<div align="center">**Instructional Unit – Program Review**</div>

Part 1: - Program Overview

Program Name: Computer Information Systems

Program Mission and Description: The Computer Science department (CIS) has the same mission statement as the College. In addition, the mission of CIS is to become the community college leader in computer science. The Computer Science department (CIS) has three-degree programs, Networking, Programming and Web Development. We have two instructors at the Jefferson campus and three at Shelby campus. To follow our mission, CIS is starting to offer the latest technology courses in Programming, changing our Networking option and completing a major update in Web Development. Just this past year, CIS has worked on and was approved for a fourth option – Cybersecurity.

Program Admission and Awards: The admission process is the same as the colleges. While pursuing a degree for all our options, students will receive a short certificate, certificate and AAS Degree.

Program Demographics: Please complete the following chart for your area (this data can be found on the IE website or by contacting ie@jeffstateonline.com

Category	Student Totals (3yrs)	Percentage (of total students)
Total Students	3,834	45%
Number of Male	1,996	65%
Number of Female	1,838	34%
Age 18-25	2,474	34%
Age 26-40	1,088	95%
Age 41+	310	63%
African American Students	1,008	54%
Asian Students	133	68%
Caucasian Students	2,383	43%
Hispanic Students	122	23%

In review of the data above do you see any trends that are encouraging or discouraging?

We have seen an increase in female enrollment. Our Advisory Committee has stated numerous times the need for female IT employees. There is also an increase across all categories listed above. The computer science is continuing to grow in the IT field, are enrollment should continue to grow.

How would you address those trends?

We would start advertising our options more. Doing this would increase our enrollment by making sure we target all demographics. We have also discussed creating our own Facebook and LinkedIn! accounts specific to BIS.

Mode of Delivery:

How many modes of delivery does your program/department use?

Two, Internet and traditional

Which locations support your program/department?

Clanton, Jefferson, Pell City and Shelby support our program. Currently, Clanton and Pell City instruct in the basic computer courses.

Do you have any plans to expand these delivery methods or locations?

Not at this time.

Program/Department Goals: Please list your program/department goals below:

1. Increase advertising of our three options
2. Continue working towards increasing enrollment
3. Update Computer Programming and Cybersecurity
4. Overhaul Web and Mobile App options
5. Become a Centers of Academic Excellence – Cyber Defense (CAE-CD)

Program/Department Outcomes Achievement:

From our 2019-2020 Program/Department Goals, we started our Cybersecurity option and currently have over five student majors. We have been promoting the option by adding seminars and awareness of the importance of cybersecurity. In the process of becoming a CAE-CD school, we have incorporated marketing tools by adding a bulletin board with Cybersecurity information and sending emails to Cybersecurity and Networking majors of free seminars and workshops.

To increase enrollment, our CIS website is being restructured to show updates to our options and will include current trends in Information Technology. We will also use bulletin boards as a marketing to for our options. With the help of the Facebook and LinkedIn! college administrator posts information about current courses being offered per semester before registration begins.

Our Networking option has been updated to current standards by adding Cloud and Introduction to Internet of Things (IoT) courses. Cisco has updated their courses offered as well to reflect these same standards. The Cloud courses are new, and enrollment should increase as new students become Networking majors. We may in the future consider combining the Cybersecurity and Networking option since they work side by side with each other. You can't have Cybersecurity if you don't have a network. Also, we plan to add Python programming to the option.

We have removed and replaced courses in our Computer Programming option. Our Advisory Board keeps us updated on new programming software and have found that Python has become a staple in corporate IT departments. We replaced an advanced C# course and replaced it with Python. Starting in the spring, the department will be meeting on updating the Computer Programming option and the order to which the courses are taught.

The Web and Mobile App option must be updated. We currently have no majors in the option. The Advisory Board have provided us with information on where we should be focusing with this option. Hopefully, we will have changes that will take effect in the fall.

CIS faculty will be meeting frequently to create competencies for each course offered. This will be advantageous for students taking the same course but with different instructors. The competencies will reflect our Student Learning Outcomes (SLOs) and if necessary, update existing SLOs. Attached you will find our three-year assessment data.

