

**November 1, 2019**  
**Waters Hall Room 200**  
**9:00 - 9:15 Welcome and Coffee**  
**9:15 – Noon Follow-up Items**

Those in attendance:

Dr. Adam Lewis	Athens State University
Mr. Chad Easterling	Dynetics
Mr. Russ Johnson	Athens City Board of Education, President Retired VP and Service Line Director of Software Applications (SAIC)
Dr. Brady Rimes	Athens State University
Mr. Jonathan Dauwen	Northrop Grumman
Mr. Aaron Rathz	Northrop Grumman
Mr. Eric Day	Alumni
Prof. Katia Maxwell	Athens State University
Mr. Nick Agrawal	Athens State University

The meeting had the agenda switched around a little. We began by discussion the Computer Science Initiative and the CS for All Grant, as Russ Johnson was going to have to leave our meeting early, and as President of the Athens City Board of Education we were really interested in his feedback.

Professor Maxwell began by discussing the certification pathways that the state of Alabama has suggested for teachers to receive their certifications to teach Computer Science in High Schools.

The Computer Science department presented three options to the College of Education for state approval:

- Option 1** - Information Technology Degree with a minor in Secondary Education, along with two new courses.
- Option 2** – Develop new program - Bachelor of Science in Computer Teacher Education with a minor in Secondary Education, along with two new courses.
- Option 3** - A certificate with three core computer science courses, one elective and the two new education courses.

Each of these options will only require the creation of two new courses, all other classes are already in place by the College of Education or the Computer Science department. These two new classes would be:

1. Computer Science Methods class
2. Praxis exam preparation course

**The details for each of the plans are found at the end of this summary.**

Russ Johnson asked if Athens State has a presence in Huntsville, and faculty concurred as we currently offer some classes at Toftoy Hall out at the Arsenal. He feels ASU is “very well positioned” to offer these programs in this area. He mentioned, for example, colleagues now retired who would be extremely interested. Mr. Johnson strongly suggested the need to advertise these programs when and if they are approved, and the possibility of looking at other locations that are outside of the Arsenal to hold these classes (maybe being able to rent out space from Calhoun).

Prof. Maxwell added that the CS and ITE faculty are hopeful the College of Education will suggest all three options to the state for approval. She and Dr. Leigh Hester had initially developed **Option 2** after attending Governor Ivey's CS for All Symposium but could not act on this due to needing to wait to see what would transpire from the State Department of Education.

The question was asked if the IT degree being proposed in Option 1 was the same degree that just went through the ABET General Site Visit. The concern is if the state department requested changes to be made to content degrees. An explanation was provided by Prof. Maxwell that everything that ABET requires is found in the "core" section of the IT program. The proposal is that these students will follow the IT concentration which requires for a minor to be declared, and any changes that is requested by the state department would need to occur in the secondary education minor or within the concentration, however the core portion of the degree would not change. Prof. Maxwell also pointed out that if the IT program receives the ABET accreditation, students who are planning to teach will not only have NCATE accreditation for their education degree courses, but they will also have the ABET accreditation for their IT courses.

There was also brief mention that at the last ABET Symposium, during a Den Discussion Prof. Maxwell did ask if ABET was planning to get involved in accrediting CS education degrees, but there has been so much focus on cyber security that the director of assessment mentioned that at the time they were not considering it.

It is hopeful that the COE will suggest all three options and that they will be approved. If all three meet approvals, **Option 1** is ready. It would not require anything except the development of the two education courses. They do not need ACHE approval, only review by the curriculum committee for development. The IT degree is in place, and the secondary minor is as well. **Option 2** and **Option 3** must go through ACHE.

The conversation then shifted to the NSF grant that the department is working on in collaboration with COE and COB. The grant is a small size grant meant for a 2-year period. The grant is based on the concept for CS for All and educating teachers to be able to teach Computer Science in their classrooms. Athens State University plans to propose a week long boot-camp. **A schedule that is being proposed is found at the end of the summary.**

After the initial 2 years the idea is to move forward to a larger grant opportunity and create a more advanced boot-camp and run two sessions. In the more advanced sessions we could incorporate Praxis into it because ETS creates the exam, and they are willing to send a representative to do workshops.

