

## Thursday July 19, 2018 Waters Hall Conference Room # 200

Attending:

Johnathan Dauwen -Northrop Grumman  
Russ Johnson - SAIC  
Chad Easterling – Dynetics  
Joe Green – Davidson Technologies  
David Tutwiler – Southeast Communications, Decatur  
Dr. Stephen Spencer – Athens State University  
Dr. Adam Lewis – Athens State University  
Dr. Ronald Merritt – Athens State University  
Professor Katia Mayfield – Athens State University  
Professor Dave Fitzsimmons - Athens State University  
Eric Day – student  
Katie Sexton – student  
Luke Henry – student  
Matthew Marrazzo - student  
Ronda Kelly – Athens State University

The meeting focus was to share ABET’s official response to their interim visit and our action plan for their recommendations.

Updates on the Computer Science Faculty search, the Program Advisory Board web site, and new business in regard to these and other related topics will be discussed.

Professor Katia Mayfield briefed all with topics & updates to be discussed:

- Introductions
- Current ABET visit updates
- Computer Science Faculty Search
- Program Advisory Board Web site is set up needs tweaking. The summary notes and presentations are accessible on this site.
- Small changes in Computer Science with ABET, and the IT degree becoming ABET accredited.
- Moving forward with IT – ABET accreditation
  - Student Outcomes
  - Curriculum
- Governor of AL Kay Ivey has a new initiative in CS education.
- Becoming NSA Center of Academic Excellence in Cyber Defense
- Capital Campaign
- Marketing - Seeking ideas from the board on how to market our programs.
- Research that faculty are doing & how students are involved with this.
- Presentations & Events

During introductions, Dr. Stephen Spencer expressed gratitude to the board for their input and for taking the time to share their organizations' needs in conjunction with the mutual concern for student success.

**ABET** - During the initial accreditation process, there were six (6) areas pinpointed upon which we need to improve. The categories, or marks, are: Concern, Weakness and Deficiency.

ABET considers a Concern as something that might impact the program in regard to prospective students. A Weakness means we are not quite there as far as the standards, and we should meet the national standards. A Deficiency suggests that something is wrong and could impact whether or not we are accredited.

The following points reveal ABET's initial findings and the interim visit results:

1. *Program Educational Objectives* (Weakness) Initially, ABET considered the way we list program education objectives a weakness that has since been removed.
2. *Student Outcomes* - (Weakness) There was a misinterpretation between Athens State and ABET regarding Student Learning Outcomes and Student Objectives. After assessment training & ABET symposiums, we learned what objectives & outcomes were needed for graduation, and at the interim visit, they said it is no longer a weakness.
3. *Continuous Improvement* - (Weakness Remains) This is a document based on our assessment data that was initially marked as a weakness. We changed how we document items, but ABET wanted more data/ numbers based on student progress, etc. Based on the data, decisions were made. One was to implement the 70% benchmark on exit exams. However, ABET wants student data specific to the percentages of students who are meeting this number and information on what each of the percentages are within the document. As of now the weakness remains, but we are hopeful this is removed upon the next visit.
4. *Curriculum*- (Weakness) At the onset, we offered one degree, BS in Computer Science with four options. ABET requires 12 credit hours beyond the Calculus sequence for accreditation in computer science. We consulted ACHE & split one degree to two: BS in Computer Science; BS in Information Technology. Splitting these programs allowed the weakness to be removed, without requiring all of our students to have the same rigorous math courses. With the split into the two programs, the Information Security pathway now also meets the requirements for accreditation.
5. *Faculty*- (Concern) We have four full time faculty and two adjuncts. ABET was concerned about how well professors would be able to handle the programs with these class loads in addition to other administrative, etc. duties. The evaluators initially marked this as a Weakness. We are in process of trying to hire a fifth faculty member, and the weakness was removed.

6. *Marketing policy*– (Concern) Focus on how to market programs to new students. Research by faculty and how students are involved with this. Deficiency was removed:

ABET evaluators commented that it is not clear that only the Computer Science pathway of the Computer Science degree is accredited and Information Security is not accredited. Therefore, ABET initially marked this category as a Deficiency. In order to remove the Deficiency, the new Athens State University catalog states:

*“...the bachelor of science and computer science degree, excluding the information security concentration, is ABET accredited.*”

**FACULTY SEARCH** – We launch the Computer Science faculty search in early September and hope to have enough applicants to start the review process in October.