Part 2: Program/Department Change

Program/Department Goal Changes:

Over the past two years, our AAS, CER, and STC have been changed to become more option specific. ACCS has mandated that the STC have a minimum of 18 hours. Our instructors have sat down and discussed information given to us by our Advisory Board. Certificates and short-term certificates were changed to become more viable in the industry. We removed our major courses and only added them to the curriculum option to which they were necessary. For example, computer programmers do not need to know how to break down and computer or create networks. These courses were removed because they aren't necessary for our Computer Programming option. Our Cybersecurity and Networking option courses each refer to a specific certification. Certifications are important and make students more viable in the industry and increases employment opportunities.

The Advisory committee has discussed current and future trends in computer programming, cybersecurity, networking, and web development. The most discussed has been our Web and Mobile App option. They have suggested the most used software today in web development. We will be making those changes next year.

Course Student Learning Outcome Changes:

In the process of becoming a CAE-CD institution, we have had to change our Course learning Outcomes (CLOs) for our CIS 150 Introduction to Computer Logic and Programming, CIS 260 Network Security and Risk Management, CIS 263 Computer Maintenance, CIS 270 Cisco CCNA I: Introduction to Networks, and CIS 282 Computer Forensics. Along with the changes to the CLOs, we have added Program Learning Outcomes as well. Other changes:

- Cisco courses
    - CIS 273c has been removed
    - CIS 271 has changed to Switching, Routing, and Wireless Security
    - CIS 272 is now Enterprise, Security, and Automation

Part 3: Evidence of Staff Participation in Program Review

Faculty/staff participation:

We have begun CIS department meetings in the fall and spring semesters. Due to the CAE-CD, we did not meet this past spring. In fall of 2021, we meet and determined changes to our options. After everyone agreed to the changes, I submitted a vote to all BIS faculty. These changes were approved and taken in front of the Curriculum Committee.

Advisory committee minutes (if applicable) and list of members:

Two Advisory members were removed due to relocation. In just the past year, we have added four additional members. All members represent a different sector in IT. The healthcare sector is the only one we are missing. Our current members are:

Steven Ballenger	Kennedy Okoro (new)
Jonathon Hay (new)	Leighton Vance
Tracy Henderson	David Vernon
Josh McCutchen	Justin Young (new)
Brandon Morgado (new)	

See below for the April and November minutes.

COMPUTER SCIENCE
SEMI-ANNUAL
ADVISORY COMMITTEE MINUTES
April 19, 2022

Date: Tuesday, April 19, 2022
Time: 11:30 a.m.
Location: Bistro ProVare- Shelby Campus

In attendance:
Linda Dobyns, CIS Inst., Prog. Assistant- Shelby
Barrett Cummings, BUS/Info Sys. Dept. Chair – Shelby
Steve Ballenger, Committee Chair, Al. Dept. of Forensic Sciences
Danielle Coburn, Vice President Academic Affairs
Brian Gordon, Dean of Instruction
Deana Goodwine, Assoc. Dean for Technical Programs
Leighton Vance, Liberty National Life Ins.
Syed Raza, CIS Inst. – Jefferson Jonathan Hay, Cadence Bank
Kennedy Okoro, Stay Bright Technology
Melanie Cox, Office Manager
David Vernon, Amerex Corp.
Justin Young, Biohorizons Implant Systems

Absent:
Wade Crawford, CIS Inst.- Jefferson
Josh McCutchen, EBSCO

The Computer Science Advisory committee members held their semi-annual meeting on Tuesday, April 19, 2022, at 11:30 a.m. at the Bistro ProVare on the Shelby Campus.

Linda Dobyns welcomed everyone to the meeting at 11:39. She asked if they have looked over the minutes from the November meeting. Steve made a motion to accept the minutes and David seconded the motion. She then asked Kennedy if he would ask grace over our meal.

Linda announced to the group that Anthony Blevins had turned in his resignation. He will be leaving at the end of the summer semester. We will now have two posts open for new faculty.