Mr. Johnson asked, "What is the timeline?" Prof. Maxwell answered that the grant is due February 2020, and the boot camp is set for the first week in June 2020.

Regarding facilities, location and necessary space for the boot camp, Mr. Johnson said that they would be glad to make the new Athens High School available for this. Professor Agrawal asked Mr. Johnson if we might obtain a support letter from the governor's office. Mr. Johnson said he would ask. If we can provide what is needed in the letters he will also reach out to Dr. Holladay, Athens City Superintendent.

Per Prof. Maxwell, it is hopeful that the COE will reach out to superintendents on the grant application. Rachel O'Sullivan is helping to write the grant.

Russ Johnson asked if they want to reach out to just north Alabama superintendents or the whole state? Dr. Lewis said the whole state and into southern TN as well.

Mr. Johnson works with TN Tech and said he would contact them to see if they wanted to help. Prof. Maxwell added that collaboration opportunity is in fact part of the grant effort.

Professor Agrawal added that there are small, medium and large grants, and we are striving for the small grant in anticipation of seeking the next level grant in two years.

Russ Johnson asked about the boot camp size and how many would be enrolled. Prof. Maxwell said 40 and confirmed that there would not be a cost to the teacher for the boot camp. The grant specifies that attendees will receive a stipend around \$525 for all teachers who attend the full week along with equipment and other resources that will be made available. Also, lunches will be provided which allows for a speaker during lunch time. The plan for the grant also include partnership for mentoring, and mentors will also receive a stipend based on the number of volunteer hours, however those figures have not yet been determined.

Mr. Johnson raised the hypothetical scenario where he might come up with sponsorship money if for instance, teacher sponsors could be guaranteed. He asked Prof. Maxwell to write him an email with what's needed for the support letter. He added that they would probably be surprised at the responses. Prof. Maxwell, replied that if the superintendents would send or recommend teachers, it would help in that the teachers wouldn't even need to apply for the positions.

Professor Agrawal interjected that this grant is particularly advantageous because we offer the mentorship as well as the support, and when the Cyber Center emerges, we will always provide continuous support.

Prof. Maxwell reiterated that the boot camp is a week long, and they are definitely seeking volunteers. There will be continued contact with the teachers, post boot camp as well, for example via virtual chats/meetings. We will be answering their questions and looking for feedback from them such as, have they integrated this into their classes, and if so how? This feedback and follow up will help us with necessary enhancements and anything we can improve upon for next year.

Mr. Johnson asked if the mentorship would be technical or educational. Prof. Maxwell said technical, and they will be looking for volunteers from industry. She also reminded everyone that there is a partnership with the COE, so questions that arise from the perspective of integrating the material into the classroom that someone would be available to assist with those questions.

Mr. Johnson asked if they have looked at the teacher's summer calendar. Prof. Maxwell said they have but are hoping to tie this in with the Cyber Summit. He also asked if it is appropriate to speak to the state department about this. Prof. Maxwell said it's fine to do this, but we will know more about this process after February 2020.

Prof. Maxwell said they are trying to bring in teachers from areas that are under-represented, and Ms. O'Sullivan is aware of the applicable counties in regard to the grant.

Once we wrapped up the education discussions we backtracked and started to follow the discussions based on the outline of the agenda.

### **MACS Club Endowed Scholarship –**

The scholarship was first started by the efforts of Prof. Fitzsimmons. For several years any money that the group has earned has gone towards the establishment of an Endowed Scholarship. Recently the amount to raise for the endowed scholarship was raised to \$25K, because the group had been working under the assumption that \$10K would establish the scholarship, Eric Day (president of MACS club up until graduation last year) worked closely with club advisors and Mr. David Brown and was able to get the club "grandfathered" under the amount of \$10K.

