

**Academic Program Review  
Pilot Draft – updated July 2016**

**Academic Program Review  
Five-Year Report**

**Due Date: October 15**

**To be submitted by the Department Chair to Dr. Duke Jones, Associate Provost for University Effectiveness**

Name: Tim DeClue Department: CIS Date: 1/17/17 Year of Cycle: 5

The Academic Program Five-Year Report has two parts: student learning and program effectiveness. You are reporting on data collection and other assessment activities from the four years. Your response is intended to provide an in-depth analysis of your quantitative and qualitative data that ultimately leads to meaningful improvements in both student learning and program effectiveness.

**Meta-analysis related to Student Learning:**

***1. What have you learned about your students and your PLSLOs? What implications result from this?***

The 10 student learning objectives (PLSLOs) for all students in the SBU Computer and Information Sciences Department are listed below:

1. An ability to apply knowledge of computing and mathematics appropriate to the discipline
2. An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution
3. An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs
4. An ability to function effectively on teams to accomplish a common goal
5. An understanding of professional, ethical, legal, security and social issues and responsibilities
6. An ability to communicate effectively with a range of audiences
7. An ability to analyze the local and global impact of computing on individuals, organizations, and society
8. Recognition of the need for and an ability to engage in continuing professional development
9. An ability to use current techniques, skills, and tools necessary for computing practice
10. An ability to apply design and development principles in the construction of software systems of varying complexity

The curriculum is designed to enable the PLSLOs. Table 1 (below) shows the relationship of the courses in the student outcomes and their supporting required courses in the computer science curriculum. The student learning objectives (outcomes) appear on the Department website, and are a part of the syllabus template used by the CIS Department. The outcomes appear in the syllabi for the CIS core courses required for all CIS students.

**Table 1: PLSLOs and supporting curriculum components**

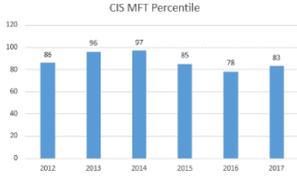
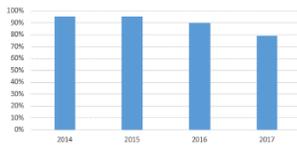
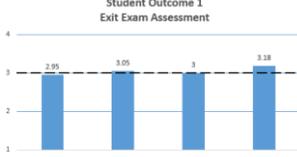
Courses Outcomes	Sem CIS 1001	Fnd CIS 1033	CS1 CIS 1144	CS2 CIS 1154	Net CIS 2013	ISAD CIS 2213	DB CIS 3323	ADS CIS 3333	MO CIS 3413	CIS 4462 4472
1.			X	X				X		
2.			X	X	X	X		X		X
3.			X	X	X	X	X			X
4.		X		X	X	X				X
5.	X	X			X	X				
6.	X				X	X				X
7.	X	X								
8.	X									X
9.							X		X	X
10.			X						X	X

The tools used to assess the PLSLOs from Table 1 are detailed below in Table 2.

**Table 2: PLSLOs and supporting curriculum components**

<b>Assessment Process &amp; Description</b>	<b>Frequency</b>	<b>Documentation &amp; Maintenance</b>
<p><b>Student Outcome Survey</b>  <i>Students Assessing The Program</i></p> <p>The outcome survey is administered to graduating seniors. The outcome survey consists of the student outcomes (1-10) and a 4 point scale of self-assessed achievement. Results and proposed curriculum changes are discussed at the appropriate assessment meeting (fall or spring).</p>	Each Spring	The anonymous paper surveys are kept in a filing cabinet in the Department Chair's office. The tabulated results are kept in a spreadsheet on a shared network drive. The survey was begun to address formative assessment needs.
<p><b>Major Field Test</b>  <i>Program Comparison to Other Programs</i></p> <p>The ETS' Major Field Test (MFT) is a nationally-normed exam providing comparative data and percentile ranking information with other institutions granting degrees in computer science. Institutional scores and proposed improvement measures are discussed each spring assessment meeting.</p>	Yearly	The MFT is administered and maintained by the Office of Institutional Effectiveness. Results are tabulated by ETS and reported back to the University. Scores for individual students and for the CIS Department as a whole are kept on the University's Portal.
<p><b>Student Artifacts from Capstone Course</b>  <i>Program Assessing The Students</i></p> <p>The senior capstone sequence (CIS4462 and CIS4472) results in a series of artifacts contained in a portfolio useful for assessing the student outcomes. These artifacts are assessed by the entire CIS faculty with a common rubric. Results are discussed and improvement measures proposed in the assessment meetings each semester.</p>	Annually Each Spring	Each senior project team of 2-5 students is required to produce both a digital and printed version of their senior project documents. The printed documents are kept for a year in the Department Chair's office, then bound and placed in the Department Library. Digital copies are kept on a departmental external hard-drive.
<p><b>Course Pass Rates</b>  <i>Program Assessing The Students</i></p> <p>CIS1154 (Computer Science 2) is a core course and prerequisite for the largest number of succeeding courses of all courses in the CIS Department curriculum. The pass rate for this course is a significant indicator of success for the students in the CIS Department</p>	Annually	The CIS1154 course pass rate is calculated each fall and spring.
<p><b>Alumni Survey and Feedback</b>  <i>Alumni Assessing the Program</i></p> <p>The CIS Department hosts an alumni advisory board each fall for alumni who have graduated between 1 and 5 years previously. A survey is administered at each meeting of the Alumni Advisory Board. Results and proposed changes are discussed at the fall assessment meeting.</p>	Annually Each Fall	The anonymous paper surveys are kept in a filing cabinet in the Department Chair's office. The tabulated results are kept in a spreadsheet on a shared network drive. Feedback is recorded in the minutes of the Alumni Advisory Board and posted on the shared network drive.
<p><b>Industry Advisory Board Feedback</b>  <i>Program Comparison to Other Programs</i></p> <p>The CIS Department hosts an Industry Advisory Board each spring for companies who regularly hire alumni of the CIS Department.</p>	Annually Each Spring	Feedback is recorded in the minutes of the Industry Advisory Board and posted on the shared network drive.

Each student learning objective (outcome) and the assessment practices associated with the student outcome are shown below.

