



Affordable Materials Grants, Round 19:
Transformation Grants
(Spring 2021-Spring 2022)
Proposal Form and Narrative

Notes

- The proposal form and narrative .docx file is for offline drafting and for our review processes. Submitters must use the online Google Form for proposal submission.
- The only way to submit the official proposal is through the online Google Form. The link to the online application is on the [Round 19 RFP Page](#).
- The italic text provided below is meant for clarifications and can be deleted.

The Round 18 Kickoff will include an asynchronous training module, required for all team members to complete, followed by the synchronous Kickoff Meeting on March 26, 2021 from 1pm-4pm. At least two team members from each awarded team (unless the award is for one individual) are required to attend the synchronous Kickoff Meeting.

Applicant and Team 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, just list leave the submitter blank.*

Requested information	Answer
Institution(s)	Georgia Southern University
Applicant name	Atef Mohamed (Shalan)
Applicant email	amohamed@georgiasouthern.edu
Applicant position/title	Assistant Professor of Information Technology
Submitter name	
Submitter email	
Submitter position/title	





Please provide the first/last names and email addresses of all team members within the proposed project. Include the applicant (Project Lead) in this list. Do not include prefixes or suffixes such as Ms., Dr., Ph.D., etc.

The team structure integrates the topic expertise and instructional design quality experts. The team includes three faculty members: Atef Mohamed (Shalan) and Chris Kadlec, both from Georgia Southern University, and Hossain Shahriar from Kennesaw State University. The team also includes an OER Expert (Dawn Cannon-Rech) and an instructional design expert (Deborah Walker) from Georgia Southern University. Finally, a student or two will join the team near the end of the project to conduct reviewing and evaluation of the generated OER. The following table lists the project team members.

Team member	Name	Email address
Team member 1	Atef Mohamed	amohamed@georgiasouthern.edu
Team member 2	Christopher Kadlec	ckadlec@georgiasouthern.edu
Team member 3	Hossain Shahriar	hshahria@kennesaw.edu
Team member 4	Dawn Cannon-Rech	dcannonrech@georgiasouthern.edu
Team member 5	Deborah Walker	dwalker@georgiasouthern.edu
Team member 6	Students (1 or 2)	

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

Project Information

Requested information	Answer
Priority Category / Categories <i>Projects in these categories will receive three extra points in the final score for fitting a priority of these particular rounds of Transformation Grants. The type of funding for the project is determined by the funding categories criteria above. As of Round 18, projects can be a part of more than one category. Note that the below categories only indicate priority, not which applications qualify for a grant. Select all that apply.</i>	Priority categories: <div>  Collaborative Projects with Professional Support </div> <div>  Student Participation in Materials Evaluation </div> <div>  Department Scale Project </div> <div>  Upper-Level Campus Collaboration </div>

Requested information	Answer
Requested Total Amount of Funding <i>\$30,000 maximum total award per grant</i>	\$26,070.00
Final Semester of Project	Spring 2022
Using OpenStax Textbook? <i>This is to indicate to OpenStax that they can provide additional support and resources to your team during the adoption process.</i>	No

Impact Data

Please fill in the data below with impact data in below with *one course taught by one instructor* in each table, and only include courses and instructors that are specifically part of the scope of this grant proposal. Add or remove tables as needed. **Please only put a single averaged or totaled (as appropriate) number in each box. Do not put ranges or mathematical equations in any of these boxes.**

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

Course 1

Row #	Requested information	Answer
N/A	Course title and number	IT 2530: Operating Systems
N/A	Course instructor	Atef Mohamed
1	Average number of students enrolled per section	24
2	Average number of affected course sections scheduled in a summer semester	2
3	Average number of affected course sections scheduled in a fall semester	2
4	Average number of affected course sections scheduled in a spring semester	3

Row #	Requested information	Answer
5	Total number of course sections scheduled in an academic year <i>Add up rows 2-4.</i>	7
6	Total number of student section enrollments per academic year <i>Multiply row 1 and row 5.</i>	166
7	Original <u>required</u> commercial materials <i>Include each title, author, price for a new copy purchased from either your campus bookstore, the publisher, or Amazon, and a URL to the book showing the price.</i>	<ul style="list-style-type: none"> Operating Systems: Internals and Design Principles, 9th Edition, By: Willam Stallings. ISBN-13: 978-0134670959, Pearson, ©2018; Price: \$159.99 at Amazon: https://www.amazon.com/Operating-Systems-Internals-Design-Principles/dp/0134670957
8	Original cost per student section enrollment <i>Add up the cost of all materials in row 7.</i>	\$159.99
9	Average post-project cost per student section enrollment	\$0.00
10	Average post-project savings per student section enrollment <i>Subtract row 9 from row 8.</i>	\$159.99
11	Projected total annual student savings per academic year <i>Multiply row 10 and row 6.</i>	\$26,558.34

