SAINT LOUIS UNIVERSITY.

Program-Level Assessment: Annual Report

Program Name (no acronyms): Computer Information Systems	Department:
Degree or Certificate Level: Undergrad, B.S	College/School: School for Professional Studies
Date (Month/Year): May 2021	Primary Assessment Contact: John Buerck
In what year was the data upon which this report is based collected? Academic year 2020-2021	
In what year was the program's assessment plan most recently reviewed/updated? 2020	

1. Student Learning Outcomes

Which of the program's student learning outcomes were assessed in this annual assessment cycle? (Please list the actual learning outcome statements and not just numbers, e.g., Outcomes 1 and 2.)

An ability to communicate effectively with a range of audiences about technical information. (ABET-3)

An ability to make informed judgments in computing practice based on legal and ethical principles. (ABET-4)

2. Assessment Methods: Artifacts of Student Learning

Which artifacts of student learning were used to determine if students achieved the outcome(s)? Please identify the course(s) in which these artifacts were collected. Clarify if any such courses were offered a) online, b) at the Madrid campus, or c) at any other off-campus location.

ABET 3
CIS1600 - Introduction to Programming – Final Term Project
CIS3000 - System Analysis and Design - Discussion Forum (week 3)
CIS4960 - Computer Information Systems Capstone Experience – Final Project
CIS4100 - Technology Strategy and Decision Making - Business Case for technology

ABET 4
CIS2700 - Discrete Methods and Models - Week 3 Discussion: Fairness
CIS3150 - Workplace Ethics
CIS4960 - Computer Information Systems Capstone Experience – Final Project
CIS4300 - The Fundamentals of Computer Forensics
CIS4600 - Cyber Threats and Defense - Lab exercise 2
CIS4720 - Enterprise Application Development - Development Project
CIS4750 - Data Mining- Chapter 7 & 8 exercises

**All courses were taught 100% online

3. Assessment Methods: Evaluation Process

What process was used to evaluate the artifacts of student learning, and by whom? Please identify the tools(s) (e.g., a rubric) used in the process and include them in/with this report.

Instructors have outcomes set up and added to their artifact rubric vis Canvas outcomes. At the end of their courses, a Canvas Outcomes report was run to collect data about student performance and artifacts used to assess learning outcomes. Data was used to analyze and make changes as needed to assessment of learning outcomes.

4. Data/Results

What were the results of the assessment of the learning outcome(s)? Please be specific. Does achievement differ by teaching modality (e.g., online vs. face-to-face) or on-ground location (e.g., STL campus, Madrid campus, other off-campus site)?

The Canvas outcomes reported that many of the artifacts had properly assessed student learning outcomes for their specific courses, but some minor adjustments might be needed; which will be explained further in section 5 of this report. Most instructors used programming software and final projects as their assessment tool and felt it was appropriate for the type of students in these classes.

More specifically, we found the following for each LO:

ABET 3 – 82 total artifacts assessed

- Meets Standard - Student communicates technical information clearly and consistent with the supporting material. – 58 students met this level
- Approaches Standard - Student communicates technical information clearly and consistent, but without supporting material. – 16 students met this level
- Does Not Meet Standard - Student does not communicate technical information clearly and consistent with the supporting material. – 8 students met this level

ABET 4 – 32 total artifacts assessed

- Meets Standard - Student can make informed judgments in ethical issues when issues are presented in a complex, multi-layered context. – 27 students met this level
- Approaches Standard - Student can apply some ethical concepts to an ethical question and the application is accurate. – 2 students met this level
- Does Not Meet Standard - Student can recognize basic and obvious ethical issues but fails to grasp complexity or interrelationships. 3 students met this level

All courses were taught online, so there is no difference in teaching modality to note

5. Findings: Interpretations & Conclusions

What have you learned from these results? What does the data tell you?

As discussed in section 4, the data has largely supported that the learning outcomes have been supported by the artifacts chosen. However, there is always room for improvement. Some suggestions made by instructors about possible ways to strengthen learning outcomes are as follows:

1) Update rubrics for artifact assessment to be more specific with components being assessed.
2) Review software used in courses for updated versions or other competitor software for a variety of options
3) Some courses need more breakdown of concepts for students to fully understand coding and/or technical information.
4) The requirements of an assignment should be evaluated to ensure there are few or no opportunities to misunderstand them.