<b>Student Learning Objective (SO) 1:</b> <b>An ability to apply knowledge of computing and mathematics appropriate to the discipline.</b> Educational Strategies from Table 1: 1144, 1154, 3333				
Assessment Process	Expected Attainment	Results Summary	Data Collection	Analysis
<b>External/Summative:</b> Major Field Test	Institutional Score $\geq$ 50 <sup>th</sup> percentile		Annual	Computer Information science graduates perform well on the major field test consistently scoring as a group above the national average.
<b>Internal/Formative</b> CIS1154 Pass Rate	70% of students should pass CIS1154 with a C or better (CIS1154 is the prerequisite for a majority of CIS courses)		Annual	The data showed continuing success in achieving the expected level of attainment.
<b>External/Summative:</b> (2015 was the first year assessed)	Mean score should $\geq$ 3.0 on 1-5 scale. Given to alumni on alumni advisory board. This group changes yearly.	<b>Year/Mean</b> 2015: 4.5 2016: 4.3	Annual in Fall	Survey results exceeded the expected level of attainment.
<b>Internal/Summative:</b> Exit Exam	Mean score should $\geq$ 3.0. Given to seniors in capstone course.		Each Spring	Survey results exceeded the expected level of attainment in the three most recent years.

<b>STUDENT LEARNING OBJECTIVE (SO) 2:</b> <b>An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution.</b> Educational Strategies from Table 1: 1144, 1154, 2213, 3333, 4462, 4472														
Assessment Process	Expected Attainment	Results Summary	Data Collection	Analysis										
<b>Internal/Summative:</b> Senior Project Rubric	All teams should receive a mean score $\geq 3$ on <b>Requirements Section</b> of rubric. Note: the target score was $\geq 4$ prior to 2015.	<table border="1"> <caption>Student Outcome 2 Requirements Section - Sr Project Rubric</caption> <thead> <tr> <th>Year</th> <th>Mean Score</th> </tr> </thead> <tbody> <tr> <td>2014</td> <td>3.5</td> </tr> <tr> <td>2015</td> <td>2.91</td> </tr> <tr> <td>2016</td> <td>3.27</td> </tr> <tr> <td>2017</td> <td>3.41</td> </tr> </tbody> </table>	Year	Mean Score	2014	3.5	2015	2.91	2016	3.27	2017	3.41	Each Spring	The Requirements Section of the Rubric assesses performance related to <b>problem definition</b> and <b>requirements</b> .
Year	Mean Score													
2014	3.5													
2015	2.91													
2016	3.27													
2017	3.41													
<b>Internal/Formative</b> CIS1154 Pass Rate	70% of students should pass CIS1154 with a C or better (CIS1154 is the prerequisite for a majority of CIS courses)	<table border="1"> <caption>CIS1154 Pass Rate C grade or better</caption> <thead> <tr> <th>Year</th> <th>Pass Rate (%)</th> </tr> </thead> <tbody> <tr> <td>2014</td> <td>90%</td> </tr> <tr> <td>2015</td> <td>90%</td> </tr> <tr> <td>2016</td> <td>85%</td> </tr> <tr> <td>2017</td> <td>75%</td> </tr> </tbody> </table>	Year	Pass Rate (%)	2014	90%	2015	90%	2016	85%	2017	75%	Annual	The data showed continuing success in achieving the expected level of attainment.
Year	Pass Rate (%)													
2014	90%													
2015	90%													
2016	85%													
2017	75%													
<b>External/Summative:</b> Alumni Survey (2015 was the first year assessed)	Mean score should $\geq 3.0$ on a 1-5 scale. Given to alumni on alumni advisory board. This group changes yearly.	<b>Year/Mean</b> 2015: 4.67 2016: 4.10	Annual in Fall	Survey results exceeded the expected level of attainment.										
<b>Internal/Summative:</b> Exit Exam	Mean score should $\geq 3.0$ . Given to seniors in capstone course.	<table border="1"> <caption>Student Outcome 2 Exit Exam Assessment</caption> <thead> <tr> <th>Year</th> <th>Mean Score</th> </tr> </thead> <tbody> <tr> <td>2014</td> <td>2.8</td> </tr> <tr> <td>2015</td> <td>2.81</td> </tr> <tr> <td>2016</td> <td>2.79</td> </tr> <tr> <td>2017</td> <td>2.88</td> </tr> </tbody> </table>	Year	Mean Score	2014	2.8	2015	2.81	2016	2.79	2017	2.88	Each Spring	The results, while close, do not exhibit the level of attainment desired. This area remains a continuing topic during curriculum meetings.
Year	Mean Score													
2014	2.8													
2015	2.81													
2016	2.79													
2017	2.88													

<b>STUDENT LEARNING OBJECTIVE (SO) 3:</b> <b>An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs</b> Educational Strategies from Table 1: 1144, 1154, 2213, 3323														
Assessment Process	Expected Attainment	Results Summary	Data Collection	Analysis										
<b>Internal/ Summative:</b> Senior Project Rubric	All teams should receive a mean score $\geq 3.0$ on <b>Total Score</b> of the rubric. Note: prior to 2014-15, the target score was 4.0.	<table border="1"> <caption>Student Outcome 3 Exit Exam Assessment</caption> <thead> <tr> <th>Year</th> <th>Mean Score</th> </tr> </thead> <tbody> <tr> <td>2014</td> <td>3.17</td> </tr> <tr> <td>2015</td> <td>3.45</td> </tr> <tr> <td>2016</td> <td>3.12</td> </tr> <tr> <td>2017</td> <td>3.55</td> </tr> </tbody> </table>	Year	Mean Score	2014	3.17	2015	3.45	2016	3.12	2017	3.55	Each Spring	The expected level of achievement was attained.
Year	Mean Score													
2014	3.17													
2015	3.45													
2016	3.12													
2017	3.55													
<b>External/ Summative:</b> Alumni Survey (2015 was the first year assessed)	Mean score should $\geq 3.0$ on a 1-5 scale. Given to alumni on alumni advisory board. This group changes yearly.	<b>Year/Mean</b> 2015: 4.42 2016: 4.20	Annual in Fall	Survey results exceeded the expected level of attainment.										
<b>Internal/ Formative</b> CIS1154 Pass Rate	70% of students should pass CIS1154 with a C or better (CIS1154 is the prerequisite for a majority of CIS courses)	<table border="1"> <caption>CIS1154 Pass Rate C grade or better</caption> <thead> <tr> <th>Year</th> <th>Pass Rate (%)</th> </tr> </thead> <tbody> <tr> <td>2014</td> <td>~95%</td> </tr> <tr> <td>2015</td> <td>~95%</td> </tr> <tr> <td>2016</td> <td>~90%</td> </tr> <tr> <td>2017</td> <td>~80%</td> </tr> </tbody> </table>	Year	Pass Rate (%)	2014	~95%	2015	~95%	2016	~90%	2017	~80%	Annual	The data showed continuing success in achieving the expected level of attainment.
Year	Pass Rate (%)													
2014	~95%													
2015	~95%													
2016	~90%													
2017	~80%													

