

CFITS INDUSTRY PARTNERS



UNIVERSITY OF
SOUTH ALABAMA

**INDUSTRY
PARTNER
PROGRAM**

Les Barnett, Director
2019

CENTER FOR FORENSICS,
INFORMATION TECHNOLOGY,
AND SECURITY
with the
SCHOOL OF COMPUTING

INDUSTRY COLLABORATION INITIATIVES, cont.

Joint Research Projects

CFITS solicits and conducts joint projects with academic and industry partners that focus on research, knowledge discovery, and innovation. Our investigators can lead proposal preparation, participate as full partners, or offer subcontract support on federal, local, and foundation grant programs as well as conducting sole source research activities for industry partners.

University NSF Initiative

Industry University Cooperative Research Center enables industrially-relevant, per-competitive research via a multi-member, sustained partnerships among industry, academe, and government. NSF in the US economy supports the development and evolution of IUCRCs, providing a financial and procedural framework for membership and operations in addition to best practices learned over decades of fostering public/private partnerships that provide significant value to the nation, industry and university faculty and students.

IUCRCs offer a platform for significant leveraging of financial investment by members to accelerate the knowledge base in emerging technological and manufacturing sectors and develop an industrially savvy workforce to benefit US economy.

Staff Development

The School of Computing offers four undergraduate programs, a masters program, and a PhD.

Courses offered to continue the education of your staff:

- CS—Computer Science
- HI—Health Informatics
- IS—Information Systems
- IT—Information Technology

Information Assurance Training

- Specific Courses

Graduate Programs

- MS—Information Systems
- MS—Computer Science
- PhD in Computing

Contracted Courses

- Your personnel only
- Examples focus on your work

Center of Academic Excellence

USA Center for Forensics, Information Technology, & Security in the School of Computing is host to the Center. In 2014, the Department of Homeland Security and the Department of Defense re-designated USA as a CAE In Information Assurance / Cyber Defense, a seven year designation which met rigorous new criteria.

Development

CFITS and the SoC recognize the important role we have to play in the community. We realize that what we do is not possible without the support of our Industry Partners.

In addition to the various initiatives, Industry Partners can provide financial help with a variety of funding opportunities.

- ACM/Alumni Banquets—sponsor your SoC graduate employees
- Tuition Reimbursement
- Room Naming
- Activity Sponsorship
- Make Presentations to Partner Schools as part of our CFITS K-12 CS STEM Initiative

K-12 Computer Science STEM Initiative:

The following page describe elements of the CFITS & School of Computing’s K-12 Computer Science STEM Initiative. Industry Partners play a key role in the success of this important effort.

- Industry Partner presentations—A representative presents your business, your industry, and why computing is important to you.
- Industry Professional presentations—One of your employees who is a degreed computing professional presents his job, career, and the great opportunity computing is.
- Industry Partner Tours—About your business with a focus on computing.

K-12 Partner School Initiative:

OVERVIEW

The Center for Forensics, Information Technology and Assurance (CFITS) is home to the K-12 CS STEM Outreach Program. The program is fully integrated into the School of Computing (SoC), its Faculty, it’s Industry Advisory Board, Industry Partners and Industry Professionals and Alumni.

Many if not most all of the hands on learning lab activities, or “field trips” as they are inaccurately referred to, were developed as part of the service component of our SoC faculty, in keeping with the “Faculty K-12 Outreach Program Policy of the School of Computing. Still others were funded by the Dean of the School of Computing, from departmental funds and resources. Each and every “field trip” is attended and assisted by one or more industry professionals, providing teaching assistance and guidance.

EDUCATIONAL THEORY

The HOLLAs and other learning objects and modules created as the educational basis for the CS STEM K-12 Partner School program are created based upon constructivism and focus on active-learning and student-centered classrooms for the implementation of constructivist learning theory. During our HOLLAs, or “Field Trips”, students actively participate in each of the activities within the learning modules.

CFITS' PARTNER SCHOOL PROGRAM

INITIATIVES

CFITS Computing Camps: Designed for middle school to high school students, the CFITS Computing Camps are delivered using the Raspberry Pi project PC. These camps are only available to Partner Schools, and feature whole grade, or whole class participation. Students will learn how to program, and use these simple programs to interact with the outside world using lights, servos and other devices.

K-12 STEM Initiative: Implementation of our SoC K-12 Initiative "*Math, Science, and Computing Initiative Project (4.1)*" is intended to increase the pool of qualified high school graduates in the area from which to recruit undergraduate students. Engaging industry partners that showed specific interest in K-12 math and science education accelerated the development of our program, with implementation in the Fall of 2012.



