

Cecil
College
Academic
Program
Review



Computer Science
November 2013





Program Review

Computer Science

Division of Academic Programs

Fall 2013

COMPUTER SCIENCE PROGRAM REVIEW

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• **CECIL COLLEGE** **COMPUTER SCIENCE PROGRAM REVIEW**

Cecil College's Vision

Cecil College will be the premier provider for learning throughout the region.

Cecil College's Mission

Cecil College is a comprehensive, open-admission, learner-centered institution. The College provides career, transfer, and continuing education coursework and programs that anticipate and meet the dynamic intellectual, cultural and, economic development challenges of Cecil County and the surrounding region. Through support services and a technologically enriched learning environment, the College strives to empower each learner with skills, knowledge, and values needed for college preparation, transfer to four-year institutions, workforce entry or advancement, and personal enrichment. Further, Cecil College promotes an appreciation of cultural diversity, social responsibility, and academic excellence

Program Description

The College periodically reviews its academic offerings for currency and relevance. The computer science as a separate discipline is reorganized since fall of 2011 and is consisted of computer science and computers information systems programs. Prior to 2011 and beginning with the 2000, all Computer Science students graduated and received certificates from Business and Computer Information Systems department. Prior to 2000, Computer Science department existed as Computer Science and Data Processing department since 1981 up until 2000. All the programs listed below are reviewed periodically for their relevance to the current job market needs.

The College offers associate degrees/certificates in 12 areas for students enrolled in the computer science program. The various program degree and certificate options are as follows:

- Computer Science – Cyber-Security Option Associate of Science (NEW)
- Computer Science – Cyber-Security Option Certificate (NEW)
- Computer Science – Oracle Certified Associate Certificate
- Computer Science – Oracle Certified Professional Certificate
- Computer Science – Computer Aided Drafting and Design Option Associate of Applied Science
- Computer Science – Applications Option Associate of Applied Science
- Computer Science – Applications Option Certificate
- Computer Science – Programming Option Associate of Applied Science
- Computer Science – Programming Option Certificate
- Computer Science – Programming Option Associate of Science

- Computer Science – Arts and Sciences Transfer - Computer Science Option Associate of Science

The *Computer Science* Associate of Science - Arts and Sciences Transfer Cyber Security Option and Arts and Sciences Certificate in Cyber Security programs, are the two new programs added to the Computer Science department beginning with the fall of 2013. The Cyber Security Computer Science program option prepares students to transfer to a four-year institution for continued study in computer cyber security. Cyber security specialists apply computer security techniques to work with industry, the government and academia to solve computer networking and security related challenges. Students with bachelor's degrees in computer cyber security continue their education in graduate school or enter the work force as a network, forensic or computer security expert. The Cyber Security Computer Science certificate provides students with the skills, knowledge and credentials to successfully begin a career in the field of Cyber Security. Cyber security specialists apply computer security techniques to work with industry, the government and academia to solve computer networking and security related challenges. Cecil College has aligned the AS in Cyber Security degree to the 60 credits requirement as mandated by the State of Maryland. This has resulted in an optimized curriculum with the truncation of a few courses.

Those choosing the field of cyber security, as security analysts, plan and implement security measures that protect their organizations' computer networks and systems from cyber-attacks. Jobs in this field require continuous research of security trends, monitoring networks for security breaches, investigating violations as they occur, developing security standards, installing software and data encrypting programs to protect sensitive information, and creating disaster recovery plans. Demand for security analysts is expected to be very high through 2020 as cyber-attacks have grown in both frequency and sophistication over recent years. The federal government is expected to greatly increase its hiring to protect the nation's critical information networks. These government opportunities include positions with the Department of Homeland Security, Department of Defense, and National Security Agency as well as the CIA and FBI. As the health care industry increases its use of electronic medical records, the protection of patient records and privacy of personal information is also becoming increasingly important. As of 2013, the average annual salary of the Cyber Security graduates is approximately \$85,000.

The core courses in Oracle Certifications are all online. The Oracle Certifications prepare students to work in entry level and mid-level career positions as database administrators and database designers installing, configuring, programming, and managing Oracle databases.

The CAD program has about 10 students as of 2013-2014 Academic Year. The AAS in Computer Aided Drafting and Design prepares students for entry-level positions in computer aided drafting and design. The students in this program receive training on the latest CADD software, as well as training CADDware systems and other related software programs.