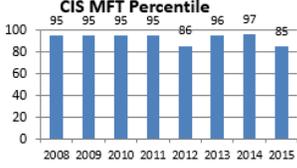
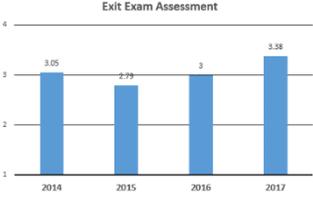
<b>STUDENT LEARNING OBJECTIVE (SO) 4:</b> <b>An ability to function effectively on teams to accomplish a common goal</b> Educational Strategies from Table 1:1033, 1154, 2213, 3313, 4462/72														
<b>Assessment Process</b>	<b>Expected Attainment</b>	<b>Results Summary</b>	<b>Data Collection</b>	<b>Analysis</b>										
<b>Internal/ Summative:</b> Senior Project Rubric (Presentation)	All teams should receive a mean score $\geq 3$ on <b>Presentation Section</b> of rubric	<p style="text-align: center;"><b>Student Outcome 4</b> Presentation Section - Sr Project Rubric</p> <table border="1"> <thead> <tr> <th>Year</th> <th>Mean Score</th> </tr> </thead> <tbody> <tr> <td>2014</td> <td>2.82</td> </tr> <tr> <td>2015</td> <td>3.04</td> </tr> <tr> <td>2016</td> <td>3</td> </tr> <tr> <td>2017</td> <td>3.19</td> </tr> </tbody> </table>	Year	Mean Score	2014	2.82	2015	3.04	2016	3	2017	3.19	Each Spring	The presentation section assesses, via information presented, the success of the team in accomplishing the goal of a successful project. The score exceeds the target.
Year	Mean Score													
2014	2.82													
2015	3.04													
2016	3													
2017	3.19													
<b>External/ Summative:</b> Alumni Survey (2015 was the first year assessed)	Mean score should $\geq 3.0$ on a 1-5 scale. Given to alumni on alumni advisory board. This group changes yearly.	<p style="text-align: center;"><b>Year/Mean</b></p> <p style="text-align: center;">2015: 4.5 2016: 4.2</p>	Annual in Fall	Survey results exceeded the expected level of attainment.										
<b>Internal/ Formative</b> CIS1154 Pass Rate	70% of students should pass CIS1154 with a C or better (CIS1154 is the prerequisite for a majority of CIS courses)	<p style="text-align: center;"><b>CIS1154 Pass Rate</b> C grade or better</p> <table border="1"> <thead> <tr> <th>Year</th> <th>Pass Rate (%)</th> </tr> </thead> <tbody> <tr> <td>2014</td> <td>~95</td> </tr> <tr> <td>2015</td> <td>~95</td> </tr> <tr> <td>2016</td> <td>~85</td> </tr> <tr> <td>2017</td> <td>~75</td> </tr> </tbody> </table>	Year	Pass Rate (%)	2014	~95	2015	~95	2016	~85	2017	~75	Annual	The data showed continuing success in achieving the expected level of attainment.
Year	Pass Rate (%)													
2014	~95													
2015	~95													
2016	~85													
2017	~75													
<b>Internal/ Summative:</b> Exit Exam	Mean score should $\geq 3.0$ . Given to seniors in capstone course.	<p style="text-align: center;"><b>Student Outcome 4</b> Exit Exam Assessment</p> <table border="1"> <thead> <tr> <th>Year</th> <th>Mean Score</th> </tr> </thead> <tbody> <tr> <td>2014</td> <td>3.15</td> </tr> <tr> <td>2015</td> <td>3.7</td> </tr> <tr> <td>2016</td> <td>3.29</td> </tr> <tr> <td>2017</td> <td>3.59</td> </tr> </tbody> </table>	Year	Mean Score	2014	3.15	2015	3.7	2016	3.29	2017	3.59	Each Fall/Spring	Survey results exceeded the expected level of attainment.
Year	Mean Score													
2014	3.15													
2015	3.7													
2016	3.29													
2017	3.59													

<b>STUDENT LEARNING OBJECTIVE (SO) 5:</b> <b>An understanding of professional, ethical, legal, security and social issues and responsibilities</b> Educational Strategies from Table 1: 1001, 1033, 2213, 3313, 4462, 4472														
Assessment Process	Expected Attainment	Results Summary	Data Collection	Analysis										
<b>External/ Summative:</b> Alumni Survey (2015 was the first year assessed)	Mean score should $\geq 3.0$ . Given to alumni on alumni advisory board. This group changes yearly.	<b>Year/Mean</b> 2015: 3.91 2016: 3.90	Annual in Fall	Survey results exceeded the expected level of attainment, but because this score was the lowest recorded for the survey, the faculty will address this value in the fall assessment meeting.										
<b>Internal/ Summative:</b> Exit Exam	Mean score should $\geq 3.0$ . Given to seniors in capstone course.	<table border="1"> <caption>Student Outcome 5 Exit Exam Assessment</caption> <thead> <tr> <th>Year</th> <th>Mean Score</th> </tr> </thead> <tbody> <tr> <td>2014</td> <td>2.91</td> </tr> <tr> <td>2015</td> <td>3.55</td> </tr> <tr> <td>2016</td> <td>3.32</td> </tr> <tr> <td>2017</td> <td>3.24</td> </tr> </tbody> </table>	Year	Mean Score	2014	2.91	2015	3.55	2016	3.32	2017	3.24	Each Spring	Survey results exceeded the expected level of attainment for the last three years.
Year	Mean Score													
2014	2.91													
2015	3.55													
2016	3.32													
2017	3.24													