Course 2

Row #	Requested information	Answer
N/A	Course title and number	IT 2530: Operating Systems

N/A	Course instructor	Christopher Kadlec
1	Average number of students enrolled per section	59
2	Average number of course sections scheduled in a summer semester	0
3	Average number of course sections scheduled in a fall semester	1
4	Average number of course sections scheduled in a spring semester	0
5	Total number of course sections scheduled in an academic year <i>Add up rows 2-4.</i>	1
6	Total number of student section enrollments per academic year <i>Multiply row 1 and row 5.</i>	59
7	Original <u>required</u> commercial materials <i>Include each title, author, price for a new copy purchased from either your campus bookstore, the publisher, or Amazon, and a URL to the book showing the price.</i>	Operating Systems: An Introduction, by R. Garg, G. Verma, illustrated Edition, ISBN 1942270380, 9781942270386, Mercury Learning and Information, @2017; Price: \$84.95 at Amazon; https://www.amazon.com/Operating-Systems-Introduction-R-Garg/dp/1942270380
8	Original cost per student section enrollment <i>Add up the cost of all materials in row 7.</i>	\$84.95
9	Average post-project cost per student section enrollment	0
10	Average post-project savings per student section enrollment <i>Subtract row 9 from row 8.</i>	\$84.95

11	Projected total annual student savings per academic year <i>Multiply row 10 and row 6.</i>	\$5,012.05
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Course 3

Row #	Requested information	Answer
N/A	Course title and number	N/A
N/A	Course instructor	
1	Average number of students enrolled per section	
2	Average number of course sections scheduled in a summer semester	
3	Average number of course sections scheduled in a fall semester	
4	Average number of course sections scheduled in a spring semester	
5	Total number of course sections scheduled in an academic year <i>Add up rows 2-4.</i>	
6	Total number of student section enrollments per academic year <i>Multiply row 1 and row 5.</i>	
7	Original <u>required</u> commercial materials <i>Include each title, author, price for a new copy purchased from either your campus bookstore, the publisher, or Amazon, and a URL to the book showing the price.</i>	
8	Original cost per student section enrollment <i>Add up the cost of all materials in row 7.</i>	
9	Average post-project cost per student section enrollment	

10	Average post-project savings per student section enrollment <i>Subtract row 9 from row 8.</i>	
11	Projected total annual student savings per academic year <i>Multiply row 10 and row 6.</i>	

Course 4

Row #	Requested information	Answer
N/A	Course title and number	
N/A	Course instructor	
1	Average number of students enrolled per section	
2	Average number of course sections scheduled in a summer semester	
3	Average number of course sections scheduled in a fall semester	
4	Average number of course sections scheduled in a spring semester	
5	Total number of course sections scheduled in an academic year <i>Add up rows 2-4.</i>	
6	Total number of student section enrollments per academic year <i>Multiply row 1 and row 5.</i>	
7	Original <u>required</u> commercial materials <i>Include each title, author, price for a new copy purchased from either your campus bookstore, the publisher, or Amazon, and a URL to the book showing the price.</i>	

8	Original cost per student section enrollment <i>Add up the cost of all materials in row 7.</i>	
9	Average post-project cost per student section enrollment	
10	Average post-project savings per student section enrollment <i>Subtract row 9 from row 8.</i>	
11	Projected total annual student savings per academic year <i>Multiply row 10 and row 6.</i>	

If you have more courses to add, copy the table as many times as needed to complete all courses on the grant.

Narrative Section

1. Project Goals

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

Along the years, many academic departments in [Georgia Southern University](#) have accomplished considerable pedagogical improvements through successful ALG projects. Transforming courses to [Open Educational Resources \(OER\)](#) significantly decrease the financial burdens on students [G1] and helps improve increase student's retention by reducing the DFU rates in the offered courses [G2]. In addition, considering OER enables course instructors to be creative with respect to their course designs.

Our plan in this project aims to readjust the compass of one of the major courses in our [IT programs](#) to adopt and contribute to the available OER across the state of Georgia, the nation, and the globe. This plan will help to reduce the cost of textbooks to zero and at the same time, it will help implementing pedagogical transformation to create an effective and sustainable teaching framework based on the OER with a view to simplify the learning process while increasing the classroom learning and student success rates with special emphasis on students of special minorities [G3]. This teaching framework will also bring all course sections together by aligning their scopes and unifying their resources, schedules, and learning objectives. It will also allow incorporating state-of-the-art and benchmark practices in the field of operating and computing platforms.