6. Closing the Loop: Dissemination and Use of Current Assessment Findings

A. When and how did your program faculty share and discuss these results and findings from this cycle of assessment?

Faculty are provided with opportunities to share quantitative and qualitative feedback at the end of the term (eight week terms) they taught the course.

B. How specifically have you decided to use these findings to improve teaching and learning in your program? For example, perhaps you've initiated one or more of the following:

Changes to the Curriculum or Pedagogies	• Course content • Teaching techniques • Improvements in technology • Prerequisites	• Course sequence • New courses • Deletion of courses • Changes in frequency or scheduling of course offerings
Changes to the Assessment Plan	• Student learning outcomes • Artifacts of student learning • Evaluation process	• Evaluation tools (e.g., rubrics) • Data collection methods • Frequency of data collection

Please describe the actions you are taking as a result of these findings.

We will be reviewing the course offerings and update frequency as necessary.
Add instructor feedback section to canvas outcomes where data is collected.
Review program-level learning outcomes in courses to assess changes that might be necessary.

If no changes are being made, please explain why.

NA

7. Closing the Loop: Review of Previous Assessment Findings and Changes

A. What is at least one change your program has implemented in recent years as a result of assessment data?

The CIS program was redesigned in 2019, thus only one set of modifications have been to be implemented – A review of rubrics for specific assignments in specific courses.

B. How has this change/have these changes been assessed?

A select set of rubrics have been modified to provide clearer artifact assessment by the faculty.

C. What were the findings of the assessment?

Some rubrics needed more detailed assessment wording.

D. How do you plan to (continue to) use this information moving forward?

Yes

IMPORTANT: Please submit any assessment tools (e.g., rubrics) with this report.
Rubrics attached below

ABET 3

CIS1600 - Introduction to Programming – Final Term Project

Criteria	Ratings			Pts
This criterion is linked to a Learning Outcome Runtime Errors	**10 pts** **Excellent** Program runs to completion with no runtime errors.		**0 pts** **Below Expectations** Runtime errors encountered.	10 pts
This criterion is linked to a Learning Outcome Input	**10 pts** **Excellent** Prompts user for single letter with appropriate data validation. Accepts both uppercase and lowercase, converting the latter to uppercase.	**5 pts** **Needs Improvement** Input processing contains minor omissions or flaws.	**0 pts** **Below Expectations** Input processing contains major flaws.	10 pts
This criterion is linked to a Learning Outcome Output	**10 pts** **Excellent** All required outputs displayed in a clear, easily readable style.	**5 pts** **Needs Improvement** Output processing contains minor flaws.	**0 pts** **Below Expectations** Output processing contains major flaws.	10 pts
This criterion is linked to a Learning Outcome Functions	**10 pts** **Excellent** Appropriate use of functions, including the ones provided. Correct arguments are used to call the functions. Return values are used correctly.	**5 pts** **Needs Improvement** Minor flaws in the use of functions.	**0 pts** **Below Expectations** Major flaws in the use of functions.	10 pts
This criterion is linked to a Learning Outcome Word Mask	**10 pts** **Excellent** Word to guess is correctly masked with the appropriate number and positions of dashes. Logic is correctly packaged in a function.	**5 pts** **Needs Improvement** Word mask logic contains minor flaws.	**0 pts** **Below Expectations** Word mask logic contains major flaws.	10 pts