<b>STUDENT LEARNING OBJECTIVE (SO) 6:</b> <b>An ability to communicate effectively with a range of audiences</b> Educational Strategies from Table 1: 1001, 2213, 3313, 4462, 4472														
Assessment Process	Expected Attainment	Results Summary	Data Collection	Analysis										
<b>Internal/ Summative:</b> Senior Final Presentation Rubric	All teams should receive a mean score $\geq 3$ on the <b>Presentation Section</b> of rubric	<table border="1"> <caption>Student Outcome 6 Presentation Section - Sr Project Rubric</caption> <thead> <tr> <th>Year</th> <th>Mean Score</th> </tr> </thead> <tbody> <tr> <td>2014</td> <td>2.89</td> </tr> <tr> <td>2015</td> <td>3.04</td> </tr> <tr> <td>2016</td> <td>3</td> </tr> <tr> <td>2017</td> <td>3.19</td> </tr> </tbody> </table>	Year	Mean Score	2014	2.89	2015	3.04	2016	3	2017	3.19	Each Spring	Assessment showed satisfaction of the learning outcome based on student professional presentation of the senior project.
Year	Mean Score													
2014	2.89													
2015	3.04													
2016	3													
2017	3.19													
<b>External/ Summative:</b> Alumni Survey (2015 was the first year assessed)	Mean score should $\geq 3.0$ . Given to alumni on alumni advisory board. This group changes yearly.	<b>Year/Mean</b> 2015: 4.67 2016: 3.90	Annual in Fall	Survey results exceeded the expected level of attainment, this score is lower than expected and will be discussed in the fall assessment meeting and monitored.										
<b>Internal/ Summative</b> Exit Exam	Mean score should $\geq 3.0$ . Given to seniors in capstone course.	<table border="1"> <caption>Student Outcome 6 Exit Exam Assessment</caption> <thead> <tr> <th>Year</th> <th>Mean Score</th> </tr> </thead> <tbody> <tr> <td>2014</td> <td>2.9</td> </tr> <tr> <td>2015</td> <td>2.88</td> </tr> <tr> <td>2016</td> <td>3</td> </tr> <tr> <td>2017</td> <td>3.23</td> </tr> </tbody> </table>	Year	Mean Score	2014	2.9	2015	2.88	2016	3	2017	3.23	Each Spring	Survey results exceeded the expected level of attainment for the past two years.
Year	Mean Score													
2014	2.9													
2015	2.88													
2016	3													
2017	3.23													

<b>STUDENT LEARNING OBJECTIVE (SO) 7:</b> <b>An ability to analyze the local and global impact of computing on individuals, organizations, and society</b> Educational Strategies from Table 1: 1001, 1033, 4462, 4472														
Assessment Process	Expected Attainment	Results Summary	Data Collection	Analysis										
<b>External/ Summative:</b> Alumni Survey (2015 was the first year assessed)	Mean score should $\geq 3.0$ . Given to alumni on alumni advisory board. This group changes yearly.	<b>Year/Mean</b> 2015: 4.3 2016: 4.0	Annual in Fall	Survey results exceeded the expected level of attainment.										
<b>Internal/ Summative:</b> Exit Exam	Mean score should $\geq 3.0$ on a 4.0 scale. Given to seniors in capstone course.	<table border="1"> <caption>Student Outcome 7 Exit Exam Assessment</caption> <thead> <tr> <th>Year</th> <th>Mean Score</th> </tr> </thead> <tbody> <tr> <td>2014</td> <td>3.25</td> </tr> <tr> <td>2015</td> <td>3.33</td> </tr> <tr> <td>2016</td> <td>3.05</td> </tr> <tr> <td>2017</td> <td>3.06</td> </tr> </tbody> </table>	Year	Mean Score	2014	3.25	2015	3.33	2016	3.05	2017	3.06	Each Spring	Assessment results exceeded the expected level of attainment.
Year	Mean Score													
2014	3.25													
2015	3.33													
2016	3.05													
2017	3.06													

<b>STUDENT LEARNING OBJECTIVE (SO) 8:</b> <b>Recognition of the need for and an ability to engage in continuing professional development</b> Educational Strategies from Table 1: 1001, 4462, 4472														
Assessment Process	Expected Attainment	Results Summary	Data Collection	Analysis										
<b>External/ Summative:</b> Alumni Survey (2015 was the first year assessed)	Mean score should $\geq 3.0$ . Given to alumni on alumni advisory board. This group changes yearly.	<b>Year/Mean</b> 2015: 4.19 2016: 3.6	Annual in Fall	Eleven respondents. Survey results exceeded the expected level of attainment.										
<b>Internal/ Summative:</b> Exit Exam	Mean score should $\geq 3.0$ . Given to seniors in capstone course.	<table border="1"> <caption>Student Outcome 8 Exit Exam Assessment</caption> <thead> <tr> <th>Year</th> <th>Mean Score</th> </tr> </thead> <tbody> <tr> <td>2014</td> <td>3.21</td> </tr> <tr> <td>2015</td> <td>3.1</td> </tr> <tr> <td>2016</td> <td>2.68</td> </tr> <tr> <td>2017</td> <td>2.75</td> </tr> </tbody> </table>	Year	Mean Score	2014	3.21	2015	3.1	2016	2.68	2017	2.75	Each Spring	Survey results show the beginning of a downward trend. Discussion at the spring assessment meeting concluded students are unaware of professional development activities (career fairs, presentations, guest speakers, etc.). Therefore greater emphasis will be placed on why these activities exist and communicated to the students. Further discussion below.
Year	Mean Score													
2014	3.21													
2015	3.1													
2016	2.68													
2017	2.75													

<b>STUDENT LEARNING OBJECTIVE (SO) 9:</b> <b>An ability to use current techniques, skills, and tools necessary for computing practice.</b> Educational Strategies from Table 1: 2233, 2253, 3333, 4462, 4472				
Assessment Process	Expected Attainment	Results Summary	Data Collection	Analysis
<b>External/ Summative:</b> Major Field Test	Institutional Score >= 50 <sup>th</sup> percentile		Annual	The Computer science Major Field Test is updated every 4-5 years to remain current with regard to computing practice. Information Science graduates have consistently exceeded the expected level of attainment.
<b>External/ Summative:</b> Alumni Survey (2015 was the first year assessed)	Mean score should >= 3.0. Given to alumni on alumni advisory board. This group changes yearly.	<b>Year/Mean</b> 2015: 4.67 2016: 4.30	Annual in Fall	Survey results exceeded the expected level of attainment.
<b>Internal/ Summative:</b> Exit Exam	Mean score should >= 3.0. Given to seniors in capstone course.		Annual	Assessment results exceeded the expected level of attainment in all but one year.