Dr. Spencer acknowledged some key points in regard to marketing the position and requested input and assistance from the board. He said that professional computer science organizations are currently being researched in order to market the position, as well as the college. Organizations being pursued are those with databases containing minority job candidates. In order to sell this position, Dr. Spencer invited the board to make contact with any familiar, professional organizations. Emphasis would be placed on the competitive salary, the quality of the program, the Athens State mission statement, and location (appeal and lower cost of living).

There were problems with selling this position last year because so many qualified candidates were international, which means they would require sponsorship, a cost of around \$20 - \$30K for our institution over several years. This is a large investment, especially given the fact that there is no guarantee the candidate would remain at Athens State.

**PAB WEB SITE** – Professor Katia Mayfield reminded board members that their packets contain additional documentation regarding anything discussed on the slides shown at this meeting: the ABET interim visit, the report from ABET, and our response. There is also a place on the site for anyone on the board to provide welcome feedback.

Computer Science does not require a Program Advisory Board; however, if there is one, ABET would like this information to be made available to the public.

Meeting summaries and presentations are posted for public access. ABET suggested board member bios for the web site. Professor Mayfield proposed this in addition to listing links to the businesses.

**EXIT EXAM PROPOSAL** – There were problems such as students not being prepared because, in the past, the test had only been confirmed via check mark. Based on discussions with the board, students are now required to score 70% or above; otherwise, they will be

required to take a remedial class. This means they will receive an 'Incomplete' in the Capstone class. The following semester the student would enroll in a class, one which they have not yet taken, chosen by the instructor. As long as the student passes this course with a 'C' or better, the 'Incomplete' grade on the Capstone will be replaced with this grade. There are three different versions of the exam; therefore, students get three tries. This will keep students from having to pay tuition for an extra class which in turn would delay the student's graduation. The majority of students pass on the first try. This has allowed us to collect data needed for the assessment of the program.

Because there are now two different degrees, the exit exam is based on these five core concepts of the exam:

1. Digital Logic
2. Computer Programming
3. Data Structures
4. Discrete Math
5. Software Engineering

Prof. Mayfield asked the board if they thought each of these subject areas are sufficient as they pertain to the specific degree, or should one or more carry more weight than any other in regard to scoring? Companies are not necessarily seeing all of these as being on the same, even playing field. Board member brought up the need for scripting which is different from standard programming as his company is looking for testing engineers. Chad Easterling of Dynetics, brought up operating systems, the need for software systems, and knowledge for scripting as well. It was brought to the board's attention the classes that are currently being offered to try and fix these knowledge gaps however not all students are required to take these courses, the faculty is also looking into ways to bring these concepts in to different classes so that students receive exposure to it if they don't take one of the focused courses. Jonathan brought up Virtualization. He and Dr. Lewis openly discussed Virtualization and how companies are going to this.

Professor Mayfield reiterated the core items (above) and the subject specifics portion of the exam:

1. Algorithms
2. Operating Systems
3. Computer Organization & Architecture
4. Software Systems

Students seeking the ITE degree would be inquisitive regarding:

1. Database Systems
2. Programming & Scripting
3. Networking
4. Security

In discussion, \_\_\_?\_\_\_ added that Athens State students graduate with certification in Security Plus. Professor Mayfield reviewed the concepts upon which students are tested and conveyed that the Program Advisory Board is given a Topics Review Sheet which shows what will be on the exit exam. In a previous board meeting, it was apparent that the multiple choice exams were frowned upon. Students will now be required to show their work on the exams.

**CHANGES WITH ABET** - CAC (Computing Accrediting Commission) -- In the past, schools would have their own set of student learning outcomes. ABET would list their suggested outcomes, and we could add to these if necessary or map our outcomes to their suggested ones. The CAC has now provided the outcomes they say we must have. Our catalog changes have already gone into effect for 2018-2019 before the changes were finalized and therefore our outcomes will have to be “mapped” to the requirements of CAC, however in the 2019-2020 catalog we will be using the outcomes required by ABET.

Five of the outcomes are across the board for any computer-related degree, and normally there is a sixth which has to do with a computing degree.

Per ABET, we will be breaking down each of the outcomes as an *outcome indicator*, not as the outcome itself. The indicators will help to assess the overall outcome. The 2018-2019 catalog does not include these six outcomes. The outcomes shown in the catalog now are the ones formulated at the last board meeting. This is because there was no knowledge that these six outcomes had been adopted at the time they needed to be submitted for the catalog. ABET is aware. So the ‘set outcomes’ is basically, the only change.