Criteria	Ratings			Pts
This criterion is linked to a Learning Outcome Guesses	**10 pts** **Excellent** Keeps track of guesses, warning user if a guess has been repeated.	**5 pts** **Needs Improvement** Guesses logic contains minor flaws.	**0 pts** **Below Expectations** Guesses logic contains major flaws.	10 pts
This criterion is linked to a Learning Outcome Rules	**20 to >19.0 pts** **Excellent** Follows the rules of the game with the correct action taken at each turn and correct determination of whether the player wins or loses.	**19 to >10.0 pts** **Needs Improvement** Rules logic contains minor flaws.	**10 to >0 pts** **No validation** Rules logic contains major flaws.	20 pts
This criterion is linked to a Learning Outcome Documentation and Readability	**20 to >19.0 pts** **Excellent** Docstring supplied with student name, date, and a brief description of the program. Docstring provided for each function. Additional comments provided, as needed. Program adheres to style guidelines for readability, including appropriate names for all variables.	**19 to >10.0 pts** **Needs Improvement** Minor omissions or flaws with documentation and/or readability.	**10 to >0 pts** **Below Expectations** Major omissions or flaws with documentation and/or readability.	20 pts

CIS3000 - System Analysis and Design - Discussion Forum (week 3)

Criteria	Ratings			Pts
This criterion is linked to a Learning Outcome Context	**0 pts** **Below Expectations** Rudimentary and superficial regurgitation of content with no connections and/or completely off topic.	**1 pts** **Proficient** Generally competent in summarizing learning, but information is thin and commonplace with limited connections and vague generalities. Appears to be a summary of previous posts	**2 pts** **Exemplary** Rich in content full of thought, insight, and analysis. New ideas and new connections are made.	2 pts
This criterion is linked to a Learning Outcome Readings and Resources	**0 pts** **Below Expectations** Readings and resources are not mentioned	**1 pts** **Proficient** Little if any reference is made to readings and other course materials	**2 pts** **Exemplary** Readings and other resource materials are used to support comments	2 pts
This criterion is linked to a Learning Outcome Timeliness	**0 pts** **Below Expectations** Some or all of the required postings are missing	**1 pts** **Proficient** Some or all of the required postings are made, but most are at the last minute without allowing for response time	**2 pts** **Exemplary** All required postings are made early in the discussion and throughout the discussion	2 pts
This criterion is linked to a Learning Outcome Stylistics	**0 pts** **Below Expectations** Five or more grammatical and/or spelling errors	**1 pts** **Proficient** Several (3-4) grammatical and/or spelling errors	**2 pts** **Exemplary** Few (02) grammatical and/or spelling errors	2 pts
This criterion is linked to a Learning Outcome Commenting	**0 pts** **Below Expectations** No comments at all	**1 pts** **Proficient** One brief comment to another student's post. "I agree" with little support as to rationale	**2 pts** **Exemplary** At least one detailed comment made to address another students' post	2 pts

CIS4960 - Computer Information Systems Capstone Experience – Final Project

Criteria	Ratings				Pts
This criterion is linked to a Learning Outcome Problem Statement	**20 pts** **Exemplary** Demonstrates the ability to build a persuasive and insightful problem statement; identifies target audience and/or beneficiaries.	**15 pts** **Proficient** Demonstrates adequate knowledge of the subject by building a comprehensive problem statement; identifies target audience and/or beneficiaries.	**10 pts** **Competent** Demonstrates some knowledge of the subject by building a problem statement that is superficial; identifies most of the target audience and/or beneficiaries.	**5 pts** **Novice** Demonstrates inadequate knowledge of the subject by building a problem that is general and vague; fails to identify target audience.	20 pts
This criterion is linked to a Learning Outcome Problem Analysis	**20 pts** **Exemplary** Demonstrates through analysis of the problem and possible solutions by examining pertinent sources from a variety of perspectives; applies knowledge of project management and computing skills related to the issue at hand; identifies a solution that is appropriate and insightful.	**15 pts** **Proficient** Submits a number of solutions that demonstrate an adequate understanding of the problem but fails to address key options; applies adequate knowledge of project management and computing skills related to the issue at hand; identifies a suitable solution that may need to be further developed.	**10 pts** **Competent** Presents information from pertinent sources providing a limited number of solutions, perspectives, and methodology; needs to further develop application of project management and computing skills related to the issue at hand; identifies a solution but fails to substantiate choice.	**5 pts** **Novice** Proposes a single solution that fails to address the problem statement and demonstrates little understanding of the topic; fails to demonstrate knowledge of project management and computing concepts related to the problem.	20 pts