Before 2019 Fiddler's MACS had \$8,500. We are trying to raise \$1,500 more. There was a vendor change this year because students requested more than the 25% they were receiving as they were mostly running the event. The vendor declined, and students opted to go with another vendor. However, the new vendor did not require student assistance, and without student assistance, the club gets 25%. Per the vendor, MACS earned \$500 from 2019 Fiddler's, but they said sales were significantly low due to the storms that moved in Saturday evening. All donations are made through an "honor system".

On Friday, November 8<sup>th</sup>, there is a concert series which will give the club \$200 for assisting and any money that is made from sales of popcorn and water goes directly to the club, so hopefully this will bring in around \$300. **UPDATE: The event had low attendance and the club only made \$26, for a total of \$226.** On Nov.19, MACS is partnering with Marco's Pizza in Athens and they will donate 20% of proceeds for any order that is tagged as "MACS fundraiser" when they order. This will apply to placing orders as dine in, carry out, online, and delivery.

**A flyer has been provided by Marcos Pizza with coupons and is attached to this email, please feel free to share and spread the word!**

Students updated the bylaws of MACS club. Going forward, half the Fiddler's money raised will go to the scholarship (once endowed), and the other half stays in the club for conferences, competitions, etc. Stipulations are in place, (i.e., student must be an *active* member). The reason we are doing this primarily is because there is only one dedicated computer science scholarship. The minimum is \$10K, and the timeline for raising the funds is five years.

**If anyone is interested in providing a direct donation to this scholarship the instructions are found at the end of this summary.**

Two questions were asked as far as the scholarship and we have received the information:

1. Who chooses the recipient of the scholarship?

Based on the criteria for the endowment the Advancement office will normally choose the awards, but a list of names can be provided to us for those who meet the requirements.

2. What is the amount of the scholarship that will be awarded?

The amount is usually 4-5% of the endowment. This is why it is so important for us to try and reach the \$25,000 level.

### **Annual Assessment**

From the 2018/19 ABET visit, there were nine outcomes. From the nine, there were five in which students did not meet the outcomes. CS was only tied to one. IT students were tied to five. The IT degree is only in its second year. It is difficult to assess when there are only three graduating IT students. As of the visit from ABET last month, there are now six learning outcomes versus nine.

The one outcome in which both programs did not meet was "Demonstrate the ability to apply knowledge of computing and Mathematics".

The other four outcomes not met by IT students were:

1. Have the ability to analyze a problem, and identify and define the computing requirements appropriate to its solution.
2. Demonstrate an ability to communicate effectively with arrange of audiences.
3. Demonstrate an understanding of professional, ethical legal, security and social issues and responsibilities
4. Demonstrate ability to use current techniques, skills and tools necessary for computing practice.

**Data can be reviewed on the slides 6 – 9 of the presentation attached to the email.**

### **ABET – IT Program General Visit**

This occurred at the end of September. All concentrations, (1) Information Technology, (2) Computer Networking, and (3) Health Information Technology were reviewed for accreditation. No official response has been received from ABET Headquarters as far as the reviewer's comments. However, before leaving campus there were debriefing sessions and the department believes that through the (unofficial) comment made that the

Information Technology with all of its concentrations will become ABET accredited. The reviewers left campus with an unofficial suggestion of one weakness and two concerns which are discussed in the next section.

Before discussing the findings, below is an explanation of the usage of the terms:

**Deficiency** – A Deficiency indicates that a criterion, policy, or procedure is not satisfied. Therefore, the program is not in compliance with the criterion, policy, or procedure.

**Weakness** – A Weakness indicates that a program lacks the strength of compliance with a criterion, policy, or procedure to ensure that the quality of the program will not be compromised. Therefore, remedial action is required to strengthen compliance with the criterion, policy, or procedure prior to the next review.

**Concern** – A Concern indicates that a program currently satisfies a criterion, policy, or procedure; however, the potential exists for the situation to change such that the criterion, policy, or procedure may not be satisfied.

### **ABET Information Technology Curriculum Changes**

There was one weakness, which was curriculum-related. In the Networking Concentration students do not have to take Database Management or Systems Architecture and Integration. These are electives. However, ABET requires Management of Data knowledge and Systems Architecture and Integration knowledge. The department felt students were getting this knowledge with Computer Organization and Architecture, but we were unable to provide the team with sufficient evidence of this.