To fulfill our plan, this project aims to achieve the following goals.

- Avoiding commercial textbooks associated with multiple course sections and adopting available materials in [OpenALG](#), [GALILEO](#), [University System of Georgia \(USG\)](#) libraries, and free on the web at no cost to students.
- Adapting and/or creating new OER for selective or complementary learning topics introduced as needed to integrate the course learning objectives depending on the investigated scope and quality of the available OER materials.
- Creating voice-supported PowerPoint slides for each module in the course.
- Creating a question bank and a set of assessment documents and coursework based on the new course design.
- Create a navigational website for course learning materials and make it publicly available through a free public domain in addition to OpenALG and GALILEO Open Learning Materials repository.
- Fostering a plan for assuring the sustainability of course learning materials through future years with active and timely maintenance and updating process.

References

- G1. Christina Hendricks, Stefan A. Reinsberg, and Georg Rieger, "The Adoption of an Open Textbook in a Large Physics Course: An Analysis of Cost, Outcomes, Use, and Perceptions", International Review of Research in Open and Distributed Learning, 2017. <http://www.irrodl.org/index.php/irrodl/article/view/3006/4220>.
- G2. Nicholas B. Colvard, C. Edward Watson, and Hyojin Park, "The Impact of Open Educational Resources on Various Student Success Metrics", International Journal of Teaching and Learning in Higher Education, 2018. <https://www.isetl.org/ijtlhe/>.
- G3. Amy T. Nusbaum*, Carrie Cuttler and Samantha Swindell, "Open Educational Resources as a Tool for Educational Equity: Evidence from an Introductory Psychology Class", Frontiers in Education, 2020. <https://www.frontiersin.org/articles/10.3389/feduc.2019.00152/full>.

2. Statement of Transformation

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.*

At Georgia Southern University, the [Information Technology department](#) offers undergraduate and graduate degree programs with a few concentrations both online and face-to-face in three campuses across Georgia. Through a highly dynamic and fast-paced environment, hundreds of students are graduating every year with hands-on skills in cutting-edge technologies and

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contributing to the development of the state of Georgia, the nation, and the whole world. Our academic programs are actively upgraded and improved to ensure the implementation of state-of-the-art practice in teaching and pedagogical delivery.

The IT 2530: “Operating Systems” is a core course in two major degree programs offered online and face-to-face in Statesboro and Armstrong campuses. While many students in this course are from Georgia, the majority are from other states or different countries with diverse backgrounds and ethnicities. Around 8 sections of the course are offered by at least two faculty every year to fulfill the high demand of the course enrollment. The course learning covers the principles of system management with emphasis on contemporary operating and computing platforms. Due to the multiple course sections, different instruction methods and content structures are adopted in different sections. Thus, course sections are embroiled with some deviations from, the main course description, schedule and timelines, assessment methods and deliverables, learning objectives, lecture notes, and textbooks. In addition to transforming this course and all its sections into the OER option, our plan involves readjusting the wheel by aligning all sections to a new course design and also unifying the course schedules and learning objectives.

Inspired by hundreds of successful ALG projects, a wave of revamping is emerging in our department to adopt OER in our courses. In this project, we propose to align the course with no-cost learning materials and utilize OER and other free resources available in the libraries of USG and other national institutes. This project will also introduce pedagogical transformation to construct a new course structure and framework that conforms with the information Technology department vision and the quality standards of the [Academic Success Center \(ASC\)](#) of Georgia Southern University. In addition to enabling cost-free learning, the new course resources will be available for students through a user-friendly menu-based navigational structure on the Web. A complete list of course modules and their resources will be organized in hierarchical structure that includes reading lists and materials, external links to OER and other free resources, voice-enabled presentation slides, question bank, and sample assessment materials and resources for each module.

This project is expected to simplify the learning process and increase classroom learning and student success rates. It will help extend course learning to incorporate cutting-edge technology and benchmark practices in the field of operating and computing platforms to enrich student capabilities and signify their future contribution to the IT workforce for the state of Georgia. This teaching framework will also bring all course sections together by aligning their scopes and unifying their resources, schedules, and learning objectives. This project will help disseminate our teaching resources, contribute to the literature, and benefit other learners across the state of Georgia. Other Instructors will also be able to utilize the published media to teach similar courses and/or provide professional trainings. Through this project we also plan to improve teaching materials quality and consider web accessibility measures in all course documentations. Our main impacts of this project are summarized as follows.

