

University System of Georgia

STEM



Science • Technology • Engineering • Math

Grantee Meeting

May 17, 2017

Middle Georgia State University

Professional Science Center

Macon, Georgia

**University System of Georgia
STEM Initiative Grantee Meeting
May 17, 2017
Middle Georgia State University
Room 211, Professional Science Center
Macon, GA**

11:30am – Noon	Check-In	Cheryl Thomas <i>USG</i>
12:00pm – 12:15pm	Welcome	Sheila Jones <i>USG</i>
12:15pm – 1:05pm	Lunch w/Keynote	
	“Digging into the Data: Where We Are & Where to Go”	Angela Bell <i>USG</i>
1:05pm – 1:15pm	Transition	
1:15pm – 1:45pm	Roundtables 1-7	

1. *Georgia Highlands College: Increase the Success and Completion Rates of College Students Majoring in STEM Disciplines – Gregory Ford, Jillian Petro & Sharryse Henderson*

To improve the performance and retention of students majoring in the STEM disciplines, Georgia Highlands College (GHC) is establishing the Center for STEM Learning (CSL). The GHC – CSL is not only a physical center on the GHC Cartersville instructional site but also an online resource center. The GHC – CSL serves as a repository for open source materials created by GHC faculty to improve student success within STEM courses. For example, faculty in Mathematics, Chemistry, and Biology are creating supplemental instruction resources through video modules. These video modules are 10-15 minute web-based tutorial sessions designed to help students better understand challenging course material. Web-based Supplemental Instruction (WSI) also address our demographic needs. As an access institution, we serve a diverse population of students that includes many non-traditional and working adults. WSI improves access to tutorial resources for all STEM students on all six instructional sites of our multi-site institution. Thus far, we have created Math 1111 (College Algebra) videos that are already available through the GHC – CSL and the college’s YouTube channel. We are currently generating Chemistry 1211K videos which will be available to students by Fall 2018. We are also in the planning phase for creating Biology resources. The biggest challenges have been ensuring all the videos are compliant with the 504 Accessibility standards and access to technology for recording and disseminating resources. We plan to collect data on student usage and hope to correlate usage with increased

success, which will address STEM readiness, retention and completion for STEM majors. Faculty are being supported through mini-grants in order to create the web-based tutorial resources.

2. *Georgia Gwinnett College: Enhancing 5th Grade Science Curriculum with Service Learning and Professional Development for Teachers – Allison D’Costa & Clay Runck*

Our Service Learning course integrates community service with real-world problem-based instruction to enrich the learning experience, teach civic responsibility, and strengthen community connections for GGC students. GGC students work alongside Gwinnett County Public Schools (GCPS) teachers to deliver hands-on science instruction to 5th graders. GCPS teachers attend a summer professional development workshop where they are trained to implement mystery scenario science labs along with GGC students. The course is designed to motivate the elementary students to consider a STEM major and empower them with the problem-solving skills to succeed in STEM as they progress to the college level. In addition to forging important links with the community and building interest in STEM, the course seeks to improve 5th grade students’ science communication and lab skills while providing GGC students with leadership experiences.

3. *Georgia State University: Enhancing the Undergraduate Experience – Dabney Dixon, Timothy Brown & Brian Thoms*

Georgia State University continues to focus on efforts to engage students in the STEM disciplines, teach them to be problem solvers, and create a cadre of undergraduate STEM mentors. The Algebra Means Progress project has worked to increase student’s basic algebra skills so that they may succeed in Math 1111 and 1113. Learning assistants are being more fully used, including efforts in large classes. The Course-based Undergraduate Research (CURE) effort helps students learn to put their science into action. The technical and social skills learned create strong leaders who can serve as mentors for the next generation of STEM students.

4. *Gordon State College: Initiation and Development of a STEM Tutoring Center and SI Program – Susan Finazzo*

Gordon State College is small rural college with an access mission located in Barnesville, Georgia. Most of the College’s students are commuters and many students work in addition to attending college. The College offers two baccalaureate degrees in STEM programs, a BS in mathematics and a BS in biology. The goal in developing a robust STEM Learning and Tutoring Center and SI program was to improve student success and retention in both of these program pathways. The College currently has an established Student Success Center (SSC) that offers limited tutoring in STEM areas. The PI worked with the SSC director and discipline faculty to recruit and train student tutors and SI facilitators. The challenges encountered in the initial stages of project were identifying qualified students, finding students with qualifications and with available time to tutor, matching SI student availability to faculty requests and overcoming faculty resistance to recommending student tutors to their classes. Significant progress has been made in all of these areas. Additionally, all tutors and SI facilitators receive from the SSC. Federal work study students are employed to man the STEM learning center so that students can access the materials in the room even when tutors are not available or SI sessions are not occurring. The goal for next year is to increase the number of SI sections and to increase the number of student visits to the STEM center.