ABET gave two choices: (1) Document the classes where these topics are covered and how many hours spent doing so, or (2) require the courses as part of the curriculum. The department opted to require these courses and the appropriate paperwork is being submitted to update the plan of study to reflect this decision. The change will be required by any student who is admitted in Fall 2020.

Concerns were associated to student advising and faculty size. As far as student advising the evaluators were concerned that students are not required to meet with an advisor before registering for classes, therefore students could be “self-advising” and causing themselves miss taking a required course at a certain time and therefore delaying their graduation. This could occur because with only five faculty members supporting two programs and a total of five concentrations some classes are only offered once a year, and if students do not realize this or speak with an advisor the issue above could occur.

Remedy for “self-advising” - The university earned a grant for a professional advising center. The department is hopeful that there will be policies in place that will address the issue of self-advising through this endeavor.

The concern with the size of our faculty dates back to 2016 when we went through the ABET accreditation process for Computer Science. The reviewers are concerned that the small number of faculty will make it to where the programs will not be sustainable in the future if there is growth. There is also concern about faculty overloads and additional duties being assigned without course releases.

Remedy for faculty size issue – The department has spoken with Dean Spencer about hiring one position with CS focus and another with IT focus. We are currently waiting for the approval to move forward with this search effort.

Mr. Easterling expressed the benefit of adjuncts such as students being exposed to people actually working in the industry. It was asked if the small number of adjuncts was on purpose or from lack of interest. Dr. Lewis explained that the choice to only have a small number of adjuncts is a decision made by the department. The full time faculty feel that it is their duty to be in the classroom with the students especially in the foundational

courses and the higher level senior classes. Dr. Lewis also mentioned and he and Dr. Spencer have spoken about the possibility of a “visiting faculty” which would also give students the exposure to different people.

If and when we get the accreditation, we will be the second institution in the state that has an ABET accredited IT degree.

### **ABET- Computer Science Review**

At the time that the IT program was having a general site visit for initial accreditation, the Computer Science program was also under review but without a visit.

This review only had to address three sections, student outcomes, continuous improvement, and faculty size. The biggest area of concern is *continuous improvement*. Dr. Lewis commended Prof. Maxwell because the **IT review** did not have even one weakness or concern that was identified in the area of *continuous improvement* and therefore we believe that this section of the CS Review will not have any issues either. The student outcomes were documented based on requirements that are now set by ABET, and the faculty size was addressed by the hiring of Prof. Nick Agrawal.

The Computer Science degree even though currently under review, will have a general site visit scheduled for Fall 2020 to re-accredit the program. The department will be completing a request for review in January, and writing a self-study report to be submitted prior to July 1<sup>st</sup>.

### **Upcoming ABET Computer Science Curriculum Changes**

Prof. Maxwell said we already have a CS general visit lined up for next year. Curriculum requirements have changed. The department is attempting the full accreditation for Cyber Security. We need to be sure to reference as a *concentration* and not a program because of the different requirements ABET has for a cyber-security program.

The curricular changes being made are:

Programming for the Web is not required by ABET, so it has been removed.

CS 340 Assembly Language, CS 472 Algorithm Analysis, ITE 327/L Database Management System were possible electives and are now part of the core requirement for the Computer Science Program.

These changes will be implemented for 2020-2021 academic year.

A concern is that curriculum changes were not made for Computer Science Theory. We have theory courses, but they are electives, not core classes. Prof. Maxwell reached out to others who have gone through ABET. They advised that ABET should deem Computer Science Theory covered as long as we have the other classes such as Language and Programming.

### **ABET Curricular Requirements**

The program’s requirements must be consistent with its program educational objectives and designed in such a way that each of the student outcomes can be attained. The curriculum must combine technical, professional, and general education components to prepare students for a career, further study, and lifelong professional development in the computing discipline associated with the program.