- Lower the overall student education debts by reducing the cost of textbooks in all course sections to zero.
- Revamping the course learning materials by utilizing OER and other freely available materials across the state of Georgia and the globe.
- Enriching the course with the latest benchmark practices and incorporating the state-of-the-art operating and computing platforms in the course materials.
- Aligning course sections to a unique schedule and timeline directed by our design goals, the department vision, and the course description specified in the program curriculum.
- Unifying course learning outcomes and assessment methods of all sections by creating a question bank and a set of assessment samples and coursework based on the new course design.

In addition, since this is the first OER transformation project proposal in the IT department of Georgia Southern University, it is expected to ignite more projects for pedagogical transformation in the future.

3. Action Plan

Transformation Grant projects are 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. This section must include:

- *The role(s) of each team member in the project with details as to the major tasks team members will complete, with an estimate of how long each task will take (e.g., number of hours).*
- *A review of existing open, no-cost, and/or low-cost course materials for the course(s).*
- *The plan for the selection, adoption, adaptation, and/or creation of new course materials (if applicable). Include plans for open licensing and plans for making your materials accessible.*
- *The plan for redesigning your course(s), including any instructional design work, curriculum alignment, course accessibility changes, etc.*
- *The plan for providing open access to the new materials. Affordable Learning Georgia will host any newly created materials in our repository; please indicate if you are using other platforms in addition to the repository to host them.*

The IT 2530 course covers the foundational and practical hands-on operating system design and management principals and techniques. It includes class lectures, lab work, exams and quizzes, discussion boards, and lab practice exams. The course description is stated as follows: “Principles of the management of memory, processors, processes and deadlocks, synchronization of computing tasks, files, devices, and systems. Principles of network organization and network operating systems. Analysis and evaluation of comparative operating systems.”.

Current course learning outcomes are

- **Identify** and describe the key components and features of an operating system.

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- **Describe** the structure and the methods used to implement the various components of operating system.
- **Practice** using various operating system management techniques.

Currently the course is taught by two different instructors (Dr. Atef Mohamed and Dr. Christopher Kadlec) in multiple sections per academic year. The course contents slightly differ by each instructor making two different styles or flavors of the course. Due to limiting the course topics to the adopted textbooks, the current modules in both styles don't really match the specified course description but the curriculum designers in the IT department. The major list of course topics is as follows.

- Module 1. Introduction to Computer Systems.
- Module 2. Operating Systems Overview
- Module 3. Operating System Processes
- Module 4. User and Kernel Thread Management
- Module 5. CPU Scheduling in Single and Multiprocessor Systems
- Module 6. Process Synchronization and Communication
- Module 7. Deadlocks and Starvation
- Module 8. Main Memory Management
- Module 9. Virtual Memory
- Module 10. I/O Systems and Device Management
- Module 11. Disk scheduling and RAID systems
- Module 12. File system Management
- Module 13. Virtual Machines
- Module 14. Embedded systems
- Module 15. Ethics in system administration

This list of topics needs to be revamped by considering other topics including distributed systems, cloud systems, networked systems, data centers, DevOps, biometrics, and system security. These new topics will be added as complete new modules, parts of modules, lab practice, or other method that allows integrating new technologies to the course learning. Currently, students perform weekly lab assignments to learn hands-on skills in multiple operating systems, e.g., CentOS, Ubuntu, and Windows. Example lab assignments include:

- CentOS Server installation
- Ubuntu workstation installation
- Disk partitioning and file system management
- Using BASH shell
- Monitoring processes
- Accessibility technologies
- User and group management
- In addition to many other, system administration tasks.

Our approach to the action plan of this project involves listing the main project scope elements (e.g., material type, module, plan), the main general activities, and then specify the activities per project scope for each team member with expected time to accomplish each activity. In the following, we list the roles of team members including our plan for the selection, adoption, adaptation, and/or creation of new course materials. We also describe our review of existing OER and describe our plan for course design and material publishing.

List of project scope element hierarchy

- Project
 - Course
 - Modules (1 to 15)
 - Reading materials
 - Instructor notations
 - Quizzes and Exams
 - Lab exercises
 - Reflective discussions
 - Course project
 - Complementary course documentation materials (e.g., Syllabus, D2L)

Our plan for course redesign includes a few goals as stated earlier in section 2. To achieve these goals, we consider the following activities. These activities will be implemented in a timeline (described later in section 5) that allows accomplishing all the specified goals. The different activities are grouped based on the corresponding implementation phase as described below.