A majority of our Computer Science students graduate from Applications and Programming degree and certificate options. These programs have only one Math requirement, and it becomes easier for the students to overcome the hurdles associated with the Math requirement. With the Computer Science Applications option, students receive knowledge and familiarization of

application software packages including Microsoft applications. Advanced courses are offered in word, Excel, and Access. In addition to the applications, students are trained in computers, peripheral devices and special application software. The program also trains students in the construction, modification, implementation, evaluation, and maintaining software and computer to meet business needs. With the Certificate option in Applications, students are prepared for entry level positions in the computer field, including positions relating to the Internet, networking, and operating systems. The Programming option is designed provide students with a preliminary knowledge of computer operating systems, networking, and data communications, as well as currently used programming languages, such as languages used in the construction of Web programs. The Certificate in Programming develops skills in programming and various languages as well as providing basic courses in computer operating systems, Web programming, business systems, networking and data communications.

The Arts and Science Transfer option in Computer Science prepares students to transfer to a four-year institution for continued study in computer science. Computer scientists apply techniques to work with industry, the government and academia to solve diverse computational problems. Students who receive bachelor's degrees in computer science continue their education in graduate school or enter the work force.

Enrollment Trends

The computing programs in Cecil County are rapidly growing in popularity as indicated by the following trend. As mentioned earlier, prior to 2011, all Computer Science majors graduated and received certificates from Business and Computer Information Systems department. Following enrollment trends are for the Computer Science programs, when the programs were separated from the Business and Technology programs and being offered under computer science.

Computer Science Headcount Enrollment, AY 2008-2013

Programs	AY 2008-09	AY 2009-10	AY 2010-11	AY 2011-12	AY 2012-13
Computer Science	0	0	0	7	16

Following table is representative of the full-time and part-time head counts in the computer science programs over the academic years 2008 through 2013. The enrollment as a standalone department started in fall of 2011. Since then the number of full-time students well superseded the part-time head count. This is quite promising as the full-timers who enroll in the computing programs are dedicated learners compared to the part-time counter-part who parallel their academic learning side-by-side their job positions.

Full-time/Part-time Students in Computer Science

Academic Year	Semester/Term	Total Enrollment	Full-Time	% of Total	Part-Time	% of Total
AY 2008/2009	Summer 2008	0	0	0%	0	0%
	Fall 2008	0	0	0%	0	0%
	Spring 2009	0	0	0%	0	0%
AY 2009/2010	Summer 2009	0	0	0%	0	0%
	Fall 2009	0	0	0%	0	0%
	Spring 2010	0	0	0%	0	0%
AY 2010/2011	Summer 2010	0	0	0%	0	0%
	Fall 2010	0	0	0%	0	0%
	Spring 2011	0	0	0%	0	0%
AY 2011/2012	Summer 2011	0	0	0%	0	0%
	Fall 2011	4	3	75%	1	25%
	Spring 2012	6	4	67%	2	33%
AY 2012/2013	Summer 2012	0	0	0%	0	0%
	Fall 2012	11	8	73%	3	27%
	Spring 2013	10	6	60%	4	40%

Computer Science Students' Profile

The table below shows the computer science students' diversity by ethnicity, gender, and age. Although the majority of the students enrolled in computer science programs are Caucasian, the number of African-American students has gradually increased during the recent years. In two

out of five years considered, where the computing programs actually received enrollment, the total Caucasian enrollment was 18, total African-American enrollment was 1, Hispanic enrollment was 1, American Indian enrollment was 2 and unreported count was 1, totaling to 23 for Academic years 2011-12 and 2012-13.

While the bulk of the students are ages 24 and younger, in the past two years there has been a noticeable increase in relatively older students (31-50 years of age) enrolling as a result of the ASAP program. In AY 2011-12, students (below age 24 years) represented 86 percent of the Computer Science enrollments, but this age group declined to 81 percent in AY 2012-13. In contrast, students between ages 30-50 years old represented 0 percent of CS student population in AY 2011-12 and increased to 19 percent by AY 2012-13.

Future efforts toward student recruitments into the computing programs should target the Cecil county residents. Marketing plans should also focus on reversing the stagnant growth and declining percentage enrollment of 24 years old and below in CS programs.