The curriculum requirements specify topics, but do not prescribe specific courses. The program must include mathematics appropriate to the discipline and at least 30 semester credit hours (or equivalent) of up-to-date coverage of fundamental and advanced computing topics that provide both breadth and depth. The computing topics must include:

1. Techniques, skills, and tools necessary for computing practice.
2. Principles and practices for secure computing.
3. Local and global impacts of computing solutions on individuals, organizations, and society.

### **Curriculum Specific to Computer Science programs:**

The curriculum requirements specify topics, but do not prescribe specific courses.

These requirements are:

- a. Computer science: At least 40 semester credit hours (or equivalent) that must include:
  1. Substantial coverage of algorithms and complexity, computer science theory, concepts of programming languages, and software development.
  2. Substantial coverage of at least one general-purpose programming language.
  3. Exposure to computer architecture and organization, information management, networking and communication, operating systems, and parallel and distributed computing.
  4. The study of computing-based systems at varying levels of abstraction.
  5. A major project that requires integration and application of knowledge and skills acquired in earlier course work.
- b. Mathematics: At least 15 semester credit hours (or equivalent) that must include discrete mathematics and must have mathematical rigor at least equivalent to introductory calculus. The additional mathematics might include course work in areas such as calculus, linear algebra, numerical methods, probability, statistics, or number theory.
- c. At least six semester credit hours (or equivalent) in natural science course work intended for science and engineering majors. This course work must develop an understanding of the scientific method and must include laboratory work.

### **Curriculum specific to Information Technology programs:**

The curriculum requirements specify topics, but do not prescribe specific courses. The curriculum must include coverage of fundamentals and applied practice in the following:

- a. The core information technologies of human-computer interaction, information management, programming, web systems and technologies, and networking.
- b. System administration and system maintenance.
- c. System integration and system architecture.

### **ABET – Concentration Names**

As you are aware we have two programs with specific concentrations that students have to choose.

We have the following:

Program (Major): Computer Science  
Concentration (1): Computer Science  
Concentration (2): Information Security

Program(Major): Information Technology  
Concentration (1): Information Technology  
Concentration (2): Computer Networking  
Concentration (3): Health Information Technology

As you can see one of the concentrations within each program has the same name as the program itself which has caused some confusion to students and they are not selecting a concentration because they believe they are following one since the name of the concentration and the program are the same. Based on feedback that we have received from the current ABET evaluation team it was suggested that we update these “repetitive” concentration names.

There are three concentrations that are actually being changed, based on feedback from the Board of Trustees the concentration in Information Security is being changed to Cyber Security.

For the concentration of Computer Science, the suggestion made to the board was Software and Systems which we will move forward with.

The concentration name suggested for Information Technology was Systems and Software because the focus is more on different Systems and then Software associated to those systems. However, it was determined that this would then cause confusion due to the Software and Systems for Computer Science.

Therefore, the department has come up with two other possibilities and would like feedback from the board. We need to submit the paperwork prior to November 21<sup>st</sup> and therefore your comments are greatly appreciated at your earliest convenience.

**The two options are:**

- (1) Applied Information Technology**
- (2) Computer Information Technology**

**Your comments on these are greatly appreciated.**

**Enrollment**

There was a brief discussion in enrollment trends and graduation. The question was asked if an analysis had been conducted as far as cultural impact on enrollment. Unfortunately, “official” research has not been conducted in the area but the trend seems to show that when the economy is doing well the enrollment declines because people are getting jobs and working. While the trends show that Computer Science enrollment is growing there is not much growth in Information Technology. I was asked if we are expecting growth in that program and the answer is yes. Attaining ABET accreditation for CS made a difference in our enrollment numbers and we expect to see the same with IT, especially since with IT we will be the second institution in the entire state to have an ABET accredited program. We also revisited the discussion of our age demographic, and when we used to attract the older students this last semester the average age of students in the computer science program was 24 while information technology students were 23.



## Capstone Projects

Students will be presenting their capstone projects on Monday, December 2, 2019 at 6:00pm in the Waters Hall Conference room.

