Affordable Materials Grants, Round 21:

Continuous Improvement Grants

(Spring 2022-Spring 2023)

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, including uploading this document.
* The only way to submit the official proposal is through the Google Form. The link to the online application is on the [Round 21 RFP Page](https://www.affordablelearninggeorgia.org/about/rfp_r21).
* The italic text provided below is meant for clarifications and can be deleted.

The Round 21 Kickoff will include an asynchronous training module, required for all team members to complete, followed by the synchronous Kickoff Meeting on March 25, 2022 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 leave the submitter blank.*

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| --- | --- |
| Requested information | Answer |
| Institution | Kennesaw State University |
| Applicant name | Yong Shi |
| Applicant email  | Yshi5@kennesaw.edu |
| Applicant position/title | Associate Professor |
| Submitter name  | *The same as Above* |
| Submitter email  | *The same as Above* |
| Submitter position/title | *The same as Above* |

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.

|  |  |  |
| --- | --- | --- |
| Team member | Name | Email address |
| Team member 1 |  |  |
| Team member 2 |  |  |
| Team member 3 |  |  |
| Team member 4 |  |  |
| Team member 5 |  |  |

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

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# Project Information

| Requested information | Answer |
| --- | --- |
| Type of Project | * ***Revision of open educational resources (OER) used in existing courses***

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| Requested Amount of Funding*$10,000 maximum total award per grant* | *$2,800* |
| Course Titles and Course Numbers | CS 7125 Cloud Computing |
| Final Semester of Project | * **Spring 2023**
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| Currently Existing Resource(s) to be Revised/Ancillaries Created*Please provide a title and web address (URL) to each of the currently existing resources that you are revising, creating new ancillary materials for, or replacing. If replacing, please include a title and web address (URL) to the new OER as well.* | https://ksuweb.kennesaw.edu/~yshi5/CloudComputing7125/CloudComputing.html |

# Project Goals

*In at least one paragraph, describe your project’s goals and what materials will be created or revised.*

As a remote on-demand resource sharing platform, Cloud has changed everybody’s life. It is important for our students to learn the knowledge of Cloud and Cloud Computing. As the coordinator of this course, the PI has been teaching CS 7125 Cloud Computing regularly as a major elective graduate course in the Department of Computer Science at Kennesaw State University over the past years. In this course, we introduce the background of Cloud and Cloud Computing, discuss different layers of Cloud Computing such as infrastructure as a Service (IaaS), Platform-as-a-Service (PaaS), Software as a Service (SaaS), Network as a Service, Security as a Service, etc. Key components of AWS, Salesforce, Google Cloud and Microsoft Azure are also discussed. Since the research and technology of Cloud Computing are changing at a fast pace, it is our responsibility to continue adding more Cloud Computing related material into this course.

To meet the goal of Affordable Learning Georgia for continuous improvement, the main purpose of this project is to continuously improve the course material of CS 7125, with introduction of the newest technologies and tools such as website hosting in Cloud, file sharing system in Cloud, visualization in Cloud, data management and data transfer, AI, machine learning, and deep learning technologies applied in Cloud, Cloud SQL, health care using Cloud, Internet of Things (IoT) and Cloud, etc. Furthermore, as a graduate course, we will also add more research components in which students will study recently published research papers in top journals and conferences such as IEEE Transactions on Cloud Computing, and discuss research topics related to Cloud such as power consumption model and energy-performance aware consolidation technique for Cloud datacenters, security assessment models for Cloud IaaS layer, analysis of workflow task execution time in Cloud, etc. We have already successfully designed this course as textbook-free in a project supported by ALG round 12 grant (the PI, Yong Shi, was the project lead). This new project is designed to develop additional open source materials such as new content slides, new mid-term and final projects, and assignments related to new cloud computing research and technologies.­­­­­­

The PI will design the new content that will be mapped into the course learning outcome and consistent with the current course content. The new projects and assignments, combined with the original projects and assignments, will give students more comprehensive and deeper knowledge and experience in cloud computing, helping them become more competitive for the job market and higher education. They will also be designed with the current industrial trends in mind, to help students keep up with the fast-paced cloud computing field. We will share all the content through D2L and other open source channels.

# Action Plan

*Describe the tasks needed to complete the project in as much detail as possible. If this application has more than one team member, include the major roles for each person and which tasks this role is assigned. Estimate the amount of time (e.g. number of hours) each task will take. Include plans for open licensing and plans for making your materials accessible. Indicate if you are using other platforms in addition to the repository to host your created materials.*

Dr. Yong Shi, the principal investigator, will conduct research on new cloud technologies and development, prepare new course materials, collect and assess student performance and feedback, and write a final report.