<b>STUDENT LEARNING OBJECTIVE (SO) 10:</b> <b>An ability to apply design and development principles in the construction of software systems of varying complexity.</b> Educational Strategies from Table 1: 1144, 1154, 2213, 4462, 4472														
Assessment Process	Expected Attainment	Results Summary	Data Collection	Analysis										
<b>Internal/ Summative:</b> Direct Assessment of Senior Project Artifacts.	90% of seniors should complete 4472 with a grade of C or better.	<b>Year/% Passing</b> 2010: 100% 2011: 92% (11/12)* 2012: 100% 2013: 100% 2014: 100% 2015: 100% 2016: 100% 2017: 100%  *NOTE: One student failed the course due to attendance requirements and retook it successfully the following year.	Each Spring	This course can only be reached after applying design and development principles to systems of varying complexity in 1144, 1154, 2213, 4462 and 4472.										
<b>External/ Summative:</b> Alumni Survey (2015 was the first year assessed)	Mean score should $\geq 3.0$ . Given to alumni on alumni advisory board. This group changes yearly.	<b>Year/Mean</b> 2015: 4.1 2016: 4.0	Annual in Fall	Survey results exceeded the expected level of attainment.										
<b>Internal/ Formative</b>	70% of students should pass CIS1154 with a C or better (CIS1154 is the prerequisite for a majority of CIS courses)	<table border="1"> <caption>CIS1154 Pass Rate C grade or better</caption> <thead> <tr> <th>Year</th> <th>Pass Rate</th> </tr> </thead> <tbody> <tr> <td>2014</td> <td>~95%</td> </tr> <tr> <td>2015</td> <td>~95%</td> </tr> <tr> <td>2016</td> <td>~90%</td> </tr> <tr> <td>2017</td> <td>~80%</td> </tr> </tbody> </table>	Year	Pass Rate	2014	~95%	2015	~95%	2016	~90%	2017	~80%	Annual	The data showed continuing success in achieving the expected level of attainment.
Year	Pass Rate													
2014	~95%													
2015	~95%													
2016	~90%													
2017	~80%													
<b>Internal/ Summative:</b> Senior Project Rubric	All teams should receive a mean score $\geq 3$ on the <b>Design Section</b> of rubric	<table border="1"> <caption>Student Outcome 10 Design Section - Sr Project Rubric</caption> <thead> <tr> <th>Year</th> <th>Mean Score</th> </tr> </thead> <tbody> <tr> <td>2014</td> <td>3.05</td> </tr> <tr> <td>2015</td> <td>3.21</td> </tr> <tr> <td>2016</td> <td>3.22</td> </tr> <tr> <td>2017</td> <td>3.2</td> </tr> </tbody> </table>	Year	Mean Score	2014	3.05	2015	3.21	2016	3.22	2017	3.2	Each Spring	Survey results exceeded the expected level of attainment.
Year	Mean Score													
2014	3.05													
2015	3.21													
2016	3.22													
2017	3.2													

What we have learned: Based on the assessment of the PLSLOs, the CIS Department has learned the following:

Learning objectives are assessed using a variety of instruments and approaches including direct assessment of student artifacts, indirect assessment through surveys, both internal and external assessment, and with annual and longitudinal assessment. The available data (shown above in previous section) presents strong evidence that the learning objectives are being met via the target score achievement.

During the fall assessment meeting these scores were discussed. The CIS Department observed the following:

- All scores are above the median, reflecting strength of satisfaction.
- Weaker areas included professional development (h) and the soft skills (e, f)

These observations lead to the following conclusions:

- The PLSLO's remain appropriate for the majors housed in the CIS Department.
- The scores indicate the CIS Department is effective in enabling CIS Department students to satisfy these objectives.

Implications: While assessment activities will continue to provide insight and guidance, at present the CIS Department has a well-aligned curriculum for enabling student to satisfy the PLSLOs.

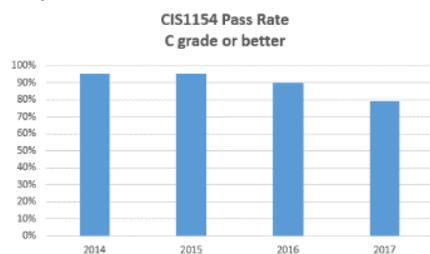
## 1. What have you learned about your teaching effectiveness? What implications result from this?

Teaching is effective in the SBU CIS Department. Four metrics are cited.

Placement Rate: The SBU CIS Department alumni have had a 100% in-discipline placement rate within 90 days of graduation for the past three years. It is reasonable to assume some positive causal effect between effective teaching and placement. Effective teaching positively influences effective learning; effective learning positively affects preparedness and prepared graduates are easily placed.

MFT Scores: The SBU CIS Department is housed in the Robert W. Plaster College of Business and Computer Science. Every student in the College takes the Major Field Test (MFT) including computer science and computer information science majors. The graduates of the Robert W. Plaster College of Business and Computer Science have scored at or above the 85<sup>th</sup> percentile on the MFT 11 out of the last 12 semesters.

Pass rate for CIS1154 and CIS4462/72: The pass rate for students earning a C grade or better in CIS1154 is shown below. One hundred percent of students passed CIS4462/4472 (senior capstone project) 11 out of the last 12 years.