The two projects being presented are:

- Project 1: Pycraft (Sponsors: Dr. Lewis)
  - Students are expanding a programming game for teaching Python programming based on Minecraft.
  - Making it available in both Mac and Windows machines
  - Fixing “bugs” and adding tutorials
- Project 2: Veterans Museum (Sponsor: Bob Bordough)
  - Converting multiple Access databases into a single SQL database
  - Creating front end and back end interfaces for user interaction

If your schedule allows we would very much welcome your attendance at these student’s presentations.

## Details of Proposals for Computer Science Certification

### Option 1

BS in Information Technology, following the IT concentration with a minor in secondary education with the addition of the two new courses, Methods and Praxis Preparation.

#### General Education Requirements

Area	Discipline/Course	Hours
I	Written Composition	6
II	Humanities/Fine Arts (12 hours total)	
	At least one fine arts course	3
	At least one literature course*	3
	Other courses in humanities or fine arts	6
III	Mathematics and Natural Sciences (11 hours total)	
	Precalculus Algebra or Precalculus Algebra and Trigonometry or Precalculus Trigonometry	3
	Natural Sciences (lab based)	8
IV	History/Behavioral and Social Sciences (12 hours total)	
	At least one history course*	3
	Other courses in history or behavioral/social science	9
	*Students must complete a 6 hour sequence in either Literature (Area II) or History (Area IV).	
	Total General Education Requirement Hours:	41

#### Major Prerequisite (Pre-Professional) Course Requirements (Area V)

Discipline/Course	Hours
Calculus I or Business Calculus	3-4
Principles of Accounting	3
Statistics Course (GBA 305, MTH 231, or MA 331)	3
Computer Programming Course	3
CS 317 Computer Science I or sufficient score on Placement Exam	0-3
HU 321 Research Sources and Skills	1
Total Major Prerequisite Requirement Hours:	13-17
Total General Education and Major Prerequisite Requirement Hours:	54 - 58

## Professional Course Requirements

	Computer Science Core Courses	Hours
	CS 318 Computer Science II	3
	CS 309 Introduction to Digital Logic Design	3
	CS 309L Digital Design Lab	1
	CS 310 Professional Ethics of Computing	1
	CS 372 Data Structures	3
	CS 380 Programming for the Web	3
	MA 308 Discrete Mathematics	3
	Computer Networking Core Courses	
	ITE 305 Networking Fundamentals	2
	ITE 306 Local Area Networks	2
	Information Technology Core Courses	
	ITE 315 System Admin & Scripting Languages	3
	ITE 321 Systems Analysis and Design	3
	ITE 420 Fundamentals of Information Security	3
	ITE 450 Human Computer Interaction	3
	Capstone Experience Courses	
	ITE 451 Software Engineering	3
	ITE 452 Senior Software Engineering Project	3
	ITE 452L Senior Software Engineering Project Lab	1
	Total Core Requirement Hours:	40

## Additional Program Requirements

In addition to the Professional Courses above, Information Technology students must complete one of the following:

- Concentration in Information Technology which requires declaring a minor
- Concentration in Computer Networking
- Health Information Technology

Concentration: Information Technology		
	Information Technology Core Courses	Hours
	ITE 327 Database Systems	3
	ITE 327L Database Systems Lab	1
	ITE 365 Visual Application Development (C#) or ITE 367 Enterprise Application Development (Java) or ITE 382 Mobile Device Software Development	3
	ITE 441 Systems Integration and Architecture	3
	Approved Elective Courses	6
	Select courses from the following (must add up to 6 credit hours):	
	ITE 307 Wide Area Networks	2
	ITE 308 Network Architectures	2
	ITE 365* Visual Application Development (C#)	3
	ITE 367* Enterprise Application Development (Java)	3
	ITE 382* Mobile Device Software Development	3
	* must be different from class taken for ITE Core Course	
	ITE 371 Health Informatics Concepts and Practices	3
	ITE 405 Internetworking Devices	2
	ITE 406 The Internet	2
	ITE 407 Network Processes and Protocols	2

	ITE 408 Enterprise Network Design & Management	2	
	ITE 421 Digital Forensics	3	
	Any 400-level Computer Science Course	3	
	Required Minor with approval from advisor		18
	Total Concentration Requirement Hours:		34

The Information Technology major must complete a minimum of 24 semester hours of 300/400 level coursework in Computer Science (CS) or Information Technology (ITE) at Athens State University.