Linda discussed with the group about the desire to have all CIS faculty get their certifications for the courses we teach. Certifications include Microsoft, CCNA, and AWS. She hopes to have her AWS in the next three months. Following that she plans to get her CCNA, A+, Network +- all the courses she teaches. This will be good for the college and for

the students. With these certifications in place, students would be able to have the logo of their certificate level stamped on their transcript. Leighton said that the AWS certification is very important to their company.

Syed spoke to the group about what all is involved in Jefferson State Community College becoming an AWS Academy. This is related to the cloud computing. He suggested that we also need to become a Microsoft Academy. We would also need to be a Microsoft Academy to teach Azure which allows a student to demonstrate a fundamental knowledge of cloud concepts. With the Microsoft Academy, all courses necessary are included and the software is free. We are currently a CISCO Academy. Linda has three courses for cloud, and they can easily be changed with a book. If we touched on Azure, when teaching cloud to cloud communications, that would be good. Kennedy asked will this be one Academy and Syed said it would be three Academies.

This is the direction for the future of IT.

Linda talked about the major problems we are having with the Web Development area. We are seeing very low student numbers. CIS 276 Server Administration is no longer offered. Tony Blevins did a workup for CIS 206, which is a new course. She opened the floor to discussion about going forward with Web Development. Steve said at UAB if you are going into the marketing field you would need Web Development. Leighton and David said at their workplace, the web developing group is also out of their marketing department. Linda asked if we should rename the option Web and Mobile developing. Most agreed that this would lean more toward marketing. She then asked if CIS 250 E-Commerce would be good to have. David said they have EDI (Electronic Data Interchange). This saves money for companies because the items come through digitally. Kennedy said E-Commerce is very useful to him. With Web Development and Advanced Web Development – it is important to understand the backend.

Linda discussed the class/certificate options with Workforce Education. They are offering classes before we can get approval to add the same programs. She said she wanted to work with the students that take the Workforce Education classes and assist them in continuing through our program to get the Academy certifications. She asked the group – what courses should be included if we want to "beef up" the Web Development and Mobile options? We want something to intrigue students to come to Jefferson State Community College to get certified. Syed said E-Marketing – which is marketing business along with Web Development and E-Commerce.

Jonathan asked if Web 206 offers any user experience or if any class exposes the student to what CISCO is all about. The automation and security, teaching fundamentals, and Dev Ops. Building user stories, turning them into actionable things. Microsoft or Amazon Partner has that built in.

The group then talked about Programming, object oriented or others. Linda said she was going to work more with the Workforce Development department to possibly offer Cobol. Leighton opened a discussion about the probability that Cobol will be here for many years to come. "It is a solid code. If you have the aptitude, it can be picked up."

Syed talked about CAE Certificate. The Department of Defense – How do you train for Cyber

Academy? Introduced more than 40 courses all outcomes are necessary. The told colleges to align your courses with The Department of Defense. Follow their learning outcomes, paradigm outcomes. Select the program and then follow the paradigm for that program. He said they went to the administration with the idea of becoming a CAE Center and they liked it, but we must find which program.

The AAS Networking was discussed next. Two-year college – pick five courses designation CE for 2- and 4- year colleges R – research KU – knowledge units. They open a portal to send all documents in July and August. A committee must look over the courses to see where we can improve. There are grants we can apply for to help with the costs. We can add a logo for each academy we are a part of. There are four community colleges that offer a CAE center and 3 to 4 four-year colleges. These courses will open opportunities for students to get a federal job. First, we must get the curriculum approved then do all things to become a CAE Center. We are now waiting for the portal to open, and they will assign a mentor to assist us in completion. David said these certificates are necessary to work in the federal programs for security. This will eventually trickle down to state and local government jobs. Syed said you must submit a report at the end of each year to maintain the CAE Center status.

Linda said we must have a Cyber Security Board in place. She asked the board if they would be willing to combine Computer Information Systems Board with the Cyber Security Board? All attendees agreed – yes.

Syed said the labs needed to be used for hands on experience. Once we move to CAE then we will start to use them for Cyber Security.

Jonathan asked about internship program opportunities. Linda said she connects students with businesses to find opportunities. We do not have an internship program yet, but she will look into that.

Linda then discussed about the lack of experience students have with interviewing. She asked the group if they would be open to sitting down for "mock interviews" with the students. Steve said he does that now with his students and David said he works on this with the interns at his workplace. They said they would be happy to help the students in this capacity.