Computer Science Program Student Diversity by Ethnicity, Gender and Age					
Race/Ethnicity	2008-09	2009-10	2010-11	2011-12	2012-13
White	0	0	0	5	13
African-American	0	0	0	1	0
Hispanic	0	0	0	0	1
Asian/Pacific Islander	0	0	0	0	0
American Indian	0	0	0	1	1
Non-Resident Alien	0	0	0	0	0
Not Reported	0	0	0	0	1
Total	0	0	0	7	16
Gender	2008-09	2009-10	2010-11	2011-12	2012-13
Male	0	0	0	7	16
Female	0	0	0	0	0
Total	0	0	0	7	16
Age (as of 12/31)	2008-09	2009-10	2010-11	2011-12	2012-13
Under 25	0	0	0	6	13
26-30	0	0	0	1	0
31-40	0	0	0	0	2
41-50	0	0	0	0	1
51 or older	0	0	0	0	0
Total	0	0	0	0	16

Students' Academic Performance

The table below is a representative picture of Computer Science students' performance or retention rate. As mentioned previously, prior to fall of 2011, the programs in computer science were being offered through the Business and Technology department. The tables listed below are representative of the computer science programs when they started to be offered independently under the computer science umbrella. Following table represents the first-time students who have completed 30 college level credits or more, number of students who have completed 16 to 29 credits, number of students who have completed 15 credits or less and the number encompassing no college credits. Looking at the table, out of 18 first time students, only 2 (11%) have completed 30 credits or more, 1 (6%) completed 16 to 29 credits, 10 (56%) completed 15 credits or less, and 5 (28%) completed no college credit at all. This is quite natural. Computer Science enrollment only began in AY 2011-12 with 7 students being enrolled for the first time. It takes couple of years to bring the enrollment numbers to the expected positions, especially; the computing programs at Cecil College are still in pre-mature, developmental stage. However, it will be important to examine how to upraise the number of students successfully completing 30 credits or more.

Computer Science Student Performance Rates, AY 2008-2013

Academic Year	Total First Time Students	Completed No Credits	Completed 15 Credits Or Less	Completed 16-29 College Credits	Completed 30 Credits Or More
2008-09	0	0	0	0	0
2009-10	0	0	0	0	0
2010-11	0	0	0	0	0
2011-12	7	1	3	1	2
2012-13	11	4	7	0	0
Grand Total	18	5	10	1	2

The next table shows a more concrete retention rate by presenting the number of first-time students in the fall semester who maintained their enrollment also in the successive fall semester. From the table, though the actual number increased from AY 2011/2012 to AY 2012/2013, but there is a depression in the percentage figure. Since the programs in the computer science department are still in the building phase, the department expects to recover from this type of decline in the near future, and is heading towards plans to maintain a sustainable steady growth in enrollment for the upcoming years.

First-time Students in the Fall Semester Who Enrolled in the Next Fall Semester, AY 2008-2013

Academic Year	Number of First Time Students Enrolled in Fall	Number of Students Enrolled in the Next Semester	% of Total
AY 2008/2009	0	0	0%
AY 2009/2010	0	0	0%
AY 2010/2011	0	0	0%
AY 2011/2012	4	3	75%
AY2012/2013	6	4	67%

Following Table represents the number of Associate's degree awarded in Computer Science. Since the programs in Computer Science are still at their elementary stages, no degree so far has been conferred in Computer Science.

Number of Degrees Awarded, AY 2008-2013

Academic Year	Total Degrees
AY 2008/2009	0
AY 2009/2010	0
AY 2010/2011	0
AY 2011/2012	0
AY2012/2013	0
Total	0

Following table is representative of the number of Pell Recipients who have graduated from the Computer Science department. Since the programs in the department only began operation with actual students enrolled in AY 2011-12, no Pell recipient student has yet graduated from the department. But the student enrollment trend is sharply rising in the computing programs. So in future, we expect a good number of students to graduate from the Computer Science department.

Number of Degrees Awarded to Pell Recipients, AY 2008-2013

Academic Year	Total Degrees	Pell Recipients	% of Total
AY 2008/2009	0	0	0%
AY 2009/2010	0	0	0%
AY 2010/2011	0	0	0%
AY 2011/2012	0	0	0%
AY 2012/2013	0	0	0%
Total	0	0	0%

There are students in Computer Science programs who enrolled just to take some specific job-related courses or courses that will prepare them for professional certifications. Following table shows the number of Associate's Degree awarded in computing. Since the department just started to receive students beginning with the academic year 2011-2012, there is yet no student who has graduated from the department. Following table is representative to this fact.