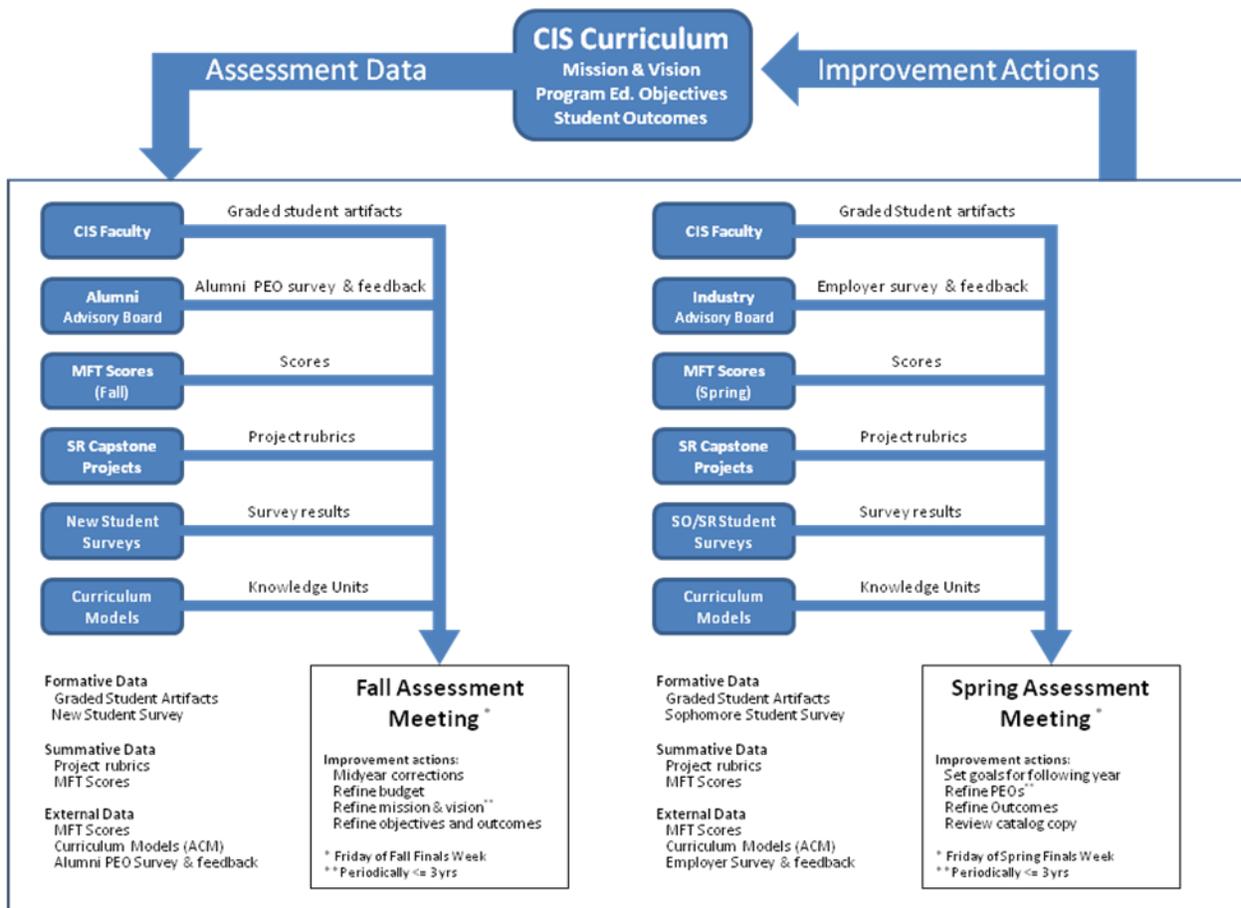
Graduation Rate: the graduation rate from the SBU CIS Department ranges over the last five years from a low of 55% to a high of 71%. The three-year average is 65%.

## 2. How effective has the program been in ensuring student learning throughout the students' experiences (regardless of location or mode of learning)? How will you improve your effectiveness?

Please refer to the meta-analysis related to PLSLO's in the prior section.

**3. Based on your findings, how have you revised your PLSLOs, curriculum map, and assessment plan? (Submit revised plan)**

The SBU CIS Department assessment plan in its revised state is illustrated below:



- The CIS Department faculty agreed the current PLSLO's, curriculum, curriculum map and assessment plan are effective and appropriate to achieve the student outcomes.

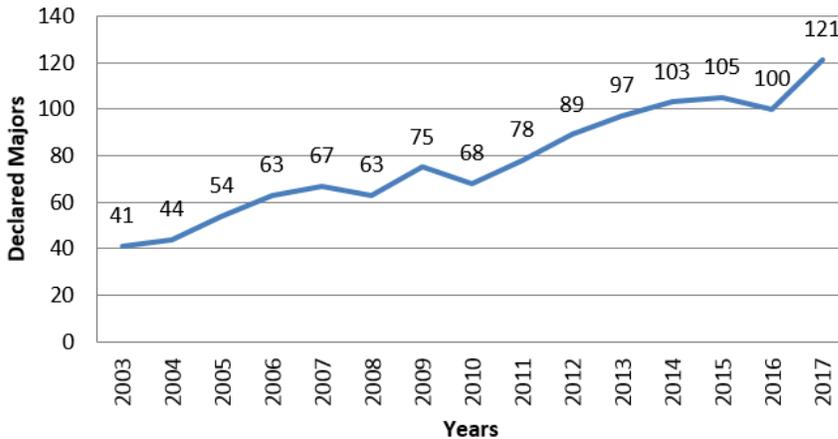
**4. What do you need to implement your revised plan?**

Since the current plan is adequate, there are no new needs.

**Meta-analysis related to Program Effectiveness:**

**1. What are the trends related to enrollment, retention, and graduation?**

**CIS Department Growth  
Numbers of Declared Majors each Fall**



***Enrollment:*** In general, the trend for enrollment in the computing sciences continues to climb. The number of students majoring in CS/CIS/WSD at SBU has grown 11 out of the last 14 years and in the most recent year the size of the department student count grew over 20% between the fall of 2016 and the fall of 2017.