Exit Exam: An exit exam is required for graduation. The departmental exit exam shall be taken while enrolled in ITE 452, Senior Software Engineering Project.

	Hours
Total Minimum Hours Required for Completion of Information Technology Major with an Information Technology Concentration	129-133

Minor required with the Information Technology concentration:

Professional Studies Course Requirements (Education Minor) Course Hours Course	Hours
ED 301 Introduction to Teaching	1
ED 302 Foundations of Education	3
ED 305 Technology & Media Education	3
SC 331 Classroom Management in Secondary Education	3
SC 333 Teaching Reading/Writing in the Content Areas	3
SC 362 Assessment and Evaluation in Secondary Education	3
SE 301 Survey of Exceptional Learners	3
SC 400 Field Work Practicum I	1
SC 401 Field Work Practicum II	1
ITE/CS XX Materials/Methods of Teaching Computer Science in Middle School/High School (needs to be developed)	3
ITE/CS XXX Praxis Preparation	2
SC 486 Internship in High School Education	4-12

Highlighted courses are two courses that need to be developed for the minor.

### Degree Option 2:

This would be a Bachelor's of Science in Computer Teacher Education (CIP 13.1321) this would be a completely new program. The plan of study is attached along with the courses in education that would be required. It is similar to both the IT and CS programs that we currently have. However, this program allows for a teacher to decide on a "specialized" area.

Bachelor of Science – Computer Teacher Education (Grades 6 -12) -- CIP Code 13.1321

EACH STUDENT MUST ASSUME RESPONSIBILITY FOR KNOWING THE ACADEMIC REQUIREMENTS FOR THE DEGREE THAT IS BEING PURSUED.

Program components for the Bachelor of Science degree with a major Computer Teacher Education

Applicable General University Requirements

Students earning the Bachelor of Science (BS) degree with a major in Computer Teacher Education must satisfy all general University requirements and meet all financial obligations before a degree is awarded.

## General Education Requirements

Area	Discipline/Course	Hours
I	Written Composition	6
II	Humanities/Fine Arts (12 hours total)	
	Fine arts course	3
	At least one literature course*	3
	Speech (SPH 106, 107) course	3
	Other courses in humanities or fine arts	3
III	Mathematics and Natural Sciences (11 hours total)	
	Precalculus Algebra or Preclaulus Trigonometry	3
	Natural Sciences (lab based; calculus-based Physics I and II recommended)	8
IV	History/Behavioral and Social Sciences (12 hours total)	
	General psychology course	3
	PSY 210 Human Growth and Development or PS 334 Adolescent Psychology	3
	At least one history course*	3
	Other courses in history or behavioral/social science	3
	*Students must complete a 6 hour sequence in either Literature (Area II) or History (Area IV).	
	Total General Education Requirement Hours:	41

## Major Prerequisite (Pre-Professional) Course Requirements (Area V)

	Discipline/Course	Hours
	Calculus I	3
	ITE 301 Problem Solving with Computers or CIS 146 Microcomputer Applications	3
	CS 305 Concepts of Computer Science or CIS 252 Advanced C++	3
	CS 317 Computer Science I or Placement Exam	0-3
	Pathways Course (New Title 3 class)	3
	Total Major Prerequisite Requirement Hours:	12-15
	Total General Education and Major Prerequisite Requirement Hours:	53-56

## Professional Course Requirements

	Computer Science Core Courses	Hours
	CS 318 Computer Science II	3
	CS 309 Introduction to Digital Logic Design	3
	CS 309L Digital Design Lab	1
	CS 310 Professional Ethics of Computing	1
	CS 372 Data Structures	3
	ITE 327/L Database Management Systems	4
	MA 308 Discrete Mathematics	3
	ITE 305 Networking Fundamentals	2
	ITE 306 Local Area Networks	2
	ITE 451 Software Engineering	3
	ITE 452/L Senior Capstone	4
	Choose one of the focus areas	