Number of Degrees Awarded, AY 2008-2013

Academic Year	Total Degrees
FY 2008/2009	0
FY 2009/2010	0
FY 2010/2011	0
FY 2011/2012	0
FY2012/2013	0
Total	0

Computer Science Faculty

The computer science department is composed of two full-time faculty members and a number of part-time faculty members. The regular load for the full-time faculty is 30 credit hours in each academic year. As a result, a number of the computer science courses are required to be taught by part-time adjuncts. Full-time faculty would need to start playing a prominent role in the teaching of courses offered in the department. The number of part-time faculty members teaching CSC courses varies in between 6 to 8. The statistics over the past five years (AY 2008-2013) shows that more courses are taught by adjunct faculty members during the spring semester compared to the respective fall semesters. Cecil offers smaller class sizes for enhancing student learning and academic success. With introduction of the new Cyber Security programs, the department is now offering new courses in Cyber Security with new students being enrolled in the programs, which has boosted the need for additional part-time faculty members.

Recently the Department has increased the number of courses offered by adding on-line courses. With introduction of the new Cyber Security programs effective fall of 2013, a number of courses in the cyber security discipline are also offered online. For instance, CSC 110 Ethics will be offered for the first time online in spring of 2014. Following is a list of online courses that are offered through the Computer Science programs.

CSC106	Introduction to Programming Logic
CSC110	Computer Ethics
CSC130	Introduction to UNIX/Linux
CSC132	Database Management
CSC135	A+ Certification
CSC156	Introduction to Windows Server 2008
CSCxxx	Windows Server 2012
CSC153	Data Base Design
CSC160	Introduction to Data Communications
CSC161	Oracle I - Introduction to SQL
CSC202	Creative Design
CSC258	CCNA - Cisco Certified Network Associate
CSC260	Oracle II - Database Programming with SQL
CSC263	Oracle III - Database Fundamentals I
CSC264	Oracle IV - Database Fundamentals II
CSC265	Oracle V - Database Security and Auditing

Assessing Student Learning Outcomes

Assessment of student learning enables institutions to demonstrate that their students have acquired adequate knowledge, skills, and competencies consistent with institutional goals and that at graduation students have achieved appropriate higher education goals (Middle States Commission on Higher Education, 2001).

General Education Learning Outcomes

Through the General Education core requirements, all curricula are designed so that students acquire and demonstrate college-level competency in:

- Critical and creative thinking skills and problems solving strategies;
- Writing;
- Oral communications;
- Quantitative analysis;
- Computer literacy and the ability to work productively with information technology; and
- An enhanced awareness of ethics, cultural diversity, artistic expression, health-and-wellness issues, and the physical and social environment.

Course Level Assessments

For each computer science course offered with a prefix of CSC, the course level assessment is done on a regular basis. The course level assessment helps the college measure student learning outcomes as well.

Assessment of Student Outcome Objectives

Technological Competency

Cecil College defines college-level technological competency as the students' ability to engage in technology collaboration; use and create structured digital documents; perform technology-enhanced presentations; use technology tools for research and evaluation; use databases to manage information; use technology tools for analyzing qualitative and quantitative data; use graphical and multimedia representational technologies; demonstrate familiarity with major legal, ethical, privacy and security issues; demonstrate a working knowledge of hardware and software applications; and create an HTML web page.

Students pursuing a degree program at Cecil College must fulfill a computer literacy requirement for graduation. In some degree programs, the computer literacy requirement is satisfied by the nature of the courses needed to complete graduation requirements. In other degree programs, the computer literacy graduation requirement is satisfied by taking Introduction to Computer Concepts (CIS 101), which uses personal computers in classroom and laboratory environments to introduce the concepts of spreadsheets, databases, presentation software, and word processing. Few individuals have not had any experience with personal computers and computer applications

by the time they enter college. As a result, the College recently implemented a process which provides an option for students to “test out” of one or all of the concepts presented in CIS 101. Faculty members also note that many students believe they have the required skills to test out of particular content areas, but then they do not achieve a sufficient score to do so.

Technology and Facilities

Reading/Writing Lab: According to the lab proctor, this lab does not see many CSC majors due to the nature of some of the technology assignments. They stated that for the department students that they do see, it would be helpful if instructors provide the lab with a handout of the assignment. In addition, they would like their services to be announced in the classrooms as well as their hours handed out to students. This is being done in many of the computer science classes.

Math Lab: The Math Lab does not typically see CSC students coming in for tutoring. The computing students that use the Math Lab are typically there for their testing services; moreover, the Math Lab requests more testing room.

