

Annual
Program
Of
Computer Science
For
AY 2018 (2017-2018)

Prepared by

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Independence
COMMUNITY COLLEGE

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1.0 Program Data and Resource Repository

1.2 Quantitative and Qualitative Data

All programs are provided with the most recent two years of data by the Office of Institutional Research (IR) as well as two-year budget data provided by the Business Office.

The data sets provided by the Office of Institutional Research include the following elements for the most recent two (completed) academic years:

- Number of Faculty (Full Time; Part Time; Total)
- Student Credit Hours by Faculty Type
- Enrollment by Faculty Type
- Faculty Name by Type
- Average Class Size, Completion, and Attrition
- Course Completion, Success and Attrition by Distance Learning v Face-to-Face
- Number of Degrees/Certificates Awarded
- Number of Graduates Transferring (if available from IR)
- Number of Graduates Working in Related Field (technical programs only)
- Expenditures and Revenues

Additional data may also be available for reporting from the Office of Institutional Research, as applicable. Requests for additional data must be made through a data request.

(See Section 1.2 in the Program Review Handbook for more information.)

Narrative:

The data from IR shows there were 13 students who declared Computer Science as their major and 4 of those who returned this year to continue in Computer Science. There were 4 who graduated with degrees of AS in Computer Science and the other 5 are still here but have changed to Liberal Studies or General Studies in order to pursue a degree at a 4-year university that we do not offer here, for example, Graphic Design and Computer Programming, both transfer degrees. These 5 students who are not declared majors still enroll in our classes, alongside our declared majors, they just are not declared majors. Students who typically want to transfer in a computer related field that is closely related to Computer Science, Computer Programming, Computer Graphics, Graphic Design and sometimes Web Design choose our AS in Computer Science. This is our “best fit” transfer degree for most students unless they are led to choose Liberal Studies or General Studies.

Computer Science (CSE) Data AY 2018

Number of Faculty:

3 Full time (1 dedicated to Web Design & Computer Science, 1 dedicated to IS, IT & Fab Force and the other 1 dedicated to AOM and teaches several CCA classes)

0 part time

Enrollment & Student credit hours by Faculty type:

Full time: 91 total credit hours taught, 331 with total students enrolled

Part time: 0 credit hours taught, 0 total students enrolled

Average Class size:

11.58 students in Face-to-Face classes

13.25 students in online classes

11.82 students across all courses

CCA Completion rates:

99.03% face-to-face

90.38% online

97.30% all CCA classes

CCA Pass ('D' or better) rates:

90.73% face-to-face

82.98% online

89.29% all CCA classes

Other CIT & CSE Course Completion rates:

92.96% face-to-face

100% online

93.06% all courses

Other CIT & CSE Course Pass ('C' or better) rates:

84.85% face-to-face

100% online

85.07% all courses

Number of Majors: 13 (4 returned in Fall 2018)

Degrees Awarded: 4

3.0 Assessment of Student Learning Outcomes

3.2 Significant Assessment Findings

The program faculty should provide a narrative overview of the program's significant student learning outcomes assessment findings, any associated impact on curriculum, as well as any ongoing assessment plans. The program may attach data charts, assessment reports or other relevant materials. *(See Section 3.2 in the Program Review Handbook for more information.)*

Narrative:

Since this is an AS transfer degree, only 12-15 hours of the degree are classes that are taken in my classroom. All the other classes in the degree program are general education courses.

Fall CCA Assessment

WS3 – Project

70% of students will complete Word Section 3 Project Exam in SNAP with 70% accuracy.

107 of the 117 (91.5%) students enrolled completed the assignment with higher than 70% (91.9%) accuracy. 91 students scored 100%, 11 students scored between 90-99%, 5 students scored between 80-89%, and 6 did not complete the assignment or scored a 0. Of the 6 who scored 0, 1 had stopped attending class and 1 other withdrew from class.

ES3 – Exercise

70% of students will complete Excel Section 3 Exercise 1 Exam in SNAP with 70% accuracy.