Linda closed out the meeting thanking all the participants and asked them to please give their feedback on all the information she passed out and that we discussed.

The meeting concluded at 1:15 p.m.

Respectfully Submitted by: Approved:

_____   _Linda M. Dobyns_____
Melanie Cox, Office Manager   Linda Dobyns

Distribution: All committee members

COMPUTER SCIENCE SEMI-ANNUAL ADVISORY COMMITTEE MINUTES

October 20, 2022
Date: Thursday, October 20, 2022
Time: 11:30 a. m.

Location: Bistro Provare - Shelby-Hoover Campus

In attendance:
Barrett Cummings, BUS/Info Sys. Dept. Chair - Shelby
Linda Dobyns, CIS Inst., Prog. Assistant- Shelby
Steve Ballenger, Com. Chair, Al. Dept. of For. Sciences
Wade Crawford, Instructor CIS Jefferson
Syed Raza, Instructor CIS Jefferson
Melanie Cox, Office Manager – Shelby
Justin Young, Biohorizons Implant Systems
Jonathan Hay, Cadence Bank David Vernon, Amerex Corp.
Brandon Morgado, Shipt
Alan Davis, Associate Dean of Developmental Education and Distance Education

Absent:
Josh McCutchen, EBSCO
Tracy Henderson, Southern Company
Dr. Brian Gordon, Dean Transfer General Studies
Danielle Coburn, Vice President, Student Affairs
Leighton Vance, Liberty National Life Ins.
Kennedy Okoro, Star Bright Technologies

The Computer Science Advisory committee members held their semi-annual meeting on Thursday, October 20, 2022, at 11:30 a.m. on the Shelby-Hoover Campus in the Bistro Provare.

Guests signed in at the door.
Linda Dobyns welcomed everyone at 11:45 a.m. to the meeting. Alan Davis asked grace over the meeting and for the lunch being served by the Jefferson State Bistro Staff.

Introductions were made around the table. Linda told the group about the new CIS hires at Jefferson State – John Wood and Peggy Peeples. She gave a bit of information for each of them. She said that Peggy is bringing with her a 3D printer and punch blocks, and we are very excited about that.

The minutes from the April 19, 2022, meeting was emailed to each guest for review by Linda Dobyns. She asked if everyone had an opportunity to read over the minutes. Steve Ballenger made a motion to accept the minutes as is and David Vernon seconded that motion – all were in favor.

Networking- Linda said she keeps hearing in the industry the need for Linux and that they are getting more active with Python. She asked for thoughts from the group about trying to find a way to put both of those inside the networking option. We are looking for a way to set us apart. Looking to drop a couple of courses that are not really adding to the program, and we need to add newer ones. Justin said they use Linux quite a bit. Not common for end user things but many of the underlying systems are Linux based. Syed asked which courses she was looking to drop, and she said one was the Internet of Things. He said that IOT was a required course and that it still had value for the program. She said that it is now more heavily used in the new networking course, so they are getting the same information. So why have it used heavily in networking and then teach it for seven weeks. There was no need to offer both. Brandon asked if that was an operating systems course? He said he thought Linux would be a good course for teaching operating systems. Linux is a good base that cuts across both systems. We had a workstation administration course and they retired that one. She has a computer maintenance course that does workstation, and she is not concerned with the windows. It would be helpful if ACCS had an apple operating system, but they do not. She feels it is important to get more into Linux information. Justin said he has seen many versions of Linux in the course he teaches. Linda said she planned on using Kali as it seems to be the front runner. Justin said Kali has a lot of penetration things built into it for cybersecurity testing and network mapping. He said he likes SuSe better overall. None of them are user-friendly. Linda said she needs to investigate Linux I and Linux II. She is getting a computer set up to use Linux to work on it. She may hold off on Python because she doesn't want Networking to go over 70 hours. Alan asked if she was talking about making the Python course that we currently offer as a degree requirement? She said yes. Wade said Python would be more valuable. The group discussed the differences between Cobal, Python, and ease of use. Linda said that our workforce education department teaches Cobal so she does not feel like we need to bring much of that into the degree side. If people already have their programming knowledge and want to brush up on it, they have the option of going with the workforce education department. David said most people are not learning it from the ground up, although, it is good to know for working at some companies. Syed said that Alabama Power is still using Cobal and they have a need for it. Linda said perhaps that would be a good program for workforce education to offer. We can work hand in hand with the workforce education department and direct students to where they need to be.

