

UNIVERSITY OF ARKANSAS PULASKI TECH

Assessment Report: 2018-2019 – Program Level

The University of Arkansas – Pulaski Technical College calls for each program (AS, AA, AAS, CP, and TC) to have an assessment plan for each academic year that includes the following:

- Program Learning Objectives
- Procedures for assessing the achievement of student learning
- Procedures for analyzing and interpreting assessment results for the continuous improvment of the program.



A primary goal for each instructional department's assessment is to include at least one direct measure of student learning, which is accomplished usually through the use of locally developed tests, student portfolios, capstone assessment measures, embedded assignments, or through licensure exams and standardized national tests. In addition to direct measures, most areas may also use indirect methods to assess student achievement. Graduation rates and graduation and employer surveys are frequently used as indirect indicators of student achievement.

This form presents template of questions that must, at minimum, be addressed by instructional departments when filing an assessment plan. While an electronic version of this form will be made available, instructional departments may include additional information not specifically addressed in this form as long as the template questions are addressed.

Other Assessment Considerations:

- The College expects programs/departments/divisions to make curriculum changes and budget requests based in part upon assessment findings. Assessment of student learning should be a catalyst for quality instruction and improvement across the college community.
- All programs will be asked to submit an annual assessment report to the Assessment Committee by October 10th of each year. (If October 10th falls on a weekend, please submit reports on the following Monday.)
- For technical and occupational programs, please consider the role of your advisory committee in your student learning objectives.

This form must be completed by October 10 of each academic year. Complete each part of this form. Please follow highlighted instructions.

Part A: Identification and Assessment Plan

1. Name of program:	Computer Information Systems Option: Applied Programing				
2. Name of individual compiling report:	Raymond E. Williams				
3. Date of submission:	10-21-2019				
4. Is the assessment plan (<mark>Check one</mark>)					
an initial plan for the a revis program	sion of an old plan $\sqrt{1}$ unaltered from previous year				





5. Provide a brief description of the program and its purposes, to include a description of the jobs/careers for which students are being prepared.

The program provides students a pathway to an education that includes knowledge of a wide variety of the programming languages in use in today's job market including Python, C++, C#, JavaScript, Java, HTML, CSS, and other languages in a platform independent environment.

The current programming market in Arkansas is underserved judging by the number of vacancies listed on job boards such as Indeed.com and Monster.com. About 25% of our students are well employed in the CIS field before graduating the program. While many employers seek to hire programmers with bachelor's degrees in computer science, most state they are willing to consider applicants with experience and other education. Graduates of our program go into entry level tech jobs (not always in programming) at tech firms of all types. We have recently begun to focus on data analysis in our programming classes with the intent of making our graduates valuable in the data cleaning and analysis fields.



Part B: Student Learning Objectives, Assessment Methods, and Data Sources

In this section of the assessment plan, student learning objectives for the program will be defined. Also, assessment methods and data sources for each objective must be defined. Follow the instructions below to define and relate the program leaning objectives.

1. Complete the chart below or attach documentation of the assessment process that includes the data included below. Also attach any assessment instruments and grading rubrics used at the program level if applicable.

			Assessment Method and/or Data Source
	Program Learning Objectives	Course	
1.	Develop a computer program that effectively utilizes the concepts of edit, compile, and run	CIS1133, CIS 1143	Capstone Project Assignment
2.	Design algorithmic solutions to simple business problems	CIS1133, CIS1143	Capstone Project Assignment
3.	Convert algorithms to computer programs using a programming language.	CIS1133, CIS1143	Capstone Project Assignment
4.	Test and verify programs.	CIS1133, CIS1143	Capstone Project Assignment
5.	Develop server-side web applications	CIS1133	Assessment planned for 2019-2020 via Website Project Assignment
6.	Identify and use SQL "data types" appropriately when adding tables.	CIS1413	Assessment planned for 2019-2020 via Capstone Project Assignment

2. For each program objective, if applicable, discuss any additional data sources that may be used to gauge success (e.g. charts, graphs, surveys, rates).

I have a draft of the external reviewers' report for the program from last year. It will be attached at the end of this document.

