**THE NORTH ORANGE COUNTY COMMUNITY COLLEGE DISTRICT**

**CYPRESS COLLEGE**

**ADVISORY COMMITTEE MEETING**

DATE OF MEETING: April 26, 2017

PLACE: Cypress College Complex, Room

COMMITTEE: CIS/Cyber Security/Networking

MEMBERS PRESENT: John Stinson, Pacific Life

 Lama Liebenau, Artesia Bellflower Cerritos Unified School District

 Joshua Chin, Net Force

 Logan Warwick, TEK Systems

 Steve Tran, Deloitte & Touche LLP

CYPRESS COLLEGE PERSONNEL:

 Susana Jianto, Department Coordinator

 Ben Izadi, Full-Time Instructor

 Peter Molnar, Full-Time Instructor

 Bret Clark, Full-time Instructor

 Carl Anderson, Adjunct Instructor

 Ali Moady, Full-Time Instructor

 Richard “Dick” McKnight, Full-Time Instructor

 Jerry Zhou, Adjunct Instructor

**WELCOME AND INTRODUCTIONS**

*Susana Jianto* welcomed all members present and noted that the meeting combined two committees. She introduced herself and asked that the members introduce themselves.

Official start time of meeting was at 12:00.

**DEGREE AND CERTIFICATE OFFERINGS**

Brochures detailing course offerings for programming and cybersecurity were passed out to the attendees. *Susana Jianto* asked for opinions from the committee members on what could be changed and whether the courses offered are still relevant to the job market.

**STATE APPROVED CERTIFICATES FOR MOBILE APPLICATION PROGRAM**

*Susana* explained that it takes two years to get the course approved and another two years to get the certificates approved. The state approved the certificates last year, and they will be added to the catalog.

**LAB/CLASSROOM UPGRADES**

*Susana* stated that the lab computers were updated from Office 2013 to Office 2016. Computer hard drives were upgraded to SSD drives in the computer lab as well as three classrooms.

**PREPARING STUDENTS**

The instructors have noticed that the students have problems reading and understanding course materials. The department added an advisory in the curriculum that students take English 58 prior to taking CIS 111.

**PREREQUISITE REQUIREMENTS**

*Susana* explained that the program recommends taking CIS 211 before enrolling in the Java Programming course, CIS 226. However, surrounding community colleges dropped that prerequisite. She asked the committee members if they think Cypress College should drop that requirement.

*Jerry Zhou* said that a lot of students asked him to waive the requirement. As long as the student has prior experience (AP course in high school or work experience), he doesn’t see a problem with waiving that requirement. If the requirement is waived, he expects greater enrollment numbers.

**CIS**

*Susana* said that the mobile development course was created under the wrong discipline (management), but it has been corrected.

*Susana* asked if offering the Visual Basic course was a good idea. It was discontinued four years ago, but since the programming classes are doing better, may be enrollment would improve for VB. *John Stinson* said that his company prefers C#. *Lama Liebenau* agreed that VB should be removed since it is rarely required.

*Susana* indicated that Cypress College will be removing 211 as a prerequisite for C++ and C# so students can graduate earlier.

**CYBERSECURITY**

*Ben Izadi* discussed different Cybersecurity related programs. He mentioned the success with the CyberPatriot program; a Cybersecurity training/competition program; designed to attract middle and high school student to the field of IT. He reported that from January 16th 2016 to Oct 15th 2016, 512 students from Anaheim and ABC district’s Middle and High schools participated in 9 training/practice competition events held at Cypress College. 17 teams (83 students) from 5 MSs and 5 HSs participated in the CyberPatriot IX competition. All 17 teams completed the 1st (Nov 2016), 2nd (Dec 2016) and 3rd (Jan 2017) rounds of competition. 5 MS and 1 HS team advanced to the semifinals (Feb 4 2017). 1 MS team ranked 26th in the nation (7th in California) out of the 227 teams. The HS team ranked #2 in the nation in the Gold category among the 162 participating teams. All competition events were hosted at Cypress college.