Dr. Yong Shi will lead all the aspects of the CS7125 Cloud Computing course materials of this Continuous Improvement grant as follows:

* Conduct research in various aspects of cloud to enhance the course content:
	+ Website hosting in Cloud for efficient website offering using Cloud resources
	+ File sharing system in Cloud for resource sharing
	+ Visualization in Cloud for automation
	+ Data management and data transfer for high throughput and low latency
	+ AI, machine learning, and deep learning technologies applied in Cloud
	+ Healthcare using Cloud
	+ Internet of Things (IoT) and Cloud
	+ Power consumption model and energy-performance aware consolidation technique for Cloud datacenters
	+ Security assessment models for Infrastructure as a Service layer
	+ Analysis of workflow task execution time in Cloud

*[Estimated Hours: 30 hours – March & April 2022]*

* Develop new course content, create new learning modules, design new student work:
	+ Revise syllabus to add new course materials, and map them to course learning outcomes and student learning outcomes
	+ Make new lecture slides to introduce new content in cloud
	+ Design learning modules to contain the new content
	+ Create new assignments, projects, quizzes, and exams that contain new course content. Sample of potential new projects and assignments are:
		- Deep learning project in Google Cloud
		- CloudFront in AWS
		- Data Management in Microsoft Azure
		- Cloud Simulation for Task Scheduling Process

*[Estimated Hours: 50 hours – May through August 2022]*

* Prepare for the course with integration of new course content into KSU's learning platform D2L

*[Estimated Hours: 20 hours – August 2022]*

* Create new periodic surveys during the semester, collect student feedback, and modify course content dynamically

*[Estimated Hours: 15 hours – August through December 2022]*

* Analyze and compare student performance before and after the introduction of new course content by evaluating quizzes, assignments, projects, and exams.

*[Estimated Hours: 10 hours – December 2022]*

* Analyze the student feedback by the end of semester to gain insight and understanding of students' overall opinion of the new course content

*[Estimated Hours: 5 hours – December 2022]*

* Complete the final report for this project

*[Estimated Hours: 10 hours – January – Spring2023]*

# Timeline

*Provide a project timeline aligned with the action plan above. Include major milestones and deadlines, keeping in mind your selected Final Semester.*

**Milestone\_1 – Spring 2022**

March & April 2022: Conduct research in various aspects of cloud to enhance the course content

Milestone deliverable: Yong Shi, PI

**Milestone\_2 – Summer 2022**

May 2022 through August 2022: Revise syllabus, add new course materials, and map them to course learning outcomes and student learning outcomes

Milestone deliverable: Yong Shi, PI

**Milestone\_3 – Fall 2022**

September-December 2022: Prepare for the course with integration of new course content into KSU's learning platform D2L, assess student performance, and collect student feedback

Milestone deliverable: Yong Shi, PI

**Milestone\_4 – Spring 2023**

January – Spring 2023: Complete the final report for this project.

Milestone deliverable: Yong Shi, PI

# Budget

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

* *$2,000 maximum per team member for salary, course release, travel, etc.*
* *Additional project expenses allowed, but must be adequately justified in this section*
* *$10,000 maximum total award per grant*
* **1. Personal**

Course Developer, Dr. Yong Shi, PI will receive 2022 Summer pay and/or other items below for the amount of $2,000

* **2. Other** - Travel/Equipment (conference registrations fees, computer equipment, etc.) for the amount of $800
* **3. Total $2,800**

# Creative Commons Terms

*I understand that any new materials or revisions created with Affordable Learning Georgia 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 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.*

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| *Rebecca Rutherfoord, Chair**Department of Computer Science* *Kennesaw State University* |

# Grants or Business Office Acknowledgment Form

*Institutional Grants/Business Offices will be responsible for fund disbursement, often in correspondence with the Department Chair, including expense and travel reimbursement. All applicants will need to provide a signed Acknowledgement Form, the template for which is linked on the RFP page, 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 form.*

*In the case of multi-institutional affiliations, all participants’ institutions must provide this form.*

*Please provide the name and title of the grants or business office representative who provided you with the acknowledgement form.*

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| *Kimberly Hunt**Grants and Contract Manager**Office of Research**Kennesaw State University* |