

# OER Revisions and Ancillary Materials Creation Mini-Grant Application

Affordable Learning Georgia aims to support the sustainability of previous Textbook Transformation Grants implementations through revisions of created open educational resources or the creation of new ancillary materials for existing OER. Individuals or teams who would like to apply for an OER Revisions or Ancillary Materials Creation. Mini-grant participants do not need to be the original creators of the resource(s). While we welcome original authors to revise their original materials, the nature of open licenses allows for the revision and remixing of OER materials by anyone as long as the terms of the license are adhered to.

The final deliverable for this category is the revised or newly-created materials as proposed in the application, which will be hosted through GALILEO Open Learning Materials. All revised or newly-created materials will be made available to the public under a Creative Commons Attribution License (CC-BY), unless the original materials were under a more restrictive license such as the inclusion of SA (Share-Alike) or NC (Non-Commercial).

For the purposes of this grant, we define revision as the major improvement of a resource through updates for accuracy, accessibility, clarity, design, and formatting. We define ancillary materials as any materials created to substantially support the instruction of a course using an existing open educational resource(s).

## Applicant Name \*

Sandip Das

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## Applicant Position \*

Assistant Professor

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## Applicant Institution \*

Kennesaw State University

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## Applicant Email Address \*

Please use your institutional email address.

sdas2@kennesaw.edu

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## Other Team Members

Individuals can apply for mini-grants; a team is not required. If you do want to add team members to your grant, please provide the names and email addresses here.

Walter Thain - wthain@kennesaw.edu

Sheila Hill - sdoneho1@kennesaw.edu

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## Type of Project \*

Revision of pre-existing OER

Creation of ancillaries for pre-existing OER

Other: .....

## Final Semester of the Project \*

This is the semester in which the materials created/revised will be completed.

Fall 2019

Spring 2020

## Proposed Grant Funding Amount: \*

This is the total (in a dollar amount) of funding you are requesting for the mini-grant. There is a maximum of \$4800, with a maximum of \$2000 per team member and \$800 for project expenses.

\$4,800

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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 either revising or creating new ancillary materials for below.

Title: Engineering Electronics Lab Manuals

Web Address:

<https://www.dropbox.com/sh/83f1mir98wcnu35/AAB5yDGCm9qawAdjH5sTei4ra?dl=0>

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## Project Description \*

In at least one paragraph, describe your project's goals and deliverables.

The primary goal of this project is to improve the currently existing laboratory manuals for the junior-level course, Engineering Electronics (EE 3401), which is required for students in three different degree programs at Kennesaw State University - Electrical Engineering, Mechatronics Engineering, and Computer Engineering. The current manual developed by KSU faculty is provided to students in electronic PDF document format, which saves students money by eliminating the need to purchase a pre-printed paper manual from the publisher; however, substantial improvement of the existing lab materials are required to improve quality, in-lab efficiency, student learning experience, learning outcomes and competency. In this project, we will transform the existing lab manuals for improved readability by coherent formatting, introducing interactive links, make them web-accessible, integrate pre-lab simulation exercises and complement each lab exercise with a short video tutorial. In addition, we will add a new lab exercise to complete the current manual and create detailed video tutorials to help with pre-lab SPICE simulations and post-lab data analysis techniques using MATLAB. At present, students submit either electronic or paper-based lab reports, depending on the instructor's preference. The newly designed manual will have integrated electronic forms for experimental data entry and data analysis. This will help reduce student printing costs and in-lab efficiency, so students can complete experiments in a timelier manner, and streamline the electronic report preparation and submission process. This effort will benefit approximately 300 students taking this course every year at KSU and many others at other USG institutions.

The proposed improvements for this project include:

Task 1. Make the instruction files interactive with active hyperlinks, in-lab electronic data entry, and data analysis applications. Develop a new lab exercise based on MOSFET amplifiers.

Task 2. Develop and integrate pre-lab simulation exercises for 8 labs. Make lab manuals web-accessible.

Task 3. Create short instructional videos (with Closed Captions) for the lab experiments that demonstrate preferred measurement and circuit construction techniques and provide helpful tips to avoid frequently encountered issues by students.

Task 4. Create introductory video tutorials (with Closed Captions) that cover SPICE-based circuit simulations (using LTSpice, an industry standard free software) and general mathematical data analysis techniques using MATLAB to aid student learning.

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## Timeline and Personnel \*

Provide a project timeline with milestones below, keeping in mind your selected Final Semester above. Provide a short description of the roles any additional team members will take on during the activities in your timeline.

This project is undertaken by three Electrical Engineering faculty at the Kennesaw State University – Sandip Das, Walter Thain, and Sheila Hill. Each will contribute equally and share the workload for each task. Timeline for the completion of tasks are projected as follows:

Task 1: Revise and create interactive instruction files with electronic data entry and develop one new lab; Duration: Jan 2019 – Mar 2019.

Task 2: Develop and integrate pre-lab simulation exercises and make lab manuals web-accessible; Duration: April 2019 – May 2019.

Task 3: Create short instructional videos for the lab experiments showing preferred measurement and circuit construction techniques; Duration: June 2019 – July 2019.

Task 4: Create LTSpice and MATLAB video tutorials; Duration: July 2019.

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## Budget \*

Please enter your project's budget below. Include personnel and projected expenses. The maximum amounts for the award are as follows: \$4,800 maximum award, \$2,000 maximum per team member, \$800 maximum for overall project expenses. Unlike standard-scale and large-scale transformations, the maximum of \$800 is not a required element of the budget, but rather meant primarily for the purchase of specific tools and software which would help with improving resources.

The total requested budget for this project is \$4,800. Each faculty will draw a summer salary of \$1,600. ( $3 \times \$1,600 = \$4,800$ ).

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