*Ben* indicated that the department has developed a mentorship program based on College students to further train MS/HS students. College mentors have visited 3 MSs and 3 HSs since September of 2016 for additional Cybersecurity training. The training program consisted of Linux and Windows OS hardening and Cisco packet Tracer device configuration.

*Ben* also mentioned the submitted grant proposal PACE (**P**athway to **A**dvancement in **C**ybersecurity **E**ducation), which is a guided pathway that builds on cyber content embedded in middle and High School (HS) curricula enabling students to complete dual-enrollment Cybersecurity courses while in HS. PACE has multiple entry and exit points including early employment, College certificate and degree completion and transfer to 4-year universities.

*Ben* also gave an overview of the Cyber Defense Certificate and AS degree and indicated that it is based on previous discussions with a number of industry advisors (i.e. Dr. Sang Nguyen, IT program director, Naval Weapons Station Seal Beach; Steve Tran, senior Cybersecurity specialist, Deloitte & Touche LLPand Stanley Han, manager of network operations center, CENIC). Ben added that the proposed certificate program is in response to the three concerns that the advisors had: (1) Lack of a pathway that starts from early age to meet the demand for Cybersecurity professionals, (2) a curriculum that is not only sound in terms of fundamental concepts and skills but also effective in preparing students for industry-recognized certificates, and (3) the need for further concentration in specific IT fields. Ben mentioned the following plan to address advisors’ concerns:

1. “To ensure adequate Cybersecurity professionals CIS department is working with the AUHSD to embed Cybersecurity content in middle and high school curricula (PACE program). Plans are underway to work with a pilot high school (Magnolia) and establish a dual-enrollment program. CybePatriot training/competition and mentorship program is another approach to generate interest in Cybersecurity at early age (MSs and HSs)
2. The proposed Cyber Defense college certificate/AS Degree includes a required core Cybersecurity certificate (12 units). The latter, provides students with courses in fundamentals of Information Technology including introduction to Cybersecurity, securing various operating systems (i.e. Linux and Windows) and configuring/troubleshooting networking devices (i.e. switches and routers). It also includes more advanced Cybersecurity concepts (i.e. ethical hacking) and introduces students to the latest scripting languages (i.e. Python and Perl).
3. The proposed Cyber Defense college certificate/AS Degree will give students an option to further concentrate in one of 6 IT areas (1. Computer Forensics, 2. Cisco Networking, 3. Homeland Security, 4. Microsoft Networking, 5. Network Virtualization, and 6. Advanced Networking). In addition, students will be prepared for various industry-recognized certificates (IT Fundamentals, Security+, CCENT, CCNA Routing & Switching, CCNA Security, MCSE and ISM).”

The responses form the advisory members were positive as a structured program that starts early, emphasizes fundamental concepts and skills with further specialization in an IT field and provides opportunities for industry certifications will result in hiring qualified graduates.

**THE VALUE OF CERTIFICATES**

*Ben* emphasized the value of vendor certifications, because companies may not know what a Cypress College Certificate is, but they recognize vendor certificates.

*Steve Tran* explained that vendor certifications can address prospective students looking to make a career change, not necessarily looking to transfer to a four-year college. He suggested Security+ as an offering, because tools change, but this will offer the fundamental concepts. In terms of skill based, he suggested CEH and all four CCNA courses. Having Security+ and CEH would give students an opportunity to get employed and do advanced training later down the line.

*Joshua Chin* asked if there has been any follow up, surveys, or data gathering done to ask the 90 percent why they never take vendor exams. *Ben* said that the students are strongly encouraged to take the vendor exams, but unless it becomes a curriculum requirement, he doesn’t foresee a change.

*Logan Warwick* asked if the core focus of these students is security or if they’re doing it as a hobby. She asked if the students understand how lucrative security is as a business. “So maybe teaching them, like doing a job fair or some education around the job market and how lucrative it is and where it's going might give them the motivation to pursue it as a career rather than just going through the motions in the course.”

