses. Our team member 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 architect, our team member will also make sure a course is continuously taught using developed no-cost learning material in the future semesters even the course might have a different instructor.

Moreover, the developed course content is not only available at the learning management system but also archived at the department server. It is also our department policy that there are at least two faculty who regularly teach a course. This further ensures the developed learning material will be continuously used and updated even there is a personnel turnover.

The IT department also has well-established course continual improvement plan. Each course is assessed each semester after being taught, and a course will be formally evaluated and updated

every three years or earlier if the need arises. A course architect is in charge of those assessment efforts. Thus, we are committed to continuously update 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 have strong support from our Department Chair and the Dean of our colleges which further ensure the sustainability of our transformation efforts.

Note: Letter of Support

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.