94 of the 117 (80.3%) students enrolled completed the assignment with higher than 70% (76.1%) accuracy. 72 students scored 100%, 11 students scored between 90-99%, 4 students scored between 80-89%, 1 student scored 78%, 1 student scored 61%, 1 student scored 11%, and 23 did not complete the assignment or scored a 0. Of the 23 who scored 0, 1 had stopped attending class and 1 other withdrew from class.

AS1 – Project

70% of students will complete Access Section 1 Project Exam in SNAP with 70% accuracy.

107 of the 117 (91.5%) students enrolled completed the assignment with higher than 70% (76.1%) accuracy. 63 students scored 100%, 7 students scored between 90-99%, 7 students scored between 80-89%, 2 students scored 75%, 11 students scored between 60-69%, 17 students scored below 60% and 10 did not complete the assignment or scored a 0. Of the 10 who scored 0, 1 had stopped attending class and 1 other withdrew from class.

Strengths:

Our computers were updated last year so we changed the way in which we setup the class. Students had to be in class on the day of the project. If they were going to be absent they needed to make arrangements to make up the exam.

Weaknesses:

The new computers presented a few challenges that we think we have worked out. They are zero client computers so using SNAP still has a few complications.

Recommendations:

Continue in the spring semester with the required attendance for the project completion. SNAP is changing to all web based in the fall with the release of Office 2019.

Spring CCA Assessment

WS3 – Project

70% of students will complete Word Section 3 Project Exam in SNAP with 70% accuracy.

74 of the 83 (89.1%) students enrolled completed the assignment with higher than 70% (90.3%) accuracy. 68 students scored 100%, 7 students scored between 90-99%, 4 students scored between 80-89%, and 2 did not complete the assignment or scored a 0. Of the 6 who scored 0, 1 had stopped attending class and 1 other withdrew from class.

ES3 – Exercise

70% of students will complete Excel Section 3 Exercise 1 Exam in SNAP with 70% accuracy.

62 of the 83 (78.3%) students enrolled completed the assignment with higher than 70% (74.9%) accuracy. 51 students scored 100%, 3 students scored between 90-99%, 4

students scored between 80-89%, 1 student scored 78%, 1 student scored 61%, 1 student scored 11%, and 22 did not complete the assignment or scored a 0. Of the 22 who scored 0, 1 had stopped attending class and 1 other withdrew from class.

AS1 – Project

70% of students will complete Access Section 1 Project Exam in SNAP with 70% accuracy.

75 of the 83 (90.3%) students enrolled completed the assignment with higher than 70% (73.1%) accuracy. 53 students scored 100%, 1 student scored between 90-99%, 1 student scored between 80-89%, 1 student scored 75%, 2 students scored between 60-69%, 17 students scored below 60% and 10 did not complete the assignment or scored a 0. Of the 10 who scored 0, 1 had stopped attending class and 1 other withdrew from class.

Strengths:

Our computers were updated last year so we changed the way in which we setup the class. Students had to be in class on the day of the project. If they were going to be absent they needed to make arrangements to make up the exam.

Weaknesses:

The new computers presented a few challenges that we are continuing to work out. They are zero client computers so using SNAP still has a few complications.

Recommendations:

Continue in the fall semester with the required attendance for the project completion. SNAP is changing to all web based in the fall with the release of Office 2019.

4.0 External Constituency and Significant Trends

An important component of maintaining a superior program lies in awareness and understanding of other possible factors that may impact the program and/or student outcomes. After consideration of these other factors, program faculty should document the relevant information within this section. As applicable, this should include the following.

4.1: Program Advisory Committee:

Narrative:

- Include Advisory Member Name/ Title/ Organization/ Length of Service on committee; note the Committee Chair with an asterisk (*).
- Upload meeting minutes from the previous spring and fall semesters and attach in the appendices section (10.0).

Fall 2017 Meeting Minutes:

Present: Tamara Blaes, Chance, Mike*, and Tim with MicroWare.

Here are the outcomes for our Computer Science Program:

Program Outcomes:

1. The student will be able to analyze a variety of complex information systems.
2. The student will be able to apply and demonstrate power usage of computer science skills.
3. The student will be able to organize and prepare a system for solving problems.
4. The student will be able to demonstrate effective collaboration and communication skills.