Task ID: Activity name - *Activity Details*

➤ Initial Course Restructuring and project kickoff

In this phase, the course instructors will specify initial list of topics and learning outcomes. The project leader will also develop some documentation to control the workflow in the project. The tasks to be conducted in this phase include the following.

Task 1: Align course learning objectives to the new design goals and teaching plan.

Task 2: Decide course topics to meet the required learning objectives.

Task 3: Set-up and kick-off the plan.

- Prepare list of topics and requirements for each topic with check-sheets.
- Define the basic quality requirements of the required OER.
- Create shared repositories to organize the collected OER and free materials.

➤ Collecting OER resources

In this phase, OER resources will be collected and evaluated for adequacy and quality. Tasks are as follows.

Task 4: Search available resources.

Task 5: Evaluate resources according to the basic quality requirements.

➤ **Implement the course redesign**

This is the longest phase of all, and in it, the course designers will decide on selecting, updating, or creating all the required materials. The instructional designers will create course materials by distributing the modules among them based on the strength and expertise of each designer. The overall expertise of the team members will cover all the required modules in system design, administration, and security protection.

Main tasks are:

Task 6: Decide on selected resources.

Task 7: Decide on updating or creation OER as needed

Task 8: Design and develop the required OER resources.

➤ **Reviewing and evaluating course draft**

Here the created course materials will be thoroughly reviewed for completeness, integration, correctness, usability, and accessibility. Team members will be performing the following main tasks.

Task 9: Instruction evaluation: *check completeness and integration of course materials.*

Task 10: Correctness evaluation: *check quiz and exams, English, etc.*

Task 11: Usability evaluation: *check OER representation, structure, and accessibility.*

Task 12: Review proposed updates in Tasks 9, 10, and 11 and implement them.

➤ **Web content design and publishing of the course OER materials**

Publishing of the course materials will be considered in this phase. Web contents will be created and loaded into [OpenALG](#) library, [GALILEO](#) Open Learning Materials repository, in addition to a public domain such as [Google Sites](#) or [GitHub](#).

Task 13: Design and create webpages and menu navigation guide for course topics.

Task 14: Publish the course materials in OpenALG, GALILEO, and another public domain.

Task 15: Prepare and review the project deliverables and publish the course OER.

➤ **Course teaching and validation**

The course will be taught and validated during the Spring 2022 semester. Local D2L webpages will be created (*assumed in 0 time in this plan*)

Task 16: Create D2L course material

Task 17: Teach the course in multiple sections

Task 18: Provide feedback and perform final updates.

List of responsibilities by team member and timelines

Team member	Role(s)	Responsibilities (<i>Project Scope</i>)	Expected # Hours
Dr. Atef Mohamed	<ul style="list-style-type: none"> ➤ Project Lead ➤ Subject matter expert ➤ Instructional designer ➤ Instructor of record 	➤ Task 1 (Course scope)	➤ 5
		➤ Task 2 (Course)	➤ 5
		➤ Task 3 (Project)	➤ 5
		➤ Task 6 (Modules 1-7)	➤ 10
		➤ Task 7 (Modules 1-7)	➤ 20
		➤ Task 8 (Modules 1-7)	➤ 75
		➤ Task 13 (Course)	➤ 30
		➤ Task 14 (Project)	➤ 5
		➤ Task 16 (Modules 1-8)	➤ 0
		➤ Task 17 (Modules 1-8)	➤ 0
		➤ Task 18 (Modules 1-8)	➤ 16
		Subtotal hours	171 hours
Dr. Chris Kadlec	<ul style="list-style-type: none"> ➤ Subject matter expert ➤ Instructional designer ➤ Instructor of record 	➤ Task 1 (Course)	➤ 5
		➤ Task 2 (Course)	➤ 5
		➤ Task 6 (Modules 8-13)	➤ 10
		➤ Task 7 (Modules 8-13)	➤ 20
		➤ Task 8 (Modules 8-13)	➤ 75
		➤ Task 16 (Modules 9-15)	➤ 0
		➤ Task 17 (Modules 9-15)	➤ 0
		➤ Task 18 (Modules 9-15)	➤ 16
		Subtotal hours	131 hours
Dr. Hossain Shahriar	<ul style="list-style-type: none"> ➤ Subject matter expert ➤ Instructional designer ➤ Quality assurance 	➤ Task 4 (Course project)	➤ 5
		➤ Task 5 (Course)	➤ 16
		➤ Task 6 (Modules 14-15)	➤ 5
		➤ Task 7 (Modules 14-15)	➤ 10
		➤ Task 8 (Modules 14-15)	➤ 20
		➤ Task 9 (Course)	➤ 20
		➤ Task 12 (Course)	➤ 20

		➤ Task 15 (Course)	➤ 24
		Subtotal hours	120 hours
MS. Deborah Walker	➤ Instructional design expert	➤ Task 9 (Course) ➤ Task 11 (Course)	➤ 16 ➤ 16
		Subtotal hours	32 hours
MS. Dawn Cannon-Rech	➤ OER expert	➤ Task 4 (Course)	➤ 24
		Subtotal hours	24 hours
Student(s)	➤ Quality assurance	➤ Task 10 (Course) ➤ Task 11 (Course)	➤ 144 ➤ 24
		Subtotal hours	168 hours

Total: 646 hours.