Computer Lab: The Computer Lab remains a high priority to the students in this department. The lab personnel are well trained, personable, and highly competent. Recently, the computer labs have received new software and some computer hardware. Students and faculty have complained that the network is slow in the Computer Lab, as in other areas of the College during particular times.

Library: Recently, Cecil College has hired new library personnel to boost up the circulation process. Also, the college is actively increasing its reservation count with Cyber Security and Computing titles. With the introduction of the new Cyber Security programs, the college is collecting books in cyber security and the related areas.

Faculty: Although equipment at the College is generally in good shape, the faculty agrees that some issues can be addressed. For example, within cost parameters, faculty would like to choose the type of hardware they use.

The college greatly supports the Faculty Professional Development (FPD) by supporting faculty to different national and international conferences, symposiums, meetings or trainings. This has largely impacted on the quality of the instructional delivery. CS faculty is quite competent with the knowledge of cutting edge tools and techniques in computing. The faculty member has to request the funds needed for every event and the college is supportive of the faculty development.

With the recent technology infused classrooms, the faculty feels that decisions are made with little faculty input. While there are semblances of getting faculty to weigh in on technology, in the end, the attitude of the IT department is that faculty must adjust to IT decisions.

Finally, the faculty has continued to experience recurrent network issues in both the classrooms and offices. In the past there have been issues with on-campus use of Blackboard as well as with the overhead projections and other equipment. With the number of computer science courses that we offer, this becomes a critical problem.

Articulation Agreements

In addition to the use of ARTSYS, the College has created transfer opportunities for the students in the various Computer Science and Cyber Security programs by working with departmental faculty to develop inter-institutional articulation agreements with a number of four-year colleges and universities. The department has also developed high school agreements for courses that have been successfully matched with like outcomes and indicators. These agreements are reviewed annually and updated as needed. For instance, with the introduction of the new Cyber Security programs, Cecil College has created articulation agreements with the University of Maryland University College (UMUC). Under this articulation agreement, Cecil students completing an AS in Cyber Security will be able to complete their last two years of studies to receive BS in Cyber Security online with the UMUC.

Advisory Council

The Computer Science department as well as the programs in the department is relatively new. The first enrollment in the computer science department dates back to February of 1981. There has been an advisory council in CIS and DAP for years. The advisory council consisted of a number of members coming from diverse areas of the work force. However, they have not met in many years. However, the full-time faculty members in the department are actively thinking about an Advisory Council with members from different professional arenas. The Council will be able to provide with its inputs and valuable suggestions once operational.

COMPUTER SCIENCE PROGRAM REVIEW: A SWOT ANALYSIS

SWOT Analysis is an abbreviation for Strengths, Weaknesses, Opportunities and Threats Analysis, which is a well-rounded, 360 degrees analysis to the Computer Science programs. This analysis is important to identify the strengths and weaknesses in the program, to explore further opportunities and to overcome from the threats and weaknesses existing in the program.

Strengths	Opportunities
<ul style="list-style-type: none"> • Faculty members are content with the facilities • For uniformity, all the courses are now numbered with CSC prefix. Old CIS and DAP prefixes are eliminated. • New Cyber Security AS Degree • New Cyber Security Certificate • Equipment at the College is generally in good shape • Started offering on-line courses in Cyber Security • Good job opportunities for graduates within the county and the state • Experienced full-time faculty • Building new Cyber Security lab • Collaboration between Engineering and Computer Science department • College has developed a technology plan • Reinvigoration of programs through new full-time faculty 	<ul style="list-style-type: none"> • Advertise Cyber Security degree programs to the local community as well as to the high schools • Creating an active advisory council for computer science • Alignment of CS with UMUC (2+2 articulation agreement) for its Cyber Security programs • Accreditation of computing programs by the ABET (Accreditation Board for Engineering & Technology) • Fully online cyber security programs
Weaknesses	Threats
<ul style="list-style-type: none"> • Lack of enough labs, especially for the Cyber Security programs • Slow computer network • Need reliable computer help desk • Program brochures required • Nonsystematic faculty development program • Still needs an advisory council • Most courses are taught by adjunct faculty 	<ul style="list-style-type: none"> • Low enrollment in many courses results in class cancellations • Increasing use of adjunct faculty to teach several core courses • Schedule management issues • Funding for the Cyber Security labs • Competing institutions offering the same or similar programs in Cyber Security within the State of Maryland • The state mandated 60 credits for the AS degree programs resulted in truncation of important courses in program disciplines