We would like to know:

Are students being prepared for the future job market?

This is a tricky question for us. We hire people to work with us who fit in with us so the answer to this question for us is yes, we have had extremely good luck with prepared young individuals working for us.

What should the training include?

We all agreed this should be an equal amount of hardware, software, and people skills. Even though many computer technicians do not feel like they may need people skills, they will. We interact with people all the time to find out what is wrong with their item and what needs to be done to fix or replace it. We also do a small amount of our own on the job training that is concentrated on our business needs when we hire a new technician.

Do you think our curriculum adequately addresses industry needs?

For the most part yes, there could be more software class added to reach that more equal status. Also, there is a huge demand in this area for website construction. We have customers asking us all the time if we know how or know anyone who can create a website. This area of Kansas is lacking in this technology.

Do course and program outcomes and performance levels meet industry standards? Okay, this is what took us so long to get back to you, as we are not teachers. So, looking at what you have and your programs, everything seems to fit and flow well together. We really did look at all of it.

What industry validated credentials (include certificates or licenses) are necessary for industry success?

Having these certifications is always nice but not always required: A+, CISCO, Windows and Microsoft Office.

These are a few questions to get us talking.

Another important issue facing us this year is how prepared are the students we get when they arrive to ICC in general? What I mean by that is, are they already trained and know how to use a computer and computer software, in your opinion?

Our experience with kids in school is that they know how to use their phones, but they do not know how to operate at computer. If you put them in front of one, they can probably do a simple Google search but that is it, no other skills unless they are very interested in computers themselves.

Is there a need for them to learn the basic class we teach which is a class that covers how to use Microsoft Word, Excel, Access & PowerPoint and then concepts of hardware, software and how a computer functions?

Oh yes! We think this is very important and should never go away from education.

Computers and technology are not going anywhere except bigger, better, faster, or different. But we will have computers around for a very long time and in more commonly used items. Also covered are the Internet, social media, security, data, and careers. Now, they may think they know all there is to know about social media, but they are always surprised in class to learn more. Anyway, just your thoughts on this type of class as well. Students could possibly benefit from this type of class information. We believe the more they get the better off they will be.

Spring 2018 Meeting Minutes:

Present: Tamara, Blake, Drew*, and Mick

Here are the outcomes for our Computer Science Program:

Program Outcomes:

- 1. The student will be able to analyze a variety of complex information systems.*
- 2. The student will be able to apply and demonstrate power usage of computer science skills.*
- 3. The student will be able to organize and prepare a system for solving problems.*
- 4. The student will be able to demonstrate effective collaboration and communication skills.*

I would like to know:

1. Are students being prepared for the future job market? Drew: I don't think they are at this point. They need more hands-on experience. Blake: Yes and no Mick: I was, but I already had a large knowledge base going in.
2. What should the training include? Drew: Actual experience they will need in a real job. Blake: More real-world experience. Mick: Everything that could go wrong will go wrong and how to fix it.
3. Do you think our curriculum adequately addresses industry needs? Drew: there needs to be more soft skills and hands-on practices. Blake: For me yes, others probably not. Mick: There probably needs to be more technical classes.
4. Do course and program outcomes and performance levels meet industry standards? Drew: Well, that is a tough one, let me think on it. Blake: I'm sure it does. Mick: You guys are the ones checking on it, so I am guessing it is all okay.
5. What industry validated credentials (include certificates or licenses) are necessary for industry success? Drew: Just an IT Associates degree for me. Blake: I'm not completely for sure yet, I do my own work. Mick: I'll leave that up to my boss.

These are a few questions to get us talking. Like I told you on the phone, we are not required this semester to meet face-to-face, which is nice. We just should communicate with each other at least digitally. In the Fall of 2018, we will try to meet as a whole group with the guys from MicroWare to discuss further options.