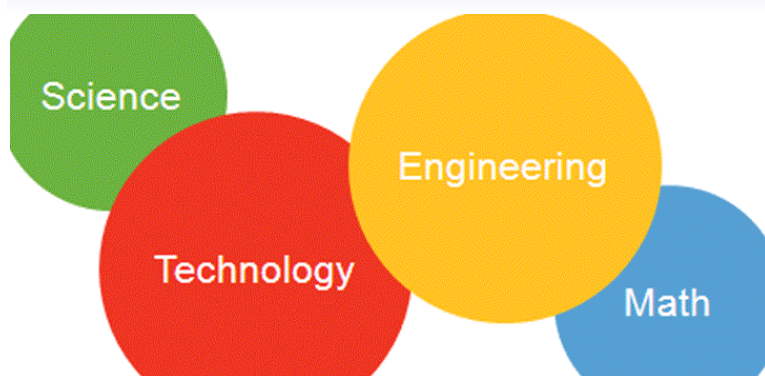
CIS Dual Enrollment in Alabama Public High Schools:

CFITS is fully engaged in the broad effort to improve education in Science, Technology, Engineering and Math, the STEM disciplines. The US Bureau of Labor Statistics reports that over two in three new STEM related jobs will be in computing. This reality fuels our commitment to help bring about inclusion of Computer Science as a science requirement option for graduation in public high schools.

GOALS

1. Improve retention of grade level STEM skills in our Partner School students.
2. Educate K-12 students in Computer Science.
3. Create employable individuals in the sciences.
4. Help address the CyberSecurity work force needs of our nation.
5. Impart the importance of Learning Objects as a teaching tool in the STEM fields of learning and to quantify the impact on similar student groups.
6. Establish the cost effectiveness of each activity, while improving the value of each.
7. Build a pool of STEM proficient high school graduates from which to recruit successful college students ready and able to participate in the School of Computing degree programs.

PROGRAM ORIGIN



The K-12 STEM Partner School Program is the result of the K-12 STEM Initiative of the USA School of Computing Advisory Board, and continues to be actively supported by the efforts of the Promotion Special Interest Group of that Board.

Implementation of our School of Computing K-12 STEM Initiative - the *“Math, Science, and Computing Initiative Project (4.1)”* - was intended to increase the pool of qualified high school graduates in the area from which to recruit students for the growth of our programs in the SoC.

School of Computing programs here at USA are widely recognized across all university disciplines by college as well as government associations at the federal, state, and local levels. In 2011 our efforts were recognized with designation as a Center of Academic Excellence in Information Assurance Education by the Department of Defense and Homeland Security, a designation which was renewed in 2014.

The state of Alabama’s efforts in workforce development are partially driven by efforts in economic development, and we at SoC and CFITS are part of that effort. With the Department of Labor reporting that through 2018, 71% of all jobs in STEM fields will be in computing, it becomes clear why so much demand exists for our graduates.

Currently, there are nine jobs for each computing graduate. The Department of Labor projects this to continue into the future.

By engaging industry partners who demonstrate specific interest in K-12 math and science education, we can accelerate the development of this program, which began in Fall 2012.

This program endeavors to improve student success in *all* STEM disciplines, with a substantially increased number of high school graduates both STEM capable and Computer Science aware.

The National Science Foundation and the Department of Homeland Security certified our membership in the Cyber Corps®: Scholarship for Service (SFS) community for January 2013 - December 2021.

MEASURING RESULTS

There is a wide acceptance of the fact that STEM competence among US High School graduates, including Alabama High School graduates, is not up to world standards. Among educators, the need to improve STEM education to world standards has been addressed at the federal, state and local levels, and is well accepted as a real problem in workforce development.

What is less widely recognized is the fact that here in the U.S., over 2/3 of STEM job openings for college graduates today and through 2025 are predicted to be in the computer sciences.

If the U.S. stays on its present course, of this total of nearly 527,16 jobs in computing, less than 59,581 students who fill them will graduate in the U.S., and of those 59,581 many will be foreign nationals.

The opportunity for our High School graduates in this field is very large, and dependent on the quality of STEM education we provide our young people. To this end, there are many efforts all across the country to generate student interest in STEM education, and growing recognition of the dominant prospects in the computer sciences at the college degree level.

One challenge we all face is budget cuts. For that reason alone, we must measure the impact of these efforts, and their efficacy for each learning activity. There is wide excitement among students, teachers and parents about robotics camps, as evidenced by their widespread growth. However, they are not always managed in such a way that their impact on STEM learning can be measured.

The CFITS, working with our Partner Schools has developed a protocol for measuring the impact of each learning activity that is part of our effort. The initial elements include:

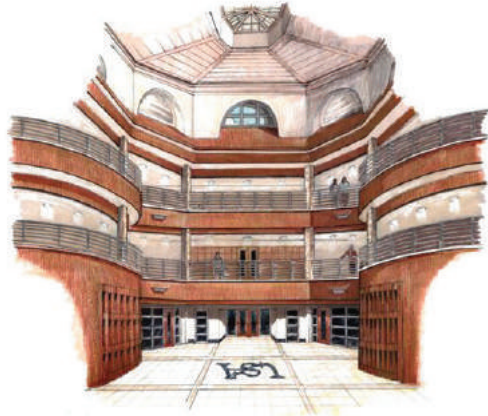
- Measuring each activity in terms of student time “immersed” in the activity, called “immersion units.”
- Keeping accurate and true costs of each activity, divided by each school, grade, class and per student.
- Employing each activity with whole grades of students in a given Partner School, or where not possible, an entire class.
- Keeping accurate records of the frequency of each activity by “immersion units” within each grade or class, by year.

Shelby Hall

at the University of South Alabama
University Blvd. and Old Shell Road



Shelby Hall's atrium



UNIVERSITY OF SOUTH ALABAMA

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