As initial effort towards our project goals, we investigated the possibility of OER and other free materials availability on the Web. We searched [USG Libraries](#) [R1], [OpenALG](#) [R2], and [GALILEO](#) OER repository [R3]. We also looked at similar programs in other states, such as Open Educational Resources Network ([Open Washington](#)) [R4]. Our initial research also included [local OER at Georgia Southern](#) University [R5], industry free libraries such [Microsoft MSDN](#) [R6], [IBM Skills](#) [R7]. Numerous and motivating resources related to our course topics were found in many of these libraries. Moreover, useful text materials that can partially cover some topics were found in other open libraries such [OpenStax](#) [R8], [LibreTexts](#) [R9], [OER Commons](#) [R10], [JSTOR](#) [R11], [wikibooks](#) [R12], [BookBoon](#) [R13]. Free course resources were also found on [Open Course Library](#) [R14], [Open Yale Courses](#) [R15], [Florida Orange Grove](#) [R16]. Furthermore, multimedia video and image resources are available on the [Library of Congress](#) [R17], [Duke Digital Repositories](#) [R18], [Ted](#) [R19], [Youtube](#) [R20], [Open Video Project](#) [R21].

Only one ALG project was awarded for similar course from Columbus State University (CSU) [R22] in round 18, the final materials of this project are not available yet and by checking the course information at the CSU site, we found that their course is designed for computer science students not information technology, and thus it may only match our current course design by around 15%-25% of the contents. Additionally, their course is more foundational and design-oriented than our hands-on course that focuses on contemporary systems of communication and computing such as DevOps, clouds, virtual machines, embedded systems, networked systems, and data centers. Some other ALG awardee projects include useful information that can contribute to our new course design [R23]. To sum up, our initial search concludes with

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confidence that our project will succeed to find and use available OER and other free materials on the Web.

References

- R1. https://www.affordablelearninggeorgia.org/library_resources/usg_libraries
- R2. <https://alg.manifoldapp.org/>
- R3. <https://www.galileo.usg.edu/>
- R4. <https://www.openwa.org/find-oer/>
- R5. <https://georgiasouthern.libguides.com/nocostlowcost/locatingOER>
- R6. <https://docs.microsoft.com/en-us/windows/win32/system-services>
- R7. <https://www.ibm.com/skills/students/>
- R8. <https://openstax.org/subjects>
- R9. <https://libretexts.org/>
- R10. <https://www.oercommons.org/>
- R11. <https://about.jstor.org/oa-and-free/>
- R12. https://en.wikibooks.org/wiki/Main_Page
- R13. <https://bookboon.com/>
- R14. <http://opencourselibrary.org/>
- R15. <https://oyc.yale.edu/>
- R16. <https://www.floridashines.org/orange-grove>
- R17. <https://www.loc.gov/free-to-use/>
- R18. <https://repository.duke.edu/dc>
- R19. <https://www.ted.com/>
- R20. <https://www.youtube.com/>
- R21. <https://open-video.org/index.php>
- R22. <https://www.affordablelearninggeorgia.org/documents/560-proposal.docx>
- R23. <https://alg.manifoldapp.org/projects/it-5423-computer-networks-and-system-administration>

4. Quantitative and Qualitative Measures

All 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.*

To measure the success of this project, we will conduct a number of surveys based on student's performance, feedback, and retention. According to our best knowledge, we don't need IRB approval to present research information about student results. However, we plan to apply for

the IRB later to go through the regular process of utilizing student's survey results at Georgia Southern University.

- Student performance will be measured and compared to the previous semester and results will be aggregated as the percentage of students obtained above 80% in the whole course grade. Results will be collected after the Spring 2022 semester.
- Student satisfaction will be measured by using a student online survey on Qualtrics that include a set of evaluation scale questions about the course materials quality. This survey will allow students to describe the course materials efficacy for learning, sufficiency, agility, and other factors. A number of quantitative satisfaction measures will be calculated as the average of all student responses to these questions.
- Student retention will be measured as the difference between the Fall 2021 and Spring 2022 semesters. We will measure, three factors:
 - The change in the percentage of course dropping.
 - The change in the percentage of course withdrawing.
 - The change in the percentage of course failing.