Another important issue facing us this year is how prepared are the students we get when they arrive to ICC in general? What I mean by that is, are they already trained and know how to use a computer and computer software, in your opinion? Drew: I have interviewed a few students straight out of high school that are self-taught and are by far, very knowledgeable. In general, the overall student population is not well educated in high school. Unless a person takes the initiative and teaches themselves, they will not receive this type of knowledge from the high school setting. Now, with that being said, I have hired and fired 13 people to work in my store in Independence, two of them who said they had an AAS from ICC. Blake: I did not get my knowledge from high school, I was self-taught and furthered my education at ICC. Mick: I was self-taught and then went on to Neosho County Community College.

Is there a need for them to learn the basic class we teach which is a class that covers how to use Microsoft Word, Excel, Access & PowerPoint and then concepts of hardware, software and how a computer functions? Drew: Yes, sure. Blake: In my opinion, no, but I know how to use them. Mick: Yes, I use them daily.

Also covered are the Internet, social media, security, data, and careers. Now, they may think they know all there is to know about social media, but they are always surprised in class to learn more. Anyway, just your thoughts on this type of class as well.

Drew: It seems to me that anyone younger than me has their face stuck in their phone and that is the only thing they know. If we could get their classes and lessons on their

phone, that might work, but the world does not revolve only on their phones. Blake: all of this information is important. Mick: I feel like some of this is the most important of computer information.

4.2: Specialized Accreditation:

- Include Accrediting Agency title, abbreviation, ICC contact; Agency contact, Date of Last Visit, Reaffirmation, Next Visit, FY Projected Accreditation Budget.
- Upload the most recent self-study and site visit documents.
- Upload agency correspondence which confirm accreditation status.

Narrative:

This program does not require specialized accreditation.

4.3: Other:

Discuss any external constituencies that may apply to the program. *(See Section 4.3 in the Program Review Handbook for more information.)*

Narrative:

The AS Computer Science degree program follows our KBOR articulation requirement for students transferring to any Kansas university. If this program is followed, students should be able to seamlessly transfer to any of the Kansas universities and many out-of-state colleges. All the core classes for the Computer Science degree have met the Kansas Core Outcomes approval as equal transfer class to all Kansas universities. Both facts show alignment with KBOR and HLC's accreditation requirements. It is, as expected, heavy with general education requirements and a few elective classes from our computer areas.

The following are HLC goals that are being addressed in this review:

Core Components

3. A. The institution's degree programs are appropriate to higher education.

1. Courses and programs are current and require levels of performance by students appropriate to the degree or certificate awarded.
 - This program meets this core component by offering the first two years of a 4-year degree.

This program also meets the ICC Core Values of Excellence, Responsiveness, and Diversity/Enrichment:

- Excellence: Academic excellence of this program has been met through the completion of this review and working to improve the courses offered through assessment of student learning and making modifications as needed to continue improvement.
- Responsiveness: Addressed the changes for Computer Science by updating this program to meet the KBOR articulation agreement, which meets the program requirements for all the Kansas universities.
- Diversity/Enrichment: Students are exposed to International issues with Computer Science and exposed to the difference between policies of other countries. Students are also informed of the male/female career ratio unbalance.

Category 2: Maintain current levels of support/continuous improvements. This program should be continued as presented. Computer Science is a degree that offers several possibilities for students entering many different computer related fields for transfer.

Earning an associate degree in computer science can prepare you for entry-level employment or further education. While you can learn the basics of computer languages, troubleshooting, programming and design on your own, many employers prefer to interview and hire formally trained applicants.

Experts anticipate that employment opportunities for computer scientists will increase throughout the next decade. According to the Bureau of Labor Statistics, web development jobs will increase by 20% by 2022, adding nearly 30,000 new positions to the economy. An associate degree is all you'll need for some jobs, and these programs prepare you to earn a bachelor's degree in the subject as well.

While pursuing your computer science associate degree, you will develop an understanding of the basic principles and practices needed to program and maintain computers and computer systems. You will also complete many of the general education courses required by most four-year schools.

Computer science programs usually provide students with hands-on learning experiences, requiring them to complete an internship or demonstrate proficiency in lab work as a prerequisite for graduation.

“Associate Degree in Computer Science.” *ComputerScience.org*, www.computerscience.org/degrees/associate/. 11 Nov. 2018.