When asked if a security certificate would make a student more marketable in the job market, *Logan* said that it depends on the clients. In the past, it wouldn’t make them more marketable, but the situation is changing because of lack of talent out there. At some point, businesses are going to have to start developing people and training people. A lot of times they’ll go for the person who has their bachelors and networking or computer science or something similar and then train them in security. Actually, from this this last meetup at Cypress, *Logan* did get a few people interviews from it, and they ended up getting jobs, some through her, some not. But they were marketable in that sense. It was just, a candidate needs more than just a certificate.

*Steve Tran* said that in his experience, some companies are offering these certifications and getting a lot of students. Cypress College can be competitive in that space right there too, and just reiterating, if you want to get into this job market, this is what's required. And to be honest, a lot of times having this certification gets you an interview. You're looking for things like do they have Security+. If they don't have those certifications, do they have a four-year degree that's relevant?

*Logan* said that she has younger candidates who are more successful but don’t have real-world experience, but if they’re involved in outside groups or something that gives them hands-on experience, it makes them stand out, even more so than the certification. The certifications are great, but from a training perspective, hiring managers are more interested in what they've done themselves, because that indicates more than just a certificate or going through the motions. Hiring managers see them as being passionate, intangible, and the soft skills behind it.

*Ali Moady* asked if certificates are valuable for a student to get a job or not. *Logan Warwick* said that having an industry-recognized certificate is probably more valuable, because companies know the standard. This applies to certificates from different colleges, associates, bachelors and different degrees -- it might be hard for businesses to decipher.

Steve Tran said that depending on the business, certain certificates might be more valuable. Certain businesses get a discount if they have X amount of employees that have these certificates. Sometimes it’s not necessarily something that has to do with the job; sometimes it’s a supplement.

*Ali Moady* expressed that Cypress needs more students for Java. He asked the committee members what the college could do to bring more students to the mobile application class.

*Steve Tran* explained that sometimes the certificate isn’t needed. During the interview process, sometimes the candidate is given something to code. The interviewer uses a common screen share to watch the candidate and determine competency. Sometimes the coding could be Java or it could be Python, depending on the position. Sometimes a candidate is asked to show their GitHub profile too.

*Ben* summed it up by saying that in order of preference it seems to be (1) experience/internship; (2) vendor certificate; (3) certificate from college.

**TRANSFERRABLE COURSES**

*Lama* emphasized that Cypress College should focus less on certificates and more on transferrable units. Students come to community colleges as a stepping stone to go to a four-year college and get a BS degree. If the class is not transferrable, they don’t want to spend the money and time to take it. She encouraged the committee to get the courses approved by four-year universities to increase student enrollment. If students take enough of the courses, then they can get a certificate. If they want to go to a university, then they won’t want to take a course that’s non-transferrable.

*Josh Chin* echoed her point. He said that businesses look for a four-year degree, not even a two-year degree. Then it’s always been, on top of that, certificates are nice to have.

*Lama* added that businesses are looking at bachelor degrees because it signals that a candidate is hardworking. That means they’re trainable. Her husband is a computer engineer, and he does hiring. He has said that his company won’t even look at a resume unless there’s a four-year degree. They don’t want to waste their time to train that person and then that person fails.

*Ben* asked *Lama* if she thought pathways for high schools to community colleges and then to four-year universities would be attractive to students. *Lama* replied in the affirmative. There is a push from the federal government to bring STEM classes to schools. Many of her students go to community colleges for two years to take all the basics, but they only take transferrable classes. She has a student that attends Irvine Valley College because the~~ir~~ courses are transferrable; he plans to transfer to Berkeley.

*Steve Tran* said that it would be ideal if students could take a class where they can get industry certification and have transferrable credit. A lot of times a candidate can get hired with some courses, and they have industry certification, and then their employer can subsidize their four-year degree.

*Dick McKnight* said that the college had to coordinate with Cal State Fullerton and Cal State Long Beach in order to make CIS 111 and 211 transferrable.

*Ben* said that CIS 111 and 211 are the only real transferrable courses. The other courses are transferrable as electives.