Internal Strengths and Weaknesses of the Computer Science Programs

Strengths

- Computer Science Department faculty members are content with the facilities
- All computer science departmental courses are now numbered with the CSC prefix for uniformity. The older mix of CIS and DAP prefixes are eliminated.
- The success of the Cyber Security AS Degree program that launched in fall of 2013
- Alignment of AS in Cyber Security with the UMUC (2+2 articulation agreement)
- New 28 credit certificate in cyber security
- Inter-departmental Collaboration
- Equipment at the College is generally in good shape. Computers in the CS department are usually in good shape and up-to-date.
- Significant enrollment in the newly started AS in Cyber Security program beginning with the fall of 2013.
- Job opportunities for graduates within the county and in the region are promising ((See CC Benefits job outlook for 2005-2015))

Weaknesses

- For program circulation, a recent Computer Science brochure needs to be produced. In the meantime, we continue to use the tri-fold brochures produced some time ago. In the past, there have been specific program brochures done by outside vendors, but these are now obsolete.
- Faculty Development is generally self-directed, with each faculty member requesting resources for specific workshops and conferences. One problem with this method is that there is no listing of the type or extent of the support provided by the College. The faculty member has to request the funds needed for every event while not knowing what is available.
- An active advisory council for the computer science programs is a necessity to the earliest possible convenience, which could be an advantage for making the programs current and up-to-date.

External Opportunities and Threats

Opportunities

- The success of launching the Cyber Security AS degree program presents the opportunity to create other computer science, computer information systems and data processing degrees that follow a similar format.
- Given that on-line learning opportunities are provided by other colleges and universities within the state of Maryland and around the country, the College should take full advantage of this opportunity to create an on-line cyber security degree. Specially, the Cecil College is having a 2+2 articulation agreement with the UMUC for its Cyber Security AS degree program where the students will be able complete their BS degree online with the UMUC once they have completed their AS in Cyber Security from the Cecil College. Otherwise, there is the possibility that Cecil College will loose market share to its public and private college and university competitors.
- The college is regularly participating in the State-wide Cyber Security meetings to align its Cyber Security degree and certificate to the MHEC and other state mandated requirements. This will increase the appeal to our new degree program and certificate both in and out of the state.
- The job outlook for the graduates looks promising in view of the local, regional, and state job projections provided by CC Benefits.
- Alignment with Maryland On-line is important for the Cecil College. The college is a member organization of the MDLA (Maryland Distance Learning Association), and faculty and staff from the Cecil College regularly participates in the MDLA events. This has opened up online degree and certificate opportunities for the college.
- It is noteworthy to point out that the computer (IT) support specialists are one of the top ten occupations that have linkages to the Computer Science Department. Therefore, BRAC will create greater education and training opportunities for the College's existing programs in these specific areas.

Threats

- A constant worry for the full-time faculty in computing programs is the significant use of adjunct faculty. It is now possible for a student to complete a degree in computer science and never have a full-time faculty member as an instructor except for the CSC 201 Business Systems Analysis and Design and CSC 273 College Based Work Experience courses. In the Computer Science area, 2 full-time faculty members teach a variety of the courses while adjuncts teach majority of the other computing courses. Encouraging the full-time faculty to teach full loads of courses and optional overloads to meet student needs would bring partial remedy to the problem.

- Although, there is no active advisory council for the department at present, there are plans to create a new advisory council under the new computer science departmental model in action.

Recommendations for Future Improvements

1. Recognize that a college completer is not the same as a university completer.
2. Review programs and conduct assessment on a continuous basis.
3. College articulation agreements with other institutions need to be reviewed and updated on a regular basis.
4. Need for accreditation of computing programs by the CAC (Computing Accreditation Commission) of ABET (Accreditation Board for Engineering and Technology).
5. Create program advisory council to stress partnership role that the department needs in garnering the resources to create programs that address the needs of the local and the state-wide workforce.

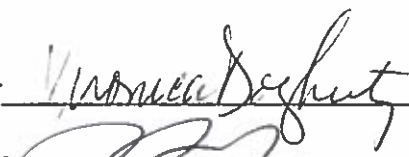
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5. Create program advisory council to stress partnership role that the department needs in garnering the resources to create programs that address the needs of the local and the state-wide workforce.

Approvals

Signature of Division Chair  Date 1/14/14

Signature of the Chair of the Academic Affairs Committee  Date 2/5/2014

Signature of the Dean of Academic Programs  Date 2-6-2014

Signature of the Chief Academic Officer  Date 5/13/14