A board member asked about changes to the college catalog. Professor Mayfield informed all that if there is a necessary change to the catalog, it must go through the curriculum committee. Dr. Spencer added that we only make changes to the catalog annually. The catalog is similar to a “contract” with the student in that we, as an institution, are bound to provide what we claim. Any changes made to the catalog would impact this “contract” of interest between the student and the college.

**MOVING FORWARD ITE – ABET** - The same thing applies with the ITE degree. According to the CAC, the general curriculum requirement for anything IT-related is mathematics appropriate. The institution determines the number of hours and may also be asked why a particular math class is appropriate for this degree. Thirty hours of fundamental and advanced computing topics must be taught; however, ABET does not determine these classes.

The question arose if ABET requires us to assess these courses? Professor Mayfield responded, “We have to come up with the classes to use for this, and how we will measure them. As far as providing the indicators, this is up to the department. For example, regarding communicating effectively, when students give presentations, instructors have a rubric or score sheet to measure student learning outcomes.”

Per ABET, the ITE degree specific curriculum requirements are these topics within the classes: Human Computer Interaction, Information Management, Programming, Web Systems and Technologies, Networking, System Administration and Maintenance, and System Integration and Architecture. Athens State University does offer these, with the exception of Information Management; although we do cover this within the classes.

The networking portion of the ITE degree does not require students to take the Human Computer Interaction course. Faculty will need to decide whether or not a change will be made. Will students be required to take the Human Computer Interaction class, or will it be a required *topic* to be covered within the courses students are already taking? As long as we show where we are covering this as a topic within another networking class, students do not have to take the Human Computer Interaction course.

We are collecting review materials for the initial onsite visit to include student exams, answer keys, syllabi, etc. ABET requires only that we submit worst average and best examples. Therefore, we are not required to submit samples for each student. We want to have the ABET visit for both the Computer Science degree and the ITE degree at the same time. The Readiness Review submission is due October 1, 2020. The Request for Evaluation date is Jan. 31, 2021, and the Self Study Report Submission date is July 1, 2021. It is after this summer visit that they will decide whether or not we receive accreditation for said degree.

**COMPUTER SCIENCE EDUCATION INITIATIVE** – Dr. Leigh Hester and Professor Katia Mayfield gained a lot of insight at Governor Kay Ivey’s *Computer Science for Alabama Symposium*. Alabama is the 15<sup>th</sup> state to adopt computer science standards for K-12. By 2022 each high school in Alabama will offer computer science classes as part of their curriculum. However, currently Alabama does not have a teaching certification for computer science.

Professor Mayfield and Dr. Hester put together a research paper for an international conference, the *Frontiers in Education: Computer Science & Engineering Conference*, which was accepted. They will be presenting their research regarding what it takes to establish a computer science education degree, and the collaborative journey between a computer science and secondary education professor. At present, Alabama does not have a computer science degree outline, and the research by Professor Mayfield and Dr. Hester contains suggestions for this. This will depend upon the state. Hopes and plans are to be able to offer a computer science degree with a teaching certification. Within this proposal, we would offer classes already being taught; therefore, hiring additional faculty would not be necessary.

*Dr. Adam Lewis presented on:*

**NSA CENTER OF ACADEMIC EXCELLENCE IN CYBERDEFENSE** - NSA has a program in which we collaborate with Homeland Security, promoting security education and workforce development. This is a University-wide initiative. The College of Arts & Sciences will

propose the Computer Science/ ITE program for designation as a Center of Academic Excellence, and the College of Business will propose the Assurance program for designation. The review process begins in October, 2018 and runs through end of year. Visitors from various organizations will be coming to look at the program and materials, checking for deficiencies, etc. This will create many student opportunities.

**CAPITAL CAMPAIGN** – Professor Mayfield said the Development Office is actively seeking donors for the CS/ITE program. She added, “We have been asked to come up with a proposal for innovative initiatives if we receive a donation within our discipline.”

**CAPITAL CAMPAIGN/ POSSIBLE INITIATIVES** - Possible initiatives and an example of each include:

Student Support - Scholarships and programs to serve first generation & under-represented students; mentoring program  
Workforce Development - Career shadowing, which helps students who are not sure what they want to do when they finish the program to decide and learn more about what they can do; programs to support donor needs.

Board members agreed that it would be good to have students become interns and obtain their security clearances. When an intern is recruited they can have the clearance needed for many organizations such as the ones represented by the board.

Professor Mayfield said that in recent past, interns have come from the Career Development Center, but most students are already working while they are in the program.

Faculty Development - Endowments, co-operative opportunities with industry.