5. *Armstrong State University: Faculty and K-12 Teacher Development for the Improvement of STEM Education – Brent Feske & Ardyth Foster*

Armstrong's Colleges of Science and Technology (CST) and Education as well as the Armstrong Office of Faculty Development support the professional development of faculty as teacher-scholars. This program is designed to assist faculty with modifying their teaching strategies to improve STEM learning in lower division courses through active learning. We have also invested in supplemental instruction, learning assistants and undergraduate research programs to improve the student experience at all levels of the curriculum. We will present our current strategies and successes in faculty development. We are also heavily involved in our local schools, specifically through the development of a Professional Development School at the Hesse K-8 school. We will present our current progress on the PDS, our progress toward a summer workshop for Hesse teachers and our efforts to expand our PDSs to other local schools.

6. *University of West Georgia: Learning from the Past, Planning for the Future of STEM Education – Scott Gordon*

The University of West Georgia received funds in 2011 through the BOR STEM initiative to create curricular activities aimed at improving retention, progression, and graduation of STEM majors. On the strength of this experience, a new plan was developed in response to the 2016 call for proposals. Funding has allowed the institution to continue successful activities from the precedent program, while improving on selected parts and removing the ones that could not be sustained or that had been institutionalized. During this round-table discussion, we will present our results for the academic year 2016-2017 and our projects for the following academic year, including the faculty mini-grant program, the undergraduate research mentoring program, and our multiple activities to provide academic help to STEM majors (SI, tutoring, interventional tutoring). Success stories and challenges will be shared in order to disseminate our vast experience acquired through this program over the years.

7. *South Georgia State College: Working with Current and Future STEM Students – Charles Johnson*

In the past year, we have worked on two major projects: Helping current students in introductory STEM classes and encouraging future STEM students. We will discuss the strategies we used for both projects and what worked and what did not. We will also present future changes we plan to make.

1:45pm – 1:50pm

Transition

1:50pm – 2:20pm

Roundtables 1-7 Repeat

2:20pm – 2:40pm

Break

2:40pm – 3:10pm

Roundtables 8-14

8. *Middle Georgia State University: Increasing Undergraduate Research Opportunities in STEM Fields – Dawn Sherry*

Studies show that STEM students are more likely to persist when students are exposed to early research. We proposed to promote undergraduate research opportunities at both the Macon and Cochran campuses. Middle Georgia State University has recently identified experiential learning opportunities as part of the Quality Enhancement Program as required by SAC-COC. In the departments of Natural Sciences and Mathematics, this has taken the form of undergraduate research projects, where students choose faculty mentors to collaborate on a research project. The STEM grant gave faculty the opportunity to apply for mini-grants to fund undergraduate research projects. Research activity creates an environment that allows faculty to closely mentor the student and to build relationships that will allow the faculty to shepherd the student towards completion of their program. These undergraduate research experiences will culminated in student presentations and papers presented at our Undergraduate Research Symposium and other regional conferences. These research experiences will prepare students for post graduate work and help to sustain their interest in STEM disciplines.

9. *Columbus State University: Focus on Building Capacity in Middle Schools – Tom Hackett*

The Columbus State University (CSU) STEM Initiative has capitalized on a CSU emphasis on University/K-12 partnerships. Since the inception of the STEM initiative in July 2016, STEM faculty from CSU have met with principals from Arnold Science Magnet Academy, Richards Middle School, Rothschild Middle School, and Aaron Cohn Middle School in order to develop programs at the middle school level that engage students in STEM. Among successful initiatives are a grant to provide cybersecurity instruction at a Muscogee County School District middle school, a second middle school initiative focusing on women in STEM, the expansion of a CSU STEM Summer Camp Series to include transportation to campus, and the emergence of two additional middle school partnerships. UTeach Columbus has also hosted workshops this year for science teachers in Muscogee County, and in Chattahoochee County on 5E inquiry lessons.