3. Describe the process of analyzing the assessment data for the last academic year. *After the Capstone Assignments are completed by the students, a rubric is applied to the Assignment and success is judged based on the student's ability to follow the rubric and complete the assigned problem (either a program or a website).*





4. Complete the chart below or attach documentation of the assessment findings that includes the data included below.

		Assessment Findings/Conclusion
	Program Learning Objectives	
1.	Develop a computer program that effectively utilizes the concepts of edit, compile, and run	Over 70% of students completed the project successfully with all failures being from the student not submitting a project.
2.	Design algorithmic solutions to simple business problems	Over 70% of students completed the project successfully with all failures being from the student not submitting a project.
3.	Convert algorithms to computer programs using a programming language.	Over 70% of students completed the project successfully with all failures being from the student not submitting a project.
4.	Test and verify programs.	Over 70% of students completed the project successfully with all failures being from the student not submitting a project.
5.	Develop server-side web applications	Not assessed this year.
6.	Identify and use SQL "data types" appropriately when adding tables.	Not assessed this year.

- 5. What is the action plan for assessment for the next academic year? Explain. Either continue the Capstone project assessment at the current course level or include course assessments on a Capstone project in a more advanced course, if the courses have enough seats to make.
- 6. What changes were implemented this year based on last year's findings? No changes were made to the assessment plan except plans to add courses being assessed for the 2019-2020 academic year.
- 7. Please write any additional information here that you think is pertinent to the assessment process for your program that assists stakeholders (i.e. administrators and standing committees) in understanding your report.

Programming courses are very objective courses where students learn to do one or two things, then attempt to implement their new knowledge in the form of a computer program. While each week there is some drastically different concept taught, the way it is applied (inside a program) is basically the same with all the assignments, tests, etc. one might require.

8. What budgetary resources, if any, are needed for your program based on your assessment findings?

From my assessments of student learning, I find no real budgetary resource need for the coming year. We make use of opensource software to do things on a pretty shoe-string budget. This year I effectively replaced a lab by using cheap, miniaturized computers (Raspberry Pi computers) instead of the far more expensive standardized computers.

However, the External Reviewer's Draft Report (included below) contains some fairly serious criticisms of our programs lack of resources, mainly full-time instructors.





Academic Program Review

External Reviewers Report Template

The report prepared by the External Reviewers will be used by the Arkansas Department of Higher Education (ADHE) to verify the student demand and employer need for the program, the appropriateness of the curriculum, and the adequacy of program resources. The report should <u>not</u> include a recommendation to ADHE on program continuation or program deletion.

The External Reviewers written report must include a summary of each area examined and should provide examples that document the conclusions. The questions below should be used by the reviewers as a guide in preparing the summary for each area. Responses to the questions should not be simply "yes or no".

- I. Review of Program Goals, Objectives and Activities
 - A. Are the intended educational (learning) goals for the program appropriate and assessed?

While the students are being prepared for an education and the goals of the program are being assessed. I am not sure the goals are right for the program. It seemed like the goals of the program are to provide a launch pad for the next step. When it should be to te

B. How are the faculty and students accomplishing the program's goals and objectives?

The goals are being accomplished however, there are not enough teachers. Many of the classes are taught by the same teacher. This means the teachers are unable to keep up with the technology they are trying to teach.

C. How is the program meeting market/industry demands and/or preparing students for advanced study?

Pulaski Tech is multi-faceted on one hand about 75% of the students said the goal was to transfer to UALR to finish a bachelor's degree in CIS. The goal of the rest of the students was to enter the workforce after graduation. The students in the latter group need more current technology and support to achieve this. Which they explained as not being provided. They said the career fairs do not accommodate CIS majors.

D. Is there sufficient student demand for the program?

The students seem to be disappointed because important classes are cancelled due to low participation. However, they also said that they are often told not to take specific courses because "it will be cancelled anyways". Every student in the room raised their hands when





asked "Who in this room has had a CIS class cancelled?"

E. Do course enrollments and program graduation/completion rates justify the required resources?

The students are dropping the courses as they move deeper into the technologies offered. However, they also feel the depth is important to ensure success for a transfer.