This is the table from the Bureau of Labor Statistics for all of the Computer and Information Technology Occupations: <https://www.bls.gov/ooh/computer-and-information-technology/home.htm>

5.0 Curriculum Reflection

5.1 Reflection on Current Curriculum

The program faculty should provide a narrative reflection that describes the program's curriculum holistically. The following are prompts formulated to guide thinking/reflection on curriculum. While presented in question form, the intent of the prompts is to stimulate thought and it is not expected that programs specifically answer each and every question.

- Is the curriculum of the program appropriate to the breadth, depth, and level of the discipline?
- How does this program transfer to four-year universities? (give specific examples)
- What types of jobs can students get after being in your program? (Please use state and national data)
- How dynamic is the curriculum? When was the last reform or overhaul?
- In the wake of globalization, how "internationalized" is the curriculum?
- How does the program assess diversity?
- Does the program have any community-based learning components in the curriculum?

Narrative:

The AS Computer Science degree program follows our KBOR articulation requirement for students transferring to any Kansas university. If this program is followed, students should be about to seamlessly transfer to any of the Kansas universities and many out-of-state colleges. All of the core classes for the Computer Science degree have met the Kansas Core Outcomes approval as equal transfer class to all Kansas universities. Both facts show alignment with KBOR and HLC's accreditation requirements. It is, as expected, heavy with general education requirements and a few elective classes from our computer areas.

Students in one of the four CCA classes were asked about their career choices this semester. Several answered with computer related fields. It is very interesting especially since they all have Liberal Studies as their degree major. When asked why they are Liberal Studies majors, they answered that they were led in that direction by their navigator.

So, we will continue to lose degree majors because students and especially student/athletes are being strongly encouraged to choose Liberal Studies. This is even though our Computer Science (AS) degree is set up just like the Liberal Studies degree. Therefore, a student planning to transfer with a computer related field degree choice could major in Computer Science and receive the same transferability as a Liberal Studies degree.

Wage & Employment Information – Computer Science			EMPLOYMENT PROSPECTS			
DEGREE/TRAINING REQUIRED Standard Occupational System (SOC) Code	OCCUPATION	KS Median Wagei	KANSAS 2012-2022 Participants growth %		USA 2014-2024 Participants growth %	
- On /Job Training, Certifications, Registered Apprenticeship, Associate Degree, Certifications or 2 Yr. Comm/Technical Colleges						
15-1134	Web Developer	\$52,710	1,300-1,580	22 %	148,500-188,000	27 %
15-1131	Computer Programmer, System Analyst	\$69,560	2,910-3,190	10 %	328,600-302,200	-8%
Bachelor's Degrees Colleges / Universities						
15-1199	Video Game Designer	\$67,920	1,480-1,600	9%	233,000-240,800	3%
15-1122	Information Security Analyst	\$77,530	NA	NA	82,900-97,700	18 %
15-1132	Software Developer, Applications	\$85,160	3,820-4,500	18 %	718,400-853,700	18 %
17-2061	Computer Hardware Engineer	\$85,240	100-110	7%	77,700-80,100	3%
15-1111	Computer and Information Research Scientist	\$88,660	NA	NA	25,600-28,300	11 %

National Center for O*NET Development. 25-2032.00. O*NET OnLine. Retrieved July 28, 2016, from <http://www.onetonline.org/link/summary/25-2032.00>. 11 Nov. 2018

<https://www.ksde.org/Agency/Division-of-Learning-Services/Career-Standards-and-Assessment-Services/Content-Area-F-L/Information-Technology-CTE-Career-Cluster>

This degree was last revised in the Fall of 2017. These programs are typically male dominated, however there has been a concentrated effort to encourage females to enter the stemtech world. This summer there was a grant provided STEM camp for 6th, 7th and 8th grade girls. The camp was 3 weeks where the girls learned design thinking and

a variety of technology in order to help solve a problem, they came up with themselves or in a group.

Several of our international students have graduated with AS degrees in Computer Science from ICC.