Criteria	Ratings				Pts
This criterion is linked to a Learning Outcome Proposed Solution	**20 pts** **Exemplary** Identifies an interesting, distinct, and manageable solution based on proper analysis of the problem; demonstrates how the solution addresses a need in the community and/or relates to continuing professional development.	**15 pts** **Proficient** identifies a distinct and doable solution that addresses the subject from a personal perspective; reflection needs to be encouraged to address how the solution meets community or personal needs.	**10 pts** **Competent** Identifies a solution that is either too narrow or too wide in scope and needs to be further developed; reflection needs to be encouraged to address how the solution meets community or personal needs.	**5 pts** **Novice** Fails to identify a topic and needs to further investigate further subject leads/possibilities; reflection needs to be encouraged to address how the solution meets community or personal needs.	20 pts

CIS4100 - Technology Strategy and Decision Making - Business Case for technology

Criteria	Ratings			Pts
This criterion is linked to a Learning Outcome clarity of thesis, objective or purpose	**7 pts** **Full Marks** Presents a clear and engaging objective, purpose, or thesis statement that the reader can easily identify; the thesis statement is clearly appropriate for the assignment; the thesis statement appears at an appropriate place in the paper.	**4 pts** **some marks** Presents a clear and engaging objective, purpose, or thesis statement that the reader identifies; the thesis is appropriate to the assignment; the thesis statement appears at an inappropriate place, making the reader hunt for the purpose.	**1 pts** **low** The reader identifies a series of sentences that address the purpose and is in an appropriate place, but no one sentence addresses the purpose of the paper.	7 pts
This criterion is linked to a Learning Outcome Support Analysis and Critical Thinking	**7 pts** **Full Marks** Uses evidence (e.g., course material/outside sources) and examples fairly and accurately. Incorporates the number/type of sources & examples consistent with audience expectations. Reader can move effortlessly into and out of sections that offer evidence or examples; can easily identify the attribution of the source. When appropriate, examines evidence critically.	**4 pts** **some marks** Uses evidence (e.g., course material/outside sources) and examples, though some ambiguity may exist as to what that how evidence or examples fit with the objective or thesis statement. There may be a few sections of the paper in which more evidence or examples were needed. The project may use a few inappropriate sources. When appropriate, examines some of the evidence critically.	**1 pts** **low** Evidence or examples are insufficient in number and type to support the objective or thesis. Reader has difficulty throughout paper of understanding how the evidence or examples support the objective or thesis. Even when appropriate, may neglect to question any underlying assumptions or the methodology used to derive conclusions.	7 pts

Criteria	Ratings			Pts
This criterion is linked to a Learning Outcome Organization	**1 pts** **Full Marks** The paper is structured in a way that sections, and paragraphs within sections, flow easily and naturally; the organization of the paper is clear and logical; paper is clearly structured in a manner consistent with the assignment		**0 pts** **No Marks**	1 pts
This criterion is linked to a Learning Outcome Completeness and Depth	**5 pts** **Full Marks** Fully answers in sufficient depth all the questions the assignment poses.	**3 pts** **some marks** Answers all the questions the assignment poses, some in sufficient depth	**1 pts** **low** Does not respond coherently to some of the questions the assignment poses.	5 pts