In addition to these quantitative measures, our survey will include comment sections for students to suggest updates or provide feedback about the new course materials. Student comments will also provide very important information on how they find the course learning based on the new design.

5. Timeline

This section allows teams to describe how the project will progress from its inception to the Final Report. Please provide a list of major milestones, events, and deadlines, aligned with your Action Plan and the final semester of your project. Include the submission of your Final Report in this list.

Do not put this timeline in the form of a table, as it will not transfer well to Google Forms for the official application—a bullet-point list is acceptable.

Our project will start from day 1 after the Kickoff meeting. The following list describes the project progress along the interval from the start to the end of the project. Notice, some intervals will overlap due to the availability of other team members to do different tasks.

◆ 4/1/2021 through 4/15/2021: **Initial Course Restructuring and Project Kickoff.**

In this phase, the course instructors and curriculum designers in the IT department will arrange some meetings to decide the initial course topics or modules, learning outcomes. The project leader will also create some check-sheets for each module to help search for suitable OER resources. Quality measures of the required materials will be also specified and documented.

◆ 4/16/2021 through 6/15/2021: **Collecting OER resources.**

In this phase, OER resources will be collected and sorted in a folder structure associated with the topic list and module requirements (as specified above in project scope element table). In parallel to the OER collection, initial evaluation to the adequacy and quality of the collected materials to each module requirements. Near the end of this phase, a report will be generated to describe the list of available resources as well as the incomplete or missing topics or components.

◆ 5/30/2021 through 12/31/2021: **Implementing the course redesign**

The course designers will work on the collected materials to decide whether they will be selected or not. They will also decide whether they will need to update any material or use it as is. Finally, they will compile a complete list of resources for every module to fulfill the required course readings, testing, lab work, and project work. In this stage, we will utilize Ubuntu server with top-edge configurations to design lab-work for the course modules. The server will be also used for learning and experimental purposes of new technologies that will be considered in the course. The faculty will also create any missing materials to complete the course work set. All newly created materials will be created under a Creative Commons Attribution License (CC BY). This phase will take around 340 hours of work by 3 faculty, and clearly, this is the longest phase interval, and it will overlap with other phases.

◆ 8/15/2021 through 12/30/2021: **Reviewing and Evaluating course draft**

Reviewers will start with the available modules and complete the revisions as modules are getting completed by the faculty until the end of Fall 2021. In this phase, the completed course materials will be reviewed from different perspectives. The course designers will check the completeness and integration of all materials and modules. A student (or two) with suitable background and previous experience in the course will also review it for correctness by reading all the materials and taking all quizzes and exams. Usability evaluation will be also conducted by the center of academic success to assure the compliance of the course quality to the university standards. This will also assure the accessibility requirements are considered in all documents and designs. Recommendations from all reviewers will be provided to the project leader to review and implement the required updates.

◆ 1/15/2022 through 5/15/2022: **Teaching and Validating the course material**

The course will be taught for the first time after revamping and it will also be validated for efficiency in classroom, impact on student's learning, and success rates. Local D2L webpages will be created to serve the local university students.

◆ 8/15/2021 through 5/15/2022: **Creating Web contents and publishing**

Navigational structure of the course learning guide, reading materials, documentations, and other contents will be compiled into webpages and will be deployed on some free public domain, e.g., [Google Sites](#) or [GitHub](#). These public contents will be also reviewed as part of phase 4 to make sure that all webpages are designed by considering the accessibility requirements as specified by Georgia Southern University [Student Accessibility Resource Center \(SARC\)](#). Near the end of this phase, the course materials will be ready and available for publishing in OpenALG and the GALILEO Open Learning Materials repository as new OER resource.

6. Budget Guide

Please enter your project's budget below. Include personnel and projected expenses, keeping in mind that this fund the estimated time in your Action Plan. The maximum amounts for the award are as follows:

- \$5,000 maximum per team member for salary, course release, travel, etc.
- Additional project expenses allowed, but must be adequately justified in this section
- \$30,000 maximum total award per grant

Do not put this budget in the form of a table, as it will not transfer well to Google Forms for the official application—a bullet-point list is acceptable. Please keep all funding guidelines from the corresponding RFP in mind.