- II. Review of Program Curriculum
 - A. Is the program curriculum appropriate to meet current and future market/industry needs and/or to prepare students for advanced study?

While the program gives the students many of the fundamentals needed. It does not dive into today's needs such as:

- a. Scripting Languages such as JavaScript and Python.
- b. Data Science needs such as Machine Learning and Big Data.
- c. Cloud Architectures such as Micro Services and Service Oriented Architectures.
- d. Advanced Networking with non-Cisco requirements
- *B.* Are institutional policies and procedures appropriate to keep the program curriculum current to meet industry standards?

UA-PTC is facing tough competition within the CIS field both for qualified instructors and interested students. After discussing policies and procedures with the teams at UA-PTC it became apparent that they really did not know how far behind they are starting the students off at. Many of the industry giants in the area would rather get students that go through a 5-week code camp then to get students at UA-PTC and other education organizations. simply because of the support programs the code camps offer to help transitioning.

C. Are program exit requirements appropriate?

The exit requirements are perfect for transferring students, however for students wishing to enter the workforce immediately I believe they should offer focused electives or speakers from industry to allow networking to happen. Many of the students had no idea of how to network or how to find internships.

D. Does the program contain evidence of good breath/focus and currency, including consistency with good practice?

The educators were great and very knowledgeable there was just not enough of them to cover both breath and depth. The students spoke very high of the instructors.

E. Are students introduced to experiences within the workplace and introduced to professionals in the field?





No, out of about 20 students one of them had an internship and most of them felt they were not supposed to work on these skills until after they graduate. They all expressed the need for a community for the CIS students somewhere they can hold events and invite speakers. Somewhere they can network with each other outside of the classroom.

F. Does the program promote and support interdisciplinary initiatives?

From what we saw yes between Business and IT. I did not see any signs from other department. However, we did discuss the potential for students to help with IT projects since they said their IT department is understaffed.

G. Does the program provide respect and understanding for cultural diversity as evidenced in the curriculum, in program activities, in assignment of program responsibly and duties; in honors, awards and scholarship recognition; in recruitment?

Yes, I don't think this was a question at all.

- III. Review of Academic Support
 - *A.* Does the program provide appropriate quality and quantity of academic advising and mentoring of students?

Students begin being advised by an advisor group once they have chosen a path they are then handed over to an already understaffed CIS Department. The students said they feel like no matter what is going on their advisor always makes time for them.

B. Does the program provide for retention of qualified students from term to term and support student progress toward and achievement of graduation?

Yes, however, the students explained dwindling class participation numbers the harder the classes and felt this can been alleviated through the creation of a community that encourages the qualified students to stick with it.

- IV. Review of Program Faculty
 - A. Do program faculty have appropriate academic credentials and/or professional licensure/certification?

Yes, to be honest the academic credentials are too high and causing the staffing problems they are having. In the CIS field it does not make any sense for an individual to get a PHD. UA-PTC would have many more candidates to choose from especially for night classes if experience was included in the calculation.



B. Are the faculty orientation and faculty evaluation processes appropriate?

We did not discuss this topic.

C. Is the faculty workload in keeping with best practices?

No, the faculty do not have time to keep up to date with current trends.

- V. Review of Program Resources
 - A. Is there an appropriate level of institutional support for program operation?

No, after discussing with the provost she seemed to be open for ideas however, there was this feeling of acceptable losses. The institution needs to stoke the fire and rejuvenate the staff. The CIS field is different than other fields of study in that it demands inspiration and creativity to thrive. Both of these ingredients are missing.

B. Are faculty, library, professional development and other program resources sufficient?

We did not discuss this topic.

- VI. Review of Program Effectiveness
 - A. Indicate areas of program strength.

The program is strong in that the students that persevere through the programs end up with great fundamentals.

B. Indicate the program areas in need of improvement within the next 12 months; and over the next 2-5 years.

0-12 Months: Inspiring students, showcasing technology, program retention.

2-5 Years: More educators, Better CIS community, Engaging the students with problems to solve.

C. Indicate areas for program development based on market/industry demands that have not been identified by the institution.