ABET 4

CIS2700 - Discrete Methods and Models- Week 3 Discussion: Fairness

Criteria	Ratings			Pts
This criterion is linked to a Learning Outcome Initial Post	**2 pts** **Outstanding** Rich in content. Full of thought, insight, and analysis. New ideas and new connections are made.	**1 pts** **Needs Improvement** Generally competent in summarizing learning, but information is thin and commonplace with limited connections and vague generalities.	**0 pts** **Below Expectations** Rudimentary and superficial regurgitation of content with no connections and/or completely off topic.	2 pts
This criterion is linked to a Learning Outcome Responses	**2 pts** **Outstanding** Posts substantive information which advances the discussion.	**1 pts** **Needs Improvement** Repeats but does not add to the discussion.	**0 pts** **Below Expectations** No responses to classmates.	2 pts
This criterion is linked to a Learning Outcome Frequency	**2 pts** **Outstanding** Responses to classmates posted on multiple days.	**1 pts** **Needs Improvement** All responses to classmates posted on the same day.	**0 pts** **Below Expectations** No participation beyond initial post.	2 pts
This criterion is linked to a Learning Outcome Timeliness	**2 pts** **Outstanding** Initial entry posted by 11:59 PM Wednesday.	**1 pts** **Needs Improvement** Initial entry posted by 11:59 PM Friday.	**0 pts** **Below Expectations** Initial entry posted on the weekend.	2 pts
This criterion is linked to a Learning Outcome Mechanics	**2 pts** **Outstanding** Written replies contain few grammatical and/or spelling errors. Both written and video replies use clear,	**1 pts** **Needs Improvement** Grammar, spelling, or other language errors are distracting.	**0 pts** **Below Expectations** Multiple language errors make the student replies difficult to	2 pts

Criteria	Ratings			Pts
	professional language.		understand.	

CIS4960 - Computer Information Systems Capstone Experience – Final Project
Rubric above in ABET 3

CIS4600 - Cyber Threats and Defense - Lab exercise 2

Criteria	Ratings			Pts
This criterion is linked to a Learning Outcome Reasoning and Analysis	**3 pts** **Proficient** Reasons support answers with some / an important reasoning, general examination and assessment	**2 pts** **Exemplary** Clear and accurate answers; insightful, specific.	**1 pts** **Below Expectations** Reasoning and analysis are not as detailed and/or concise as needed.	3 pts
This criterion is linked to a Learning Outcome Risk Assessment	**3 pts** **Proficient** Assessment includes analysis of risk from multiple points of view. Considers most or all effects of the potential threat.	**2 pts** **Exemplary** Analysis addresses the questions clearly, showing appropriate level analysis and synthesis of concepts and uses course vocabulary.	**1 pts** **Below Expectations** The answers are not as detailed and/or concise as needed; and/ or use limited course vocabulary.	3 pts
This criterion is linked to a Learning Outcome Impact Assessment	**3 pts** **Proficient** Assessment includes analysis of potential impact from multiple points of view. Considers most or all effects of the potential threat.	**2 pts** **Exemplary** All facts are accurate and relate back to the answer. Analysis includes some but not all potential impacts.	**1 pts** **Below Expectations** Analysis lacks an overall view of the potential for impact based on the type of threat.	3 pts

Criteria	Ratings			Pts
This criterion is linked to a Learning Outcome Short Term Mitigations	**3 pts** **Proficient** Mitigation recommendations contain sufficient detail for technical responses and appropriate responsibility with timelines.	**2 pts** **Exemplary** Mitigations contain some technical recommendations but may not be complete. May be missing information about timeline or responsible party.	**1 pts** **Below Expectations** Recommendations missing technical factors to mitigate the threat. Timelines and responsibility are not as detailed and/or concise as needed.	3 pts
This criterion is linked to a Learning Outcome Long Term Mitigations	**3 to >2.0 pts** **Proficient** Mitigation recommendations contain sufficient detail for technical responses and appropriate responsibility with timelines and budget considerations.	**2 to >1.0 pts** **Exemplary** Mitigations contain some technical recommendations but may not be complete. May be missing information about timeline, resources or responsible party.	**1 to >0 pts** **Proficient** Enough errors to distract the reader; organization problems; questions not stated before answers; and / or format difficult to navigate.	3 pts

CIS4720 - Enterprise Application Development - Development Project

This criterion is linked to a Learning Outcome Submitted	**30 pts** **Full Marks**	**0 pts** **No Marks**	30 pts
This criterion is linked to a Learning Outcome Aligns with specification document.	**20 pts** **Full Marks**	**0 pts** **No Marks**	20 pts
This criterion is linked to a Learning Outcome Sufficiently complex - meets assignment specs.	**10 pts** **Full Marks**	**0 pts** **No Marks**	10 pts

This criterion is linked to a Learning Outcome Image of solution submitted?	**10 pts** **Full Marks** | **0 pts** **No Marks**	**10 pts**