

STEM



Science • Technology • Engineering • Math

University System of Georgia STEM Summit

Middle Georgia State University

May 18, 2017

**University System of Georgia
STEM Summit
May 18, 2017
Middle Georgia State University
Room 211, Professional Science Center
Macon, GA**

9:15 – 10:00am	Registration w/Continental Breakfast	
10:00 – 10:15am	Welcome	<i>Sheila Jones</i>
10:15 – 11:00am	STEM Updates	
	<ul style="list-style-type: none">• STEM Careers in Georgia• 2016-2017 USG STEM Initiative• Complete College Georgia Update: Math Pathways	
11:00 – 11:50	Keynote Address	<i>Shirley Malcom</i>
11:50 – 12:00	Break	
12:00 – 12:50	Working Lunch with Your Institution	

Team Time Discussion Activity – In light of this morning’s presentations, please think about your current STEM degree offerings, the courses you teach in your programs, and the pedagogical approaches used to teach these courses. Use this time to discuss and answer the following questions:

1. How are your STEM degree offerings impacting/supporting the current need for STEM graduates in Georgia? Are your course offerings appropriate? Are there new courses that you could add to the degree major?
2. Are your STEM courses being taught in such a way to provide the STEM Skills and Competencies required for today’s STEM workforce? If not, what challenges and barriers prevent this from happening? What barriers can be easily broken down now?
3. What barriers will require more effort, but should be broken down in the near future?
4. What resources and opportunities would be helpful to overcome those barriers in an attempt to increase STEM retention and graduates at our institution?

12:50 – 1:00

Transition to Concurrent Sessions 1

1:00 – 1:30

Concurrent Sessions 1

A First-Year Seminar Aimed at Increasing Student Success in Science and Mathematics

Kennesaw State University first-year students are required to register for either a first-year seminar or a learning community. In the College of Science and Mathematics, we developed learning communities with the theme “Success in Science and Mathematics” and offered 6 such communities to 135 students in Fall 2016. In this session, we will present the structure of our communities. We will focus heavily on the first-year seminar course embedded in each community. This seminar class has as its centerpiece a research project with the theme “Factors Affecting Student Success in Science and Mathematics”. The purpose of this semester-long project is to expose students to the nature of science and the scientific method and to deepen their quantitative literacy skills. We will present preliminary data indicating that students involved in our learning communities had greater success than students who were not involved. We will discuss future plans for change and growth.

Retention and Success

Marla M. Bell

Room 211C

Factors influencing the Growth of B.S. Majors in Physics and Astronomy at Georgia State University

The number of BS physics majors at Georgia State University has increased significantly over the last few years, from 79 in Fall 2008 to 187 in Fall 2016. A number of factors have contributed to this growth, including a required two-credit course that introduces potential majors to interconnections between physics and society, the use of Learning Assistants (LAs) in undergraduate Physics laboratories, attention to pedagogy training for TAs and LAs, and an advising model that tracks students carefully and contacts students, staff and faculty when students are at risk. The details of these approaches will be discussed.

Retention and Success

Brian Thoms

Room 212

University/K-12 Partnerships in STEM: Focus on Building Capacity in Middle Schools

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.

K-12 Partnerships

Tom Hackett, Kimberly Shaw, & Elizabeth Housand

Room 237

STEM on the MOVE: engaging undergraduates in experiential learning

At the University of Georgia, STEM on the Move is designed to enhance instructional delivery and promote STEM to undergraduate audiences in the Humanities and Social Sciences; audiences not typically targeted by STEM initiatives. With the support of a Learning Technologies Grant, STEM on the Move provides portable analytical technologies, Fourier Transform Infrared Spectrometer and an X-ray Fluorescent Spectrometer, for use in undergraduate classrooms and research. One of the biggest challenges facing educators at the collegiate level is that incoming undergraduate students' misconceptions about STEM disciplines based on previous experience and/or impressions formed in middle and high school classes and the media. Often these impressions are negative and underrepresented groups in particular, do not easily identify with STEM faculty and/or believe STEM disciplines are relevant to them. STEM on the MOVE addresses these issues by making analytical technologies accessible and relevant for undergraduates outside of traditional STEM disciplines and provides experiential STEM learning opportunities for these students.

Broadening Participation

Alice M. W. Hunt & Sherry Clouser

Room 238 A

1:30 – 1:40

Transition to Concurrent Sessions 2

1:40 – 2:10

Concurrent Sessions 2

Launching a Peer Supplemental Instruction program for STEM majors.

As an access institution, Georgia Gwinnett College attracts students who are often under-prepared for college, especially for STEM courses. We have developed a peer supplemental instruction program (PSI) to support students in a successful transition from high school to college-level STEM courses. This is a critical time when students often exit STEM programs because they struggle to meet the demands of tertiary-level course work. PSI provides collaborative learning opportunities for students to practice course material and work with peers who have already succeeded in courses. Peer leaders prepare lesson plans using STEM-centered active learning strategies. Last fall 300+ students attended at least one PSI session, amounting to 1,075 PSI interactions. Assessment of the program has revealed gains in student grades and leader knowledge of course concepts. Further, both leaders and students gained new skills and competencies that should contribute to their success in STEM education and ensuing careers.