5.2 Degree and Certificate Offerings or Support

Program faculty should list what degrees and certificates are offered and/or describe how the program curriculum supports other degrees and/or certificates awarded by the college.

Narrative:

This is an Associate's of Science degree in Computer Science. Students typically elect to transfer to a university to complete any number of computer related degrees once their first two years of general education are out of the way. While here at ICC, they get their general education classes done and a few choice Computer Science classes.

Students may choose this degree if they were going to transfer on in computer science, programming, web design, graphic design, software development, information support & services, network systems, or web and digital communications.

8.0 Fiscal Resource Requests/Adjustments

8.1 Budget Requests/Adjustments

Based on program data review, planning and development for student success, program faculty will complete and attach the budget worksheets to identify proposed resource needs and adjustments. These worksheets will be available through request from the college's Chief Financial Officer. Program faculty should explicitly state their needs/desires along with the financial amount required.

Programs should include some or all of the following, as applicable, in their annual budget proposals:

- Budget Projections (personnel and operation)
- Position Change Requests
- Educational Technology Support
- Instructional Technology Requests
- Facilities/Remodeling Requests
- Capital Equipment

- Non-Capital Furniture & Equipment
- New Capital Furniture & Equipment
- Replacement Capital Furniture & Equipment

- Other, as applicable

- Accreditation Fee Request

- Membership Fee Request
- Coordinating Reports

Resource requests should follow budgeting guidelines as approved by the Board of Trustees for each fiscal year. The resource requests should be used to provide summary and detailed information to the division Dean and other decision-makers and to inform financial decisions made throughout the year.

Narrative:

Budget requests are as follows:

1. Provide \$2,000 in instructional supplies to Microcomputer Supplies. This can help defray costs associated with materials/supplies for the hands-on project classes.

2. Provide funding for faculty to continue education and attend conferences, for example the annual iTRAC Teaching & Learning conference, Wichita, \$30; ACTE Conferences \$565 plus travel and hotel, attendance centers vary, (however these at times land on or just before finals week in the fall); The Teaching Professor Annual Conference, \$699 plus travel and hotel (usually the first of June each year).

(3, 4 & 5 would be as budgetary funds are available for updating, repairs and replacements in the classrooms.)

3. Consider removing the carpet in AC107 and AC108 as the carpet in both labs is very worn and has holes in several spots. It does not look nice when showing to prospective students. Removing the carpet and polishing the cement will reduce the chance of static electricity discharge, which can be dangerous to computer equipment, and even possibly students. There is also carpet in AC106 that is newer that could be removed and that floor polished as well.

4. Providing funds for repairs and/or replacements of the chairs in all three computer labs (\$40-\$60 each, $24+24+17=65$, in total about \$2,600-3,900).

5. Consider replacing the old desks in AC107 that are not conducive to the students in a computer lab setting. The desks should be facing towards the monitors in the front of the classroom, however these desks are too big to be turned. The desks are also too low for the proper ergonomics of sitting and working students. ($\$170/2$ stations= 12 , total of \$2,040).

9.0 Program Planning and Development Participation

9.1 Faculty and Staff

Program faculty will provide a brief narrative of how faculty and staff participated in the program review, planning and development process. List the preparer(s) by name(s).

Narrative:

This program review was completed by Tamara Blaes. Anita Chappuie provide IR data and Wendy Isle provide microcomputer budget information. The Computer Science/Web Design Advisory Committee provided their insights and opinions.

9.2 VPAA and/or Administrative Designee Response

After review and reflection of the *Comprehensive Program Review* or the *Annual Program Review*, the Division Chair and VPAA will write a summary of their response to the evidence provided. The Division Chair and VPAA's response will be available to programs for review and discussion prior to beginning the next annual planning and development cycle.

Narrative:

It is concerning that students are encouraged to choose the AGS or Liberal Studies degree plan, instead of their interests. This is something that should be verified and addressed if it is indeed an issue.

What kind of scholarship opportunities does ICC provide for Computer Science, if any?

I agree with the narrative of this Annual Review.

Brian Southworth, Division Chair-STEMB. November 11, 2018

10.0 Appendices

Any additional information that the programs would like to provide may be included in this section.