Linda asked if the group had much need or had worked much with the cloud. Cisco had updated their curriculum and added focus on automation. Is that something you deal with a good bit? From an automation standpoint Justin's company is currently building a robot written in Python to take orders from customers. Its name is Iron Giant. Cisco has also picked up doing more with the enterprise. Brandon asked if there is a cloud curriculum – she said yes, there are three courses – she removed the Microsoft courses because all those retired. Everything is going to the cloud. We offer three cloud courses, three Cisco courses, and in networking we have security and forensics courses. Cloud can be very valuable but there is still a need for IT because you still need equipment. Justin said his issue with Cloud is that you are removing hardware and taking pressure for maintaining patching and stuff. Linda said she was doing some research and there is over a twenty percent need for networking professionals for the cloud. David said they send a lot to the cloud, but they sell to the government, so they must be secure. He said he doesn't have as many servers as he used to have but he still has a large bank of servers. Linda said you are always going to have routers and switches and the need for someone to work on those whether it is in a room or on the Cloud.

Alan asked if anyone had any comments, concerns, suggestions related to our distance education program? Is there anything that you have seen or things that you feel like we need to know about. I know CIS is an online program and we want to make sure that we're doing a good job in delivering the needs of the students. He wants to give you a better understanding of our standards for design of courses and things like that.

Justin responded, that from a purely educational situation of being a person who has taught some of the online classes he feels like he can move things around easily. As far as access, whiteboard seems reliable. It is easy to use and customizable. Sometimes it is tough for student engagement. It seems easy for them to complete the course and not be interactive. Perhaps it is not as interactive of an experience. Overall, there is not anything he would say that didn't work. Syed said he has seen issues with transferability to other colleges with the Quality Matters program. Alan said that the ACCS is moving away from Quality Matters. It would be retained through Spring 2023 and after that, if schools wanted to stay with Quality Matters, then they could do that. There are many schools in the system that have spent quite a bit of time with Quality Matters following the program and making faculty aware of the Quality Matters rubric. What we are going to do is go in the direction of OSCQR rubric. This a rubric that was developed by the State University of New York and it has been out for several years. Starting in November there will be a message sent out to start the self-review process. It is a quality scorecard and there is an instructional designer at Gadsden State who has used it and people that have used it have said, "if Quality Matters is the Gold standard – OSCQR is the Platinum standard" In the OSCQR

rubric is an interactive PDF. Each of the standards is a link to a web page, so it is not just telling you what to do, it is showing you examples of how to do it as well. Our new instructional designer, LaTonya Jones, and our instructional technology specialist, Valerie McCombs will be involved with this. He thinks the place to start is self-review so that each instructor can just look at their course. Most people's courses will not conform to Quality Matters standards at the outset, it takes some preparation. So, we are going to start the self-review process and then move to a more formal peer review process for design, and he envisions a departmental peer review to make sure that the content of the course is right. Because design and content are really two separate things. So that is what he sees happening over the next semester. He is glad this was brought up because he is not sure that everyone knows that as a system, we are no longer going in the direction of Quality Matters. Linda asked if the platform they are using currently is helping students with employment or do we need to go back to some hands-on engagement? Steve said that his programming class is doing hands on material. The students are writing programs and submitting them. They aren't face-to-face, but they are hands on. To go back to Linda's point, to make students engage as close to a professional environment as possible, he makes them interact with each other through the discussion posts. The students must interact as a team, and this creates a network for them to use in their professional career. Linda said she uses this process as well. She also requires them to join Linked-In and will go in at the completion of the course and give them a recommendation. David said that hands-on is very important, but the students also need to have face-to-face because they will need to work with people in the professional setting.

