

Application Number	M73
Applicant	Rabia Shahbaz
Position	Assistant Professor of Mathematics
Institution	Georgia Gwinnett College
Email	rshahbaz@ggc.edu
Team Members	Janice Alves, jalves@ggc.edu
Type	Creation of ancillaries for pre-existing OER
Course Number / Title	Math 1111, College Algebra
Final Semester	Spring 2020
Grant Amount	\$4,800

Works Being Revised	<ol style="list-style-type: none">1. Math 1111 - College Algebra Overview, URL: http://libguides.gcsu.edu/math11112. College Algebra - Math 1111, URL: http://faculty.ung.edu/bkidane/CoACRN%206984&9422.html
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<p>Description</p>	<p>Title of Project: College Algebra - It's Not just about the Numbers</p> <p>The goals of this project are to:</p> <ol style="list-style-type: none"> 1. Develop student-friendly course materials to benefit both students and instructors. 2. Provide a low or no-cost option of online platform for completing homework assignments, which will provide savings to ~300 students enrolled in 12 sections of College Algebra. <p>The deliverables of this project are:</p> <ol style="list-style-type: none"> 1. Course material: Guided notes, problem based in-class assignments, and activities. 2. Online assignments for homework. <p>Transformation Plan</p> <p>Georgia Gwinnett College (GGC) was established with an open access mission. As such, the College attracts a large population of students who are often under-represented in higher education and under-prepared for college and college-level courses. One of the courses that has proven to be a stumbling block to students' academic success is 'college algebra'.</p> <p>In a New Visions for Public Schools June 15, 2015 article, the author stated that algebra is a gatekeeper to post-secondary success. In fact, a 2017 Washington Post and several other articles stated the difficulty of passing college algebra to the point where it is ranked as the number 1 most failed course in college.</p> <p>The reasons behind students' lack of success in college algebra are varied; nonetheless, their struggles are exacerbated by the lack of helpful class resources. We, the project team, had noted that the course material developed through earlier ALG grants is limited to videos, textbook pages, and notes that do not cover all topics of college algebra. Through this revision, we plan to:</p> <ul style="list-style-type: none"> • Develop comprehensive and student-friendly guided notes, • Problem-based in-class activities/worksheets, and • Online homework assignments. <p>The chapter assignments are:</p> <p>Chapter 1: Equations and Inequalities - Janice Alves</p> <p>Chapter 2: Functions and Graphs - Janice Alves</p> <p>Chapter 3: Polynomial and Rational Functions – Rabia Shahbaz</p> <p>Chapter 4: Exponential and Logarithmic Functions - Rabia Shahbaz</p> <p>Chapter 8: Systems of Equations and Inequalities - Rabia Shahbaz</p> <p>Chapter 9: Matrices and Determinants – Janice Alves</p> <p>The course material will be piloted in one or two sections in summer 2019. Between the two team members, we will request to teach six section of college algebra in fall 2019 and spring 2020. With an average of 25 students in each section, about 300 students will be using this course material by spring 2020. In the current college algebra sections, students are required to buy Pearson mymathlab access code (Book: Algebra and Trigonometry, 6th Edition, Author: Robert Blitzer), which costs \$119.95. In fall 2019 and spring 2020, we will pilot a low- or no-cost option for homework</p>
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assignments, which will provide a savings of about \$100 per student (a total of \$ 30,000 savings). We will share our course materials with all GGC math faculty through the course page in our learning management systems. With more faculty using these course materials, the savings to our students will greatly improve.

The ability to provide additional resources for free is expected to be a major contributor to our students' academic success. On average, GGC offers 45-50 sections of college algebra per semester. With an average of 25 students in each section, the number of students taking college algebra each semester ranges between 1,125 and 1,250. The course material developed through this revision will benefit both students and instructors, and will bring some consistency in the rigor offered in various sections of college algebra. The course material developed through this project will also provide an easy access to a library of resources for our full time, part time, and new math faculty. With college algebra serving as a gateway course for many STEM, Business, and other non-STEM majors, the impact of this project will be vast and critical.

Timeline	<p>Project Start: Spring 2019</p> <p>Spring 2019. In the spring 2019 semester, we will prepare lecture material and guided notes for each of these units. These materials will include but are not limited to:</p> <ol style="list-style-type: none"> 1. Guided notes, which include definitions, theorems and problems to show as examples; 2. Problem based in-class assignments, which will include applications pertaining to real-life situations; and 3. Homework problems for students to practice. Videos and other websites will be included as additional resources for teachers and students. Research into a low- or no-cost math delivery platform will be conducted to determine if it meets the criteria for the math department guidelines. <p>Summer 2019. In the summer 2019, Dr. Shahbaz will pilot this new curriculum in her class. After analyzing the data and the surveys gathered, she will determine the adjustments (if any) that need to be made before the fall 2019 semester.</p> <p>Fall 2019. In the fall 2019 semester, both team members will use this curriculum in our Math 1111 classes. At the end of the semester, data will be gathered and analyzed to determine the overall impact of the new curriculum. At that time, a decision can be made to continue, with any adjustments necessary, or to revamp some of the areas.</p> <p>Spring 2020. In spring 2020, both team members will continue to implement the transformed course materials. In addition, the team will encourage others to utilize the resources by disseminating information about the project during the Joint Mathematics Meeting of the American Mathematical Society and Mathematical Association of America in January 2020.</p>
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Budget	<p>Compensation for faculty: \$4,000 Compensation for two faculty members: $2 \times \\$2,000 = \\$4,000$ Funds are requested to cover Dr. Shahbaz and Ms. Alves' pay and fringe benefits (FICA Med, FICA/SS, and Retirement). The pay is to compensate the work related to developing course material. The course material will be piloted in summer 2019 and fall 2019 and will be evaluated and revised before its final online submission in spring 2020.</p> <p>Project Expenses (travel, etc.): \$800 Travel Expense: \$800 The team plans to share the course materials and student performance data at the Joint Mathematics Meeting. The funds are requested to cover part of the cost of attending this meeting. The meeting will provide an opportunity for the team to disseminate information on the project and encourage a wider group of mathematics professors to consider adopting online resources to increase academic success by reducing textbook material costs to our students.</p> <p>Total: \$4,800</p>
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