More diverse technology profile. Inspiring electives such as Data Science electives or AR/VR/XR electives. Working with local IT communities. Working with the coding academies instead of against them. The students go to a coding academy because they need a job, but UA-PTC can team up with them to offer students who graduate from the academy's credits or discounts. Many of the students that go to coding academies will need a proper degree at some point in their career to move forward and UA-PTC can be there to decrease the barriers.





- VII. Review of Instruction by Distance Technology (if program courses offered by distance)
 - A. Are the program distance technology courses offered/delivered in accordance with best practices?

Yes, the students spoke about a mismatch between online courses and classroom-based learning. They said getting graded for participation on forums or chat groups that no one ever reads is unfair. Many of the students expressed failing an online course because of the high value put on participation.

B. Does the institution have appropriate procedures in place to assure the security of personal information?

We did not discuss this topic however, they use blackboard which is a standard system used by many universities.

C. Are technology support services appropriate for students enrolled in and faculty teaching courses/programs utilizing technology?

Seems to be, however we did not speak to any online students.

D. Are policies for student/faculty ratio, and faculty course load in accordance with best practices?

Yes however, many of the students complained about this policy as they would rather take an online class with only one student than have a course get cancelled because an arbitrary number of students was not met.

E.Are policies on intellectual property in accordance with best practices?

We did not discuss this topic.

- VIII. Review of Program Research and Service
 - A. Are the intended research and creative outcomes for each program appropriate, assessed and results utilized?

No, when we brought this topic up the teams where surprised to find out the CIS group had done research.

B. Are the intended outreach/service/entrepreneurial outcomes for each program's initiatives appropriate assessed and results utilized?

No, this seemed to be non-existent, or was simply glanced over.

IX. Local Reviewer Comments





A. How is the program meeting market/industry demands and/or preparing students for advanced study?

The program seems to be focused on transferring students and what they need to transfer to a 4-year U of A school rather then what the student needs to succeed in the industry. According to the provost this is because of a dramatic decline in non-traditional students coinciding with an uptick in transferring students.

My opinion is; the down turn in non-traditional students is due to the explosion in coding academies and other adult education programs available in the private sector. The increase in traditional students also coincides with the introduction of additional funding opportunities available to graduating students that is not available to adults such as the scholarship lottery funds. Additionally, while PTC was once known to produce talented selfstarting individuals many of whom I personally mentored, after the merger with the U of A network they have stopped attracting talented educators causing a decrease in technical diversity.

B. What program modifications are needed?

More diverse technology profile. Inspiring electives such as Data Science electives or AR/VR/XR electives. Working with local IT communities. Working with the coding academies instead of against them. The students go to a coding academy because they need a job, but UA-PTC can team up with them to offer students credits or discounts. Many of the students that go to coding academies will need a proper degree at some point in their career to move forward and UA-PTC can be there to decrease this barrier.

Build a rich community, encourage ideas and problem solving. Give the students projects and teach them what success looks like. Encourage individuals with the aptitude to create to work with these communities. Show the students they are not there to just get a degree and go to work. Technology is the future and they are the ones who are going to build it.

The current generation of Engineers, Developers, Creators are aging and many of them are looking for a path to pass on information to the next generation of creators. Embrace this by bringing in creators to help stoke the fire.

- X. Report Summary
 - A. Include reviewer comments on the overall need for program graduates/completers in the local area, region and/or nation over the next 5 years.

At this very moment there are 1378 positions open in the state of Arkansas and 280k open nationally that require knowledge in computer science. This number increases every day and working with the companies doing the hiring the market is becoming more competitive then ever. Some positions are staying open for years at a time

This trend is only increasing. I just spoke with a company in NW AR who told me they are





hiring every graduate who applies and starting them off at 75k a year.

B. Include reviewer comments on overall program quality, state program review process, etc.

I am an Alumni of UA-PTC. I went as a carpenter with a dream to be a developer and I left a developer with a dream to be an engineer. I was encouraged to soak in the knowledge and use it to create. I was inspired by the teachers and thus push myself to inspire others now. After talking to the students my heart broke a bit as many of the students look at the education provided as a means to an end while disregarding the journey. Just like in Mathematics, how you got the answer is just as important as the answer it.