The budget for this project includes full course development payments to three faculty: Drs Atef Mohamed, Chris Kadlec, and Hossain Shahriar. The budget also includes a payment to one or two students for a total of 168 working hours based on the rate: \$12.00 per hour. Efforts for local D2L webpages and similar activities are excluded from this budget. Equipment cost is added to the budget to purchase a top-edge workstation with Ubuntu system to allow the design of Lab-work for the course modules. The Ubuntu server will be also used for learning and experimental purposes of new technologies that will be considered in the course. The equipment also includes a document camera and a Tablet to help creating multimedia teaching materials.

The budget information for this project is listed as follows.

- | | |
|---|-----------------|
| 1. Individual Expense (Salary/Fringe Benefits): | \$12,170 |
| • Dr. Atef Mohamed, Project Lead, Developer, and Instructor of Record | |
| o \$5,000 (\$3,882 of salary + \$1,118 of fringe benefits) | |
| • Dr. Christopher Kadlec, Developer, and Instructor of Record | |
| o \$5,000 (\$3,882 of salary + \$1,118 of fringe benefits) | |
| • Student, \$12/hour * 168 hours | |
| o \$2,170 (\$2,016 of salary + \$154 of fringe benefits) | |
| 2. Equipment (Ubuntu-Lambda workstation, EPSON DC-21, and a Tablet): | \$8,900 |

3. Dr. Hossain Shahriar (Kennesaw State University - subaward), Subject Matter Expert and Instructional Designer: \$5,000

Total Budget requested: \$26,070.00

7. Sustainability Plan

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*
- *The commitment of the department(s) or institution(s) to continue the use of affordable 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*

This project is expected to continue providing support to the IT 2530 course at Georgia Southern and to other learners and instructors outside Georgia Southern. The course materials will stand as a concrete evidence of our contribution to science, education, and community. With all excitement, we will take care of the resources and continuously sustain and renew them to suit the future demands of information technology. Our plan for sustainability includes a number of activities that will be repeated along the years in timely schedules and also as needed. The goals of these activities are to make sure the resources are available for access and that they are up-to-date and aligned to the latest version of our IT 2530 course taught at Georgia Southern University. This will allow future Georgia Southern students to use these materials as part of their course learning and allow others to find the state-of-the-art operating system technology available in our course OER materials. Activities will include the following:

- Twice a year, in July and December, we will check the published materials to make sure the OER resources used in all modules are still available. If they are not available, we will patch the course with a different OER whether adopted or created.
- The links in all webpages will be reviewed once a year in July to check for any broken links, unavailable multimedia resource, or other errors that may result from the aging of the published materials.
- Occasionally, we will update some resources to reflect possible future update to the course learning objectives or to improve the offered course materials as we find necessary.

Once the materials are complete, the project may expand to include ITW2530, an online offering of a similar course.

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Creative Commons Terms

I understand that any new materials or revisions created with ALG funding will, by default, be made available to the public under a Creative Commons Attribution License (CC-BY), with exceptions for modifications of pre-existing resources with a more restrictive license.

Accessibility Terms

I understand that any new materials or revisions created with Affordable Learning Georgia funding must be developed in compliance with the specific accessibility standards defined in the [Request for Proposals](#).

Letter of Support

The Department Chair from the corresponding project, or the Department Chair's direct report such as the Dean or Provost, must provide a signed Letter of Support for the project. This letter should acknowledge the following:

- *The department will provide support for fund disbursement in correspondence with the Grants/Business Office.*
- *The department approves of the work on the proposal by the applicant(s).*
- *The department acknowledges the sustainability of the use of these affordable resources after the grant work is complete.*

In the case of multi-institutional affiliations, all participants' institutions must provide a letter of support.

Please provide the name and title of the department chair (or other administrator) who provided you with the Letter of Support.

Dr. Yiming Ji
Professor and Chair
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Georgia Southern University
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Dr. Rebecca H. Rutherford
Department Chair, IT and Professor of IT
College of Computing & Software Engineering Kennesaw State University
brutherf@kennesaw.edu
470-578-7399.

Grants or Business Office Letter of Acknowledgment

Institutional Grants/Business Offices will be responsible for fund disbursement, often in correspondence with the Department Chair, including expense and travel reimbursement. Applicants will need to provide a short Letter of Acknowledgment stating that the Grants/Business Office knows about the applicant's intent to apply for an Affordable Materials Grant. Either the Department Chair or the Project Lead can work with the Grants/Business Office to get this signed letter.

In the case of multi-institutional affiliations, all participants' institutions must provide a letter of acknowledgment.

Please provide the name and title of the grants or business office representative who provided you with the Letter of Acknowledgment.

Bruxanne Hein, Executive Director
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