The group talked about the issues these students are facing since Covid. The lack of social interaction. Linda said she has her students work in teams and she is a member of each team and interjects attitudes and situations that they may encounter in a real time job.

Linda talked about the fact that many schools combine their cyber and networking into one option. Justin said he sees quite a bit of overlap, in his opinion. If you have an attack, the first thing you do is start breaking down the process. What IP is it coming from? What does it look like? What does the payload contain? He said they are not interchangeable, but cybersecurity sits on top of a Networking foundation. If you do not have knowledge of networking, you cannot do cyber security. Linda asked what are the main things students need to know when they leave Jefferson State's program? Justin responded – with cybersecurity, you have a technical side of it with doing intrusion detection and remediation and firewalls. There is quite a bit of paperwork and policy arriving and making sure people are adhering to standards. He said that not abandoning the policy and the structure of the regulatory side of cybersecurity is important as we build out this program. Brandon said it is also based

on risk management. Linda said that the ethical hacking part is also very important to locate risks in your security wall.

Linda said that this isn't something we would do right away. We have the CAE coming up and part one has already been approved. We are reviewing part two now and working on part three. Syed said part two is in the second phase and there are three phases to each part. Alan suggested, rather than combining the two options, to create a hybrid option with the combination and that will open a third option. Linda said she felt that that would further divide the students because they would go into the hybrid AAS which would lower the number in the other options. She said many colleges now offer the AAS in CIS and a long and short certificate in Cyber and Networking.

Linda then brought up some information about Programming that John Wood sent. He wants to know what programming software students really need for employment. Jonathan said to look at the StackOverflow 2022 Developers Report. That is what you need to use as your North Star. It is a culmination of professionals and new entrance into the developer site. So, you get a lens of people who are in the professional space and people in the workforce. They break it down by code or IDE, or even down to demographics and what collaboration tools they use. Syed said you need to know how to write the program. Justin said Visual Studio has a lot of good functionality. It has a lot of developer's tools and something they can use to collaborate. There was much discussion about the wide variety of options for software for the students. Jonathan suggested to look at the report to see what people like and what people hate about the different programs. Steve said Python is still number one and he suggested looking at what the business world is using in this area as well. What certifications do we really need to be focused on at this time?

Linda next brought up Framework. Did you use data layer or business logic layer, presentation layer. What kind of entity framework do you use. Justin said they use dotnet and C#. Jonathan said they don't use dotnet and they try not to use JAVA either because of overhead. They mainly use GoLang, it is a language that Google released and still a bit of Ruby. They also use Python. She then asked about what they use for desktop server programming framework. Utility yard. She asked if they used any middleware like air table, AWS, Azure, for applications or websites? Someone said Azure or AWS.

She asked about Swift options. She said we are not getting any graduates with the swift options. Do we need to put a focus on it? If you look at the numbers across the board of employment, it is not there. What are some things that could be detrimental to students in that area? Justin said he sees that people will pay good money to go to a

coding boot camp and they are not learning enough for them to hire and train them. Steve said the students need to work on the computer and tear it down and put it back together to learn the information not just read a book. He said you need to talk through problems they encounter and work it out with an instructor to keep at it until the lightbulb comes on. Linda said that one thing about community college that she stresses to people is our knowledge and our ability to go the extra mile for our students.

Linda told the group that they have been a wealth of knowledge as usual. Our goal is to have the best prepared graduates for you guys to hire.

As a side note, we are looking into internship opportunities or shadowing opportunities for our students. If you know of anything that might be a good fit, please let us know. She said she knows that cybersecurity is a no go but perhaps something like programmers, network people. We would like to get our name out there for student opportunities. It's one thing to see it here and do it here and it is on another level to go to a work situation and do the work. Some are paid, some are not paid. We just want to connect the student with a company for them to come for an interview and hopefully an opportunity for on-the-job training to compliment the school degree program.

Linda asked if anyone knows someone in Health Care or IT that would be interested in serving on the board – that would round out our team.

Linda thanked everyone for coming and their continued contributions to our programs.

The meeting concluded at 1:05 p.m.

Respectfully Submitted by: Approved:

Melanie Cox, Office Manager   Linda

Dobyns

                                                    Linda Dobyns

Distribution: All committee members