Retention and Success

Cindy Achat-Mendes, Chantelle Anfusio, Katherine Pinzon, Judy Awong-Taylor & Jennifer Hurst-Kennedy

Room 211C

Challenges and Opportunities in Creating STEM Learning Centers

STEM Learning Centers should be a focal point on every campus. STEM Centers should facilitate student learning (learner-centered), engage student hands and minds and encourage the growth of the student STEM community. With those goals in mind the creation and development of a STEM Learning Center would appear to be a straight-forward initiative that would garner campus support and should be easy to actualize. However, depending upon college resources (fiscal, facilities, and human), culture, and perception establishing a dynamic and functional learning center can be challenging. The presenter, currently at Gordon State College, will discuss how three very different institutions; a large urban two-year community college, a small branch campus of a larger two-year transfer college and a small four-year college, each with different challenges all found unique solutions and developed their own model for a successful STEM Learning Center.

Retention and Success

Susan Finazzo

Room 212

Building Faculty Learning and Redesign Communities to Expand Inclusive Pedagogies

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.

Engaging Faculty

Kadian M. Callahan, Scott Reese, Marla Bell & Adrian Epps

Room 237

A STEM Roadtrip: Taking STEM to the High School

At South Georgia State College, we are using three strategies geared toward working with students before they get to our school. The first strategy is partnering with the Boys & Girls Club to provide an avenue to reach out to P-8 students to help initiate and supplement skills that are integral for success in STEM courses. For strategy two, a STEM prep program is used as an avenue to reach out to students (in grades 9-12) to help build the foundation for higher education in the future. Strategy three is the implementation of a community workshop that reaches out to Pre-K parents; we can employ the help of families to initiate basic inquiry and build the general knowledge needed for students to be successful in STEM courses even before they enter elementary school.

Partnerships with K-12

Charles Johnson, Kimberly Hunt & Andrew Williams
Room 238 A

2:10 – 2:20 Transition to Concurrent Sessions 3

2:20 – 2:50 Concurrent Sessions 3

SI Program Management Resource: New Digital Tool for Providing Comprehensive Support

The need for a comprehensive, digital, organized ‘warehouse’ of our broad-reaching Supplemental Instruction program was long overdue; one of our SI leaders/Coaches developed a highly functioning website as his capstone project to address the vast majority of our challenges. This data management tool has become an overnight success for Georgia College Learning Center administrators, SI Coaches, and SI Leaders. Most SI programs have volumes of important work documented – Session plans, Observation Records, Office Visits, hand-outs, and training agendas taking up drawers of space and are not easily accessible to most. This session will introduce you to a much improved, more effective and efficient means of showcasing and utilizing your SI program’s work.

Retention and Success

Jeanne Haslam

Room 211C

Growing Pains and Hidden Benefits: Lessons Learned During Early Scaling of a STEM Peer Learning Assistant Program

Beginning in fall 2016, several STEM departments at the University of Georgia began implementing Peer Learning Assistants (PLAs) in gateway courses. Now in its second semester, the program has doubled to over 60 PLAs assisting students in more than a dozen course sections. Students serving as PLAs regularly attend class meetings and support students during active learning activities. Weekly meetings with faculty provide content briefing for upcoming lessons. First-time PLAs also enroll in an upper-level course designed to develop pedagogical skills. Early results suggest promising potential for the program, but growth and sustainability present many challenges. In addition, we have found unplanned benefits to faculty and student satisfaction in the courses. We will discuss the evolution of the model regarding program structure and PLA compensation; benefits and perceived value to students, PLAs, and faculty; approaches and strategies for pedagogical training; and measurement of impacts.

Retention and Success

Tim Burg

Room 212

Broadening Participation through K-12 and Community Partnerships

The Georgia State University College of Education and Human Development continues its commitment to working with in-service and pre-service K-12 science teachers to enhance the instruction their students receive to prepare them to rigorous STEM majors in college. Various efforts include collaborations with several scientists from the College of Arts & Sciences on projects funded through the Georgia Department of Education Math/Science Partnership

program and the Teacher Quality Program funded by the U.S. Department of Education. These projects also include strengthened partnerships with several major K-12 school districts in the Atlanta metro area. CEHD faculty are also working with several community organizations to enhance the affinity and positive identification with science, as well as their scientific proficiency, for students from traditionally underrepresented populations in STEM, thus broadening access.

Partnerships with K-12 & Broadening Participation

Patrick J. Enderle & Natalie S. King

Room 237

Competency-Based STEM Programs for K-5 Teachers

In response to requests from local school systems to assist them with STEM professional development for their teachers, the College of Education and Human Services (COEHS) of Valdosta State University has developed and implemented competency-based education (CBE) programs for the Science and Mathematics Endorsements for K-5 teachers.