It was suggested that the department look at establishing a fund that would supplement the Security Plus exam for applicable students. Joe Green suggested going for the smaller number donations (like 1,000\$ versus 250K\$) as multiple small donations could add up to a larger one or provide opportunities to many students over a single student.

Dr. Spencer said we have a donor in mind, and we want to cultivate that donor. This should present opportunities for other donors. Regarding capital campaigns, the more people on board, the more support there is on campus, and the more who want to be a part of it. We want to develop specific proposals to meet the needs of the donors in order to promote the mission of the institution, thereby promoting student success. These are the guiding principles we want to put in front of donors. Dr. Spencer added that we welcome input from the board since they are knowledgeable about what meets the needs of business and industry.

Infrastructure Enhancements- Classroom and lab enhancements, and how the classes currently being taught may be improved, i.e. distance learning classes.

**MARKETING** – Partnerships/ Co-ops

- Current pamphlets
  - Computer Science
  - Information Technology
  - Cybersecurity (jointly produced with CoB)
- Other Strategies
  - What catches attention?
  - Reaching prospective students already employed?

Professor Mayfield posed the question, “How do we best market computer science and information technology? We have designed three pamphlets, and the information across the board, listing all professional courses students need to take, one for computer science, one for IT, and one for cyber security. Cyber security is created under the College of Business because they have the information assurance degree. There are three degrees under cyber security.

Bachelor’s of Science in Computer Science with a concentration in Information Security

Bachelor’s of Science in Information Technology with a minor in Information Security

Bachelor’s of Science in Information Assurance Management (through the College of Business).

When recruiting events are attended, these pamphlets are on display and distributed. Professor Mayfield addressed the board, “We have spoken with community college partners, keeping them updated with our programs, etc. But for those who are currently working and interested in an associate’s degree, what do we need to do?” Russ Johnson said this is also their question. “Almost all government contract work requires a bachelor’s degree. There are already so many who can do the work who do not have the degree, but how do we convince the government to remove this requirement?”

One board member, Joe Green asked who is the target? Prof. Mayfield said at present it is the junior college. Pamphlets are taken to recruiting events. It was brought up that the NSA Presentation Cyber Conference shows there is a national shortage of people with these skill sets. There is probably a 500-750K shortage of cyber engineers short nationally. They are not producing enough annually to cover the increasing gap. Therefore, students should be attracted to the job security and of course, the salary is much better.



Dr. Spencer added that a recent public issue came out based on the U.S. Education Dept. of Statistics which revealed that out of 26 institutions in Alabama, Athens State University was ranked ninth in ROI (Return on Investment). He said that there are opportunities to advertise this type of information which is from a news source and not from the institution itself. This includes overall quality, earnings, job placement, etc. The majority of our students come from community colleges. Thirty-three percent come from Calhoun. Twenty percent of new students are coming from four-year institutions, possibly due to cost, lack of success, or lack of one on one (personal experience) as they would receive at Athens State. Now students are coming straight from high school due to dual enrollment, which is a significant shift. So this is another market as we think of partnering with regional high schools. Also, this region is experiencing a lot of growth for economic reasons.

*Dr. Lewis goes over slides:*

**FACULTY AND STUDENT RESEARCH PROJECTS** - Projects and research papers, i.e. Capstone project, that have been published or are in process of being published, have direct student involvement. New publications, student involvement, etc. are very important in terms of research experience.

Future Faculty and Student Research Projects – Professor Mayfield has two groups for the Capstone project. One of the groups is working with Southern Home Realty in Athens, AL. They wanted a web presence. The other group has worked closely with Professor Mayfield, working on a repository which will store information on cyber attack models she is designing as part of her research with UAH and Lipscomb University. They will create an interface which will filter out things and create an output report to her directed specifications. The students will be presenting on this.

Professor Mayfield extended to board members the offer to hold employer sessions where they would come and speak to students about their specific company. These are set up with Saralynn Mitchell in Career Services. Dynetics will be here October 9. Space, Missile and Defense is going to open their presentation to anyone on campus. Until further notice, the date for this one is to be determined. Students are encouraged to attend these information sessions. They provide a good way for students to learn about the companies in the area.

**PRESENTATIONS & EVENTS** – Board members inquired if there is a fee for the company who sponsors a Capstone project.

Professor Mayfield responded that sometimes universities require a voluntary donation, Athens does not. Students who design web sites for those in the community must sign over their intellectual property rights on a liability protection form which is drafted by the legal department. Anyone sponsoring a project must sign a liability waiver.

Thank you.

Tentatively the next meeting is scheduled for 10 a.m. on Friday, Oct. 26, 2018.