	Development	
	ITE 315 System Administration & Scripting Languages	3
	ITE 365 Visual Application Development or ITE 367 Enterprise Application Development (Java)	3
	ITE 382 Mobile Device Software Development	3
	CS 380 Programming for the Web	3
	System Analysis	
	ITE 321 System Analysis & Design	3
	ITE 441 System Integration & Architecture	3
	ITE 450 Human Computer Interaction	3
	ISM 404 Managing Information Resources	3
	Security	
	ITE 420 Fundamentals of Information Security	3
	ITE 421 Digital Forensics	3
	CS 454 System Security Management	3
	CS 484 Applied Cryptography and System Security	3
	Networking	
	ITE 307 Wide Area Networks	2
	ITE 308 Network Architecture	2
	ITE 405 Internetworking Devices	2
	ITE 406 The Internet	2
	ITE 409/L Network Security & Lab	4
	Healthcare	
	ITE 321 System Analysis and Design	3
	HCM 340 Introduction to Health Care Systems	3
	ITE 371 Health Information Technology Concepts	3
	ITE 471 Information and Communication in Health Care	3
	Total Professional Requirement Hours:	41

Exit Exam: An exit exam is required for graduation. The departmental exit exam shall be taken while enrolled in ITE 452, Senior Software Engineering Project.

Professional Studies Course Requirements (Education Minor) Course Hours

Course	Hours
ED 301 Introduction to Teaching	1
ED 302 Foundations of Education	3
ED 305 Technology & Media Education	3
SC 331 Classroom Management in Secondary Education	3
SC 333 Teaching Reading/Writing in the Content Areas	3
SC 362 Assessment and Evaluation in Secondary Education	3
SE 301 Survey of Exceptional Learners	3
SC 400 Field Work Practicum I	1
SC 401 Field Work Practicum II	1
ITE/CS XX Materials/Methods of Teaching Computer Science in Middle School/High School (needs to be developed)	3
ITE/CS XXX Praxis Preparation	2
SC 486 Internship in High School Education	4-12
Total Professional Studies Requirement Hours	30-42

	Hours
Total Minimum Hours Required for Completion of Computer Teacher Education with minor in Education	124-139

The highlighted courses are ones that need to be developed.

### Option 3:

The third option that we are proposing is a certificate option for those who are already teaching. Our proposal here is that these teachers will need to take a total of 6 classes, 3 core computer science courses, 1 elective CS/IT course and the 2 new classes for methods and praxis preparation.

Course	Hours
CS 317 Computer Science I or Sufficient Score on Placement Exam	0-3
CS 318 Computer Science II	3
CS 372 Data Structures	3
ITE/CS XX Materials/Methods of Teaching Computer Science in Middle School/High School (needs to be developed)	3
ITE/CS XXX Praxis Preparation (needs to be developed)	2
Elective from the following list CS 309 & CS 309L Digital Logic & Digital Logic Lab 4 CS 417 Topics in Object Oriented Programming CS 472 Algorithm Analysis ITE 315 System Administration & Scripting Languages ITE 321 Systems Analysis and Design ITE 327 & ITE 327L Database Systems & Database Systems Lab ITE 365 Visual Application Development ITE 367 Enterprise Application Development ITE 380 Programming for the Web ITE 382 Mobile Application Development ITE 420 Fundamentals of Information Security ITE 450 Human Computer Interaction	3-4
Total Professional Studies Requirement Hours	14-18

## NSF Grant Boot Camp Proposal

Day 1:

Hardware – Determining Needs and Building a System

Networking – Setting up a Secure Network

Day 2:

Cybersecurity – What is it? It's impacts & the CIA triad

Secrecy - Encryption, Cryptography and Ciphers

Day 3:

Virtual Machines & Cyber Events

Programming – Basic understanding through Scratch

Day 4:

National Cyber Summit

Day 5:

Taking it home – Integration into current curriculum

Need to discuss with Dr. Hester as to the topics that would be covered here.

Each day we plan on also having someone provide some welcome remarks and a lunch speaker.

### Donating to the MACS Scholarship

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