Partnerships with K-12

Lynn Minor, Anthony Scheffler, Sheryl Dasinger & Mimi Wetherington

Room 238A

UGA STEM Initiative K-12 Lesson Study Collaboration

K-12 teachers supported by university students and faculty engage in the Japanese-style professional development model of Lesson Study. Partners collaboratively plan, teach/observe, debrief, revise, and reteach STEM lessons with the goal of improving instruction and thereby increasing interest in STEM fields. Undergraduate student teachers and K-12 mathematics and science teachers receive content and pedagogical support from university graduate students and faculty in Mathematics and Science Education. In addition, university resource partners gain knowledge of educational context and constraints that in turn enhances undergraduate instruction at the university level. Markers of success include improved lessons and teacher reflections and evaluations.

Partnerships with K-12

Andrea Knapp

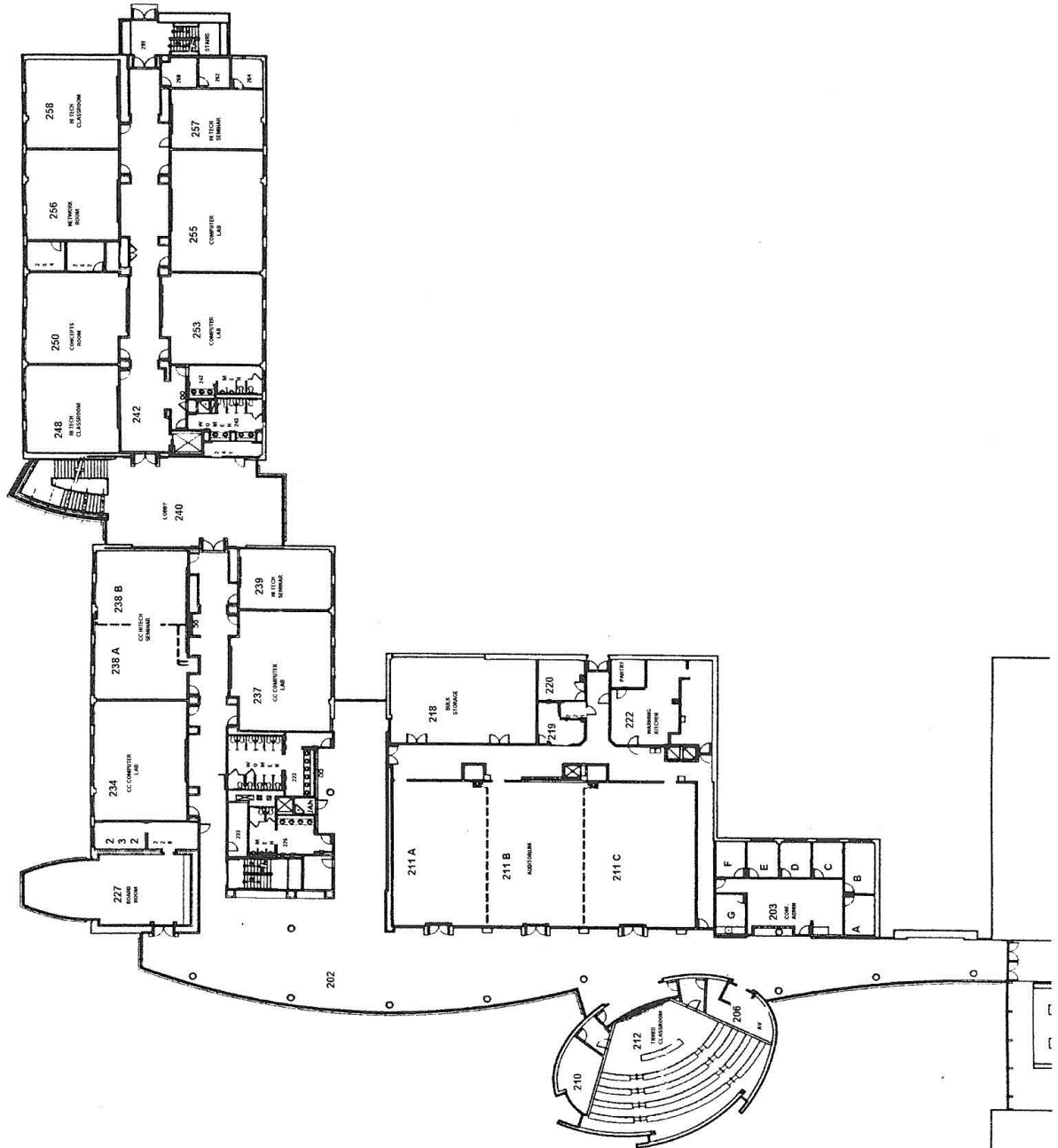
Room 238B

2:50 – 3:00 Transition to Team time

3:00 – 3:45 Team Time

Briefly share any information you learned today that could be replicated or incorporated at your institution.

3:45 – 4:00 Wrap Up



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