***Retention and Graduation:*** The graduation rate shown below is calculated by dividing the number of entering freshmen by the number of graduates four years later. While this percentage is not perfect—some freshmen will take longer and others less time to graduate—it is a useful metric to illustrate the *graduation rate*. As can be seen, the graduation rate from the SBU CIS Department ranges over the last five years from a low of 55% to a high of 71%. The three-year average is 65%.

A second metric meant to illustrate *retention* is calculated and shown below. The percent of total students graduated each year is the number of graduates divided by the total number of students in the program. If every student were retained and graduated, 25% of the students would graduate each year. Again, this cannot be a perfect calculation, but it does roughly illustrate the trend. In the three years shown, the mean was 21%

Year →	2015	2016	2017	Mean
Freshmen*	28	31	34	31
Graduates	20	21	19	20
Retention to Graduation	23%	22%	19%	21%
Graduation Rate	71%	68%	55%	65%

\* The freshmen numbers are taken from the cohort of students who should have graduated in the year indicated given an expected 8 semester progression.

**2. What will we do to address the trends related to enrollment, retention, and graduation?**

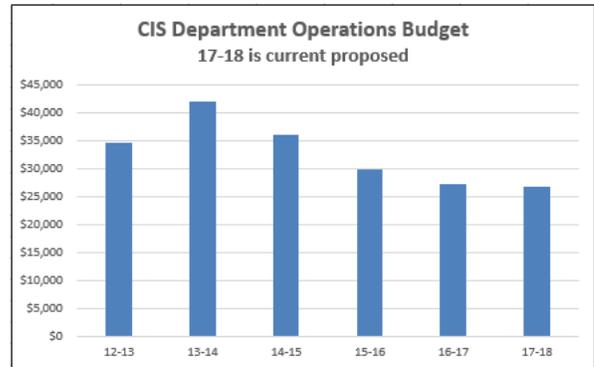
- The trends indicate a strong, vibrant and growing department. Over the last three years, on average, 65% of entering freshmen graduated and 21% of the students graduated from the CIS Department each year.
- To continue the positive trends, the CIS Department has
  - a. Designed a new undergraduate major in cybersecurity. The trends indicate increasing numbers of high school students will choose to major in a computing degree; therefore additional options for the increasing numbers makes sense.
  - b. Proposed a graduate degree in computer science. With additional students and higher demands, some of the more talented students will naturally choose to complete a graduate degree.
  - c. Proposed new faculty positions be added to address the growing numbers of students in the CIS Department. Thus far, these positions have not been approved.
  - d. Attempted to implement a mentoring program, thus far unsuccessful.

**3. What are the trends related to staffing, facilities, and budget?**

*Staffing:* Staffing has not matched the growth in student numbers. With the approval of the cybersecurity program, it is expected that a mini-spike even greater than the steady, strong growth already experienced will occur in 2017-18 and 2018-19. The cybersecurity program will be in jeopardy due to simple load limits without additional faculty. A new faculty position has not been approved for the CIS Department since 2012-13 even though student numbers have grown 15% during that time (89 majors in 2012-13 compared to 105 majors in 2015-16).

*Facilities:* Facilities are a strength of the program due to the renovation of Taylor Hall. However, the UI/UX Lab space was not included in the renovation budget, therefore it remains empty.

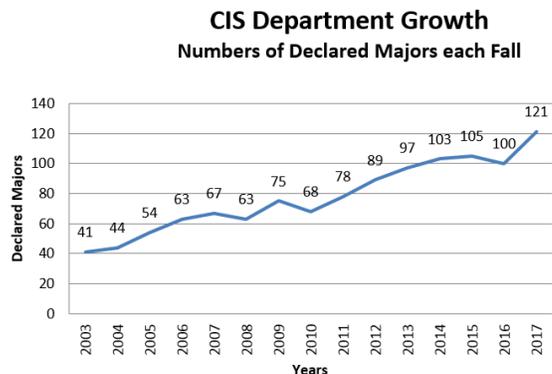
*Budget:* The operations budget has trended downward for several years. With the addition of the cybersecurity program—a program which will require a significant outlay for appropriate hardware and software—this trend should be reversed.



**4. What will we do to address the trends related to staffing, facilities, and budget? Are the resources adequate to meet the program effectiveness goals? (If the response is to request additional faculty, staff, facilities, and/or budget, include data which supports this request.)**

*Staffing:* A new faculty position resulting only from growth in student numbers has been requested annually for the fall of 2017 each budgeting cycle since 2013-14. The data shows that enrollment in the CIS Department has increased 5 of the last 6 years and 10 of the last 13 years.

With the addition of a new major, the need becomes even greater. It is possible that the decline in enrollment between the fall of 2015 and the fall of 2016 was due to an inability to adequately service the academic and instructional needs of the students in the Department.