*Lama* said that although it’s difficult to get courses approved, it’s possible. She has done it for -her AP classes at Whitney High School.

*Susana* said that they are putting in the CIS 226 Java course for the C-ID. There’s an agreement between the Cal State and the community colleges. The Cal State and community colleges come up with the standards. If our course meets all these requirements, then Cal State will accept your course as a Cal State equivalent course. The college is submitting CIS 226 for C-ID equivalency right now.

*Ali Moady* said that there are two CIS departments and we are trying to integrate them.

*Josh Chin* suggested reaching out to UCs and Cal States to find out which of their courses are similar to Cypress College courses and working with four-year universities to make Cypress College courses transferrable as general education classes, not just elective courses.

*Richard McKnight* explained that the core courses are CIS 111 and CIS 211. Students start with these courses and start to figure out what they want to focus on in the second year. Some students are very bright, but it’s a new experience. Other students are sampling different courses. Still others have a bachelor’s degree and come in to pick up a certificate or retrain. Instructors tell them that the best thing to do is pick up a bachelor’s degree.

*Lama* said that that might be part of the problem. These are general education classes, so there’s no guarantee that someone’s going to come in and get a certificate and get a great job.

**AREAS FOR FUTURE FOCUS**

*Susana* brought the discussion back to the agenda.

*John Stinson* said that Cobol is not going away. They’ve started recruiting interns to do it. For the most part, they use C#.

*Jerry* said we don’t need C. Java and C# are the major two.

*Susana* explained that the CIS department has Microsoft Excel and database management certificates. The department is not sure if these should be consolidated into one certificate called Data Analysis. *Carl Anderson* said that they could be consolidated.

*John Stinson* said that Excel is pretty much gone. Everything has been moved over to Oracle or SQL servers. In almost every IT shop, it's the accounting-finance side that does the Excel part. It's mostly user spreadsheets. It's not usually VB security-wise. Most companies really got away from Access; they didn't want end users to have that.

*Jerry Zhou* said that software changes every day. Artificial intelligence will be the future with software-defined networking. He also mentioned that mobile apps are good for AWS. *Logan* said that there is a big lack of skills for AWS, not just in security, but anything in general, or even DevOps, Google, anything Cloud. *Steve* said you got startups that are using modern technology, you’ve got big corporations that are slashing their costs. *Jerry* said that his company is using a lot of Google AngularJS. You also have Hyper-V and VM ware. *Steve* said that Cloud is not going anywhere.

**APPLICATION SECURITY**

*Logan* explained that a huge problem that organizations are facing is that their developers are not coding with security in mind. It’s not being taught in schools. It’s not on their radar even. There’s a framework called OWASP Top Ten which is basically the top ten vulnerabilities in an application. It is ensuring that as applications are developed, security is brought in early on in the SDLC process, rather than once the app’s in testing and QA. It becomes much more expensive to go back and fix it. There’s only about 10 people in Orange County who can do this. If students learn these skills, they will be much more marketable for app and cloud security. There’s a huge need for application security skills. Right now, people have to be trained. If this could start at a lower level, it will set the students up to be in a really good niche that doesn’t really exist and set companies in a better security posture. This will make organizations much stronger. This is the hardest skill set. Most people are self-taught. It’s a new focus for companies. There has big a big push in the last three years.

*Steve* added that security is a shared responsibility. There are regulatory frameworks and legislative requirements.

*Logan* said that a lot of the help desk people that her partners work with have Security + and it makes them more marketable. She also said that it’s great that Cypress College has Python and programming in cyber security, but it needs to go in the computer science curriculum. She said that it shouldn’t require a whole curriculum change. *Josh* added that it should be a core lesson, like after you talk about Java, talk about security in Java.

*Lama* shared an example of how one of her students hacked another student’s computer. Steve commented that that is how he got started. Logan added that lots of people get into it out of curiosity. Josh said that it raises a great point about security ethics and consequences.

*Susana* concluded the meeting at 1:41 p.m.

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Recorded by Alyssa Fulmer and Twailla Malio

Cypress College Court Reporting Students