10. *University of Georgia: Peer Learning Assistants-Promoting Student Retention & Success in STEM – Cole Causey*

More students enter college as STEM majors than graduate with STEM degrees. A major cause of this attrition is the high percentage of D, F, W grades received in introductory STEM courses. One promising strategy for addressing this problem involves the use of Peer Learning Assistants (PLAs). PLAs are high performing undergraduate students who assist in teaching a course they successfully completed. This presentation will describe the recently implemented PLA program at the University of Georgia. Initial results from a selection of courses in different STEM disciplines will be presented. A new PLA partnership between UGA and Athens Technical College will be discussed as a potentially attractive model for facilitating the transition of students between the two systems of postsecondary education in Georgia. Members of the audience will be encouraged to describe examples of undergraduate student involvement in STEM instruction on their campuses.

11. Albany State University: Technology Oriented Workshops for High School Teachers – Seyed Roosta, Anilkumar Devarapu, Vijay Kunwar, Jeffrey Swords

Based upon the need for greater STEM education in southwest Georgia, the Mathematics and Computer Science Department conducted a series of workshops to increase the knowledge of STEM content for Mathematics high school teachers. The specific objective was to improve the knowledge of innovative teaching approaches including the effective use of technology-oriented instructional techniques among high school STEM teachers. ASU organized two workshops in October 2016. A total of 20 high school Mathematics teachers attended. These workshops focused on using technology in the classroom, student engagement techniques, increasing the use of critical thinking skills, and using statistics in real-world situations. They met with great success, and were well received by all participants. During these workshops, the teachers suggested many of the items as areas of requested professional development. High school teaching improvements will be measured using the Teacher Keys Effectiveness System (TKES) scoring system.

12. Kennesaw State University: Developing Faculty Learning Communities – Kadian Callahan

This session describes the components used to build successful Faculty Learning Communities (FLCs) for Science and Mathematics faculty developed as part of Kennesaw State University's Student Success Initiative. Participants will work together to consider important features of FLCs that encourage generative instructional change grounded in learning-centered teaching, and will leave with a plan for FLC development at their own institutions. Participants will also learn about how the FLCs have fostered increased conversation among faculty colleagues about instructional innovations for first-year science and mathematics courses as well as expansion in the use of evidence-based pedagogies that promote inclusive excellence. Mechanisms to recognize faculty's efforts to make instructional change will be discussed along with challenges and successes. This session will be of particular interest to those seeking to promote the use of engaged pedagogies found to expand inclusiveness, and for those responsible for providing professional development experiences to science and mathematics faculty.

13. Coastal Georgia Community College: Combining Our Strengths: Improving STEM participation and Interest in the Middle Schools Through Creative Collaborations Between College Faculty and Middle School Teachers – Tanya Cofer

Developing meaningful partnerships between college faculty and school teachers can be challenging. What are the roles of each? Who is the expert? CCGA's approach is that of equals. We have paired some of our best college teachers with experienced lead teachers in the Glynn County middle schools. Lead teachers bring expertise in middle grades curricula and pedagogy. Faculty bring content expertise and their own pedagogical strategies. Together they have created unique lessons for middle grades students aimed at increasing their interest and participation in STEM. (And, of course, they learned a lot from each other too!) I will share some of the math and science lessons co-developed by our faculty-teacher teams, some of their comments about the process as well as some initial challenges we faced to implementation.

14. Georgia College: Utilizing Communities of Practice for STEM SI Program – Carolyn Denard & Jeanne Haslam

If your SI Program is challenged with providing intentional, on-going support for dozens of new and returning SI leaders, consider implementing Communities of Practice (CoP) to augment and reinforce your program's goals. The CoP model provides a platform for seasoned, accomplished SI leaders to grow as "Coaches" for their SI leader peers and take on new roles of mentoring and facilitating appropriate trainings within disciplines. Join us for a discussion of a valuable and economical practice to enhance your program's delivery and growth.

3:10pm – 3:15pm

Transition

3:15pm – 3:45pm

Roundtables 8-14 Repeat

3:45pm – 3:50pm

Transition

3:50pm – 4:50pm

Discussion Groups

1. *STEM Centers*
2. *Supplemental Instruction, Learning Assistants, Tutoring for STEM Core Courses*
3. *Faculty Development*
4. *Mini-Grant Programs for STEM Faculty*
5. *Sustaining Grant Funded Programs*

4:50pm – 5:00pm

Transition

5:00pm – 6:00pm

Team Time – Revise Year 2 Plan