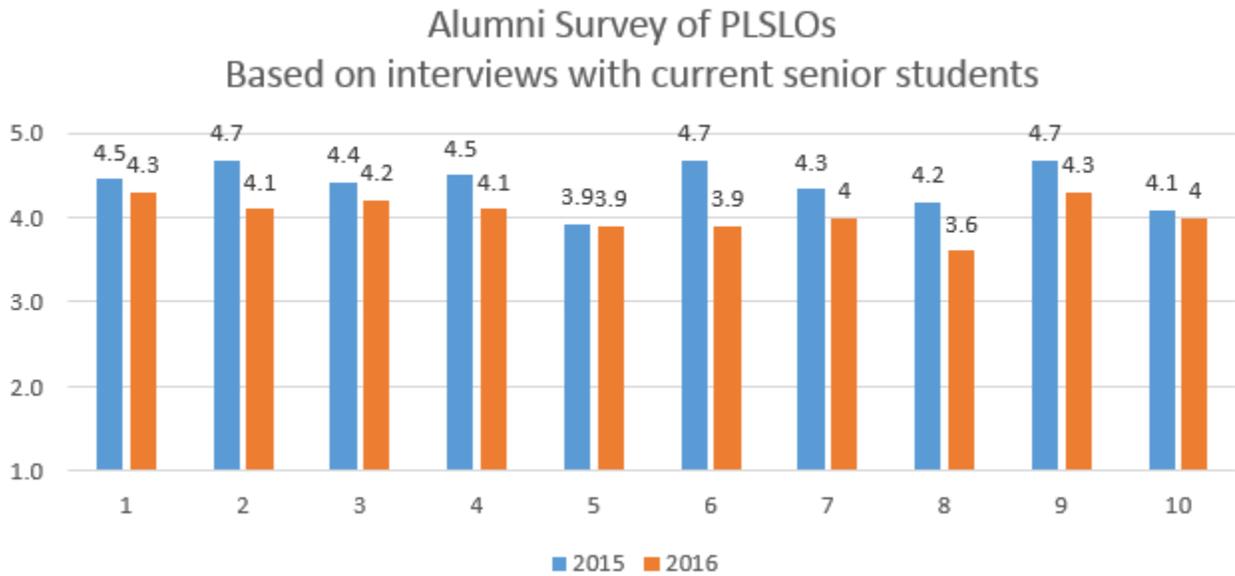


**5. What have you learned about your advising effectiveness?**

The strongest measure of advising effectiveness is the graduation rate (see the table under “Meta-analysis,” question 1). The graduation rate for the CIS Department is strong and indicates high effectiveness in advising. During the assessment meeting in December of 2016, however, it was noted that advising will be changed beginning with the fifth degree program housed in the CIS Department (CS, CIS, WEBD, CSec, and CSEd), the Department should consider assigning advisees to advisors who advise students only in one major.

**6. What have you learned from alumni?**

The CIS Department invites a 10-member alumni advisory board to attend a board meeting each fall. During the meeting the advisory board is surveyed about the ten PLSLO’s listed specifically in question 1 of this section. The scores range from 1 (very weak) to 5 (strong evidence observed). The results are shown below:



During the fall assessment meeting these scores were discussed with improvement strategies implemented as described elsewhere in this document. The CIS Department observed the following:

- All scores are above the median (3), reflecting a positive score
- Weaker areas in the most recent year included professional development (8) and the soft skills (5)

**7. Given the institutional data set, what are the two biggest threats to the program? How will you address those threats?**

The two biggest threats are:

- Uncontrolled growth: Growth in student numbers without growth in faculty. This threat, if fully realized, will result in lower quality instruction, student flight to other programs and loss of valuable faculty due to working conditions.
- Budget. Without a rising budget to meet the rising student numbers similar issues as noted in a.) will occur.

**8. If you have outside accreditation, what did you learn from your last accreditation visit/review?**

- The computer science program underwent initial accreditation in 2013 and was ultimately accredited without any findings. During the visit, however, several observations were made related to consistency of assessment practices. These practices were revised at that time and continue to be in place.

**9. How do your program effectiveness goals need to be revised as a result of these findings?**

The effectiveness goals continue to be discussed and revised annually. No changes were warranted following the last assessment meeting in May of 2017.

**Academic Program Review****Rubric for Providing Feedback on the Five-Year Report****Due Date: November 15****To be submitted by a Reviewer to Dr. Duke Jones, Associate Provost for University Effectiveness**

Reviewer Name: \_\_\_\_\_

Date: \_\_\_\_\_

Program Name: \_\_\_\_\_

Year of Cycle: 5

<b>Criterion – Student Learning</b>	<b>Quantitative Feedback Likert Scale</b>	<b>Qualitative Feedback Justification of Rating</b>
The program has effectively analyzed data and information regarding students and their learning, and the analysis has led to meaningful results and/or improvements.	5 – strongly agree 4 – agree 3 – neutral 2 – disagree 1 – strongly disagree	
The program has effectively analyzed data and information regarding teaching effectiveness, and the analysis has led to meaningful results and/or improvements.	5 – strongly agree 4 – agree 3 – neutral 2 – disagree 1 – strongly disagree	
The program has effectively analyzed data and information regarding student learning across all locations and modalities, and the analysis has led to meaningful results and/or improvements.	5 – strongly agree 4 – agree 3 – neutral 2 – disagree 1 – strongly disagree	
The program has adequately updated the PLSLOs, curriculum map, and assessment plan based on the analysis.	5 – strongly agree 4 – agree 3 – neutral 2 – disagree 1 – strongly disagree	
The program has described their needs for implementing the revised plan.	5 – strongly agree 4 – agree 3 – neutral 2 – disagree 1 – strongly disagree	Does this list require additional resources?
<b>Overall, the program has thoroughly and effectively implemented their plan, has gathered and analyzed data, and has made meaningful improvements that will ultimately improve student learning.</b>	5 – strongly agree 4 – agree 3 – neutral 2 – disagree 1 – strongly disagree	

Criterion – Program Effectiveness	Quantitative Feedback Likert Scale	Qualitative Feedback Justification of Rating
The program has effectively analyzed trends regarding enrollment, retention, and graduation, and the analysis has led to meaningful results and/or improvements.	5 – strongly agree 4 – agree 3 – neutral 2 – disagree 1 – strongly disagree	
The program has effectively analyzed trends related to staffing, facilities, and budgeting, and the analysis has led to meaningful results and/or improvements.	5 – strongly agree 4 – agree 3 – neutral 2 – disagree 1 – strongly disagree	
The program has effectively analyzed data and information regarding advising effectiveness, and the analysis has led to meaningful results and/or improvements.	5 – strongly agree 4 – agree 3 – neutral 2 – disagree 1 – strongly disagree	
The program has effectively analyzed data and information regarding alumni (student outcomes), and the analysis has led to meaningful results and/or improvements.	5 – strongly agree 4 – agree 3 – neutral 2 – disagree 1 – strongly disagree	
The program has identified, described, and responded to the most significant threats to the program.	5 – strongly agree 4 – agree 3 – neutral 2 – disagree 1 – strongly disagree	
If the program has outside accreditation, then the program included an analysis of what was learned from the last accreditation review/visit.	5 – strongly agree 4 – agree 3 – neutral 2 – disagree 1 – strongly disagree Not Applicable	
The program has adequately revised program the strategic plan for the department as a result of these findings.  (Required documentation should be attached.)	5 – strongly agree 4 – agree 3 – neutral 2 – disagree 1 – strongly disagree	
<b>Overall, the program has thoroughly and effectively implemented their plan, has gathered and analyzed data, and has made meaningful improvements that will ultimately improve program effectiveness.</b>	5 – strongly agree 4 – agree 3 – neutral 2 – disagree 1 – strongly disagree	

