Discipline	Course Number	Title
Computer Science	171	CPS 171 01/10/2019- Introduction to Programming with C++
Division	Department	Faculty Preparer
Business and Computer Technologies	Computer Science & Information Technology	Khaled Mansour
Date of Last Filed Assessment Report		

I. Review previous assessment reports submitted for this course and provide the following information.

1. Was this course previously assessed and if so, when?

   No

2. Briefly describe the results of previous assessment report(s).

   3.

4. Briefly describe the Action Plan/Intended Changes from the previous report(s), when and how changes were implemented.

   5.

II. Assessment Results per Student Learning Outcome

Outcome 1: Identify appropriate use of simple programming constructs including loops.

- Assessment Plan

    o Assessment Tool: Test Questions

    o Assessment Date: Winter 2017

    o Course section(s)/other population: All sections

    o Number students to be assessed: All students

    o How the assessment will be scored: Answer key

    o Standard of success to be used for this assessment: 70% of the students who take the exam will score better than 70%

- o   Who will score and analyze the data: Departmental faculty

1. Indicate the Semester(s) and year(s) assessment data were collected for this report.

Fall (indicate years below)	Winter (indicate years below)	SP/SU (indicate years below)
	2019	

2. Provide assessment sample size data in the table below.

# of students enrolled	# of students assessed
100	72

3. If the number of students assessed differs from the number of students enrolled, please explain why all enrolled students were not assessed, e.g. absence, withdrawal, or did not complete activity.

All students in all sections (excluding the students who audited the 2 sections) were assessed. Seven students withdrew or dropped the course

4. Describe how students from all populations (day students on campus, DL, MM, evening, extension center sites, etc.) were included in the assessment based on your selection criteria.

All students in all sections (excluding the students who audited the sections) were assessed. The sections were Face-2-Face day sections, and one section was taught online.

5. Describe the process used to assess this outcome. Include a brief description of this tool and how it was scored.

Quizzes / tests that included questions on loops.

6. Briefly describe assessment results based on data collected for this outcome and tool during the course assessment. Discuss the extent to which students achieved this learning outcome and indicate whether the standard of success was met for this outcome and tool.

Met Standard of Success: <u>Yes</u>
68 out of 72 students (94%) scored 72% (36 of 50 points) or higher on the quizzes. The standard of success was that 70% of the students would score 70% or higher. Students met the standard of success for this outcome.

7. Based on your interpretation of the assessment results, describe the areas of strength in student achievement of this learning outcome.

> 68 out of 72 students (94%) were able to understand Loops, especially the area of FOR loop. They demonstrated this throughout the semester using the quizzes and the machine problems they were assigned. Most of their strengths were in topics such as the FOR loop.

8. Based on your analysis of student performance, discuss the areas in which student achievement of this learning outcome could be improved. If student met standard of success, you may wish to identify your plans for continuous improvement.

> The students met the standard of success, but they still need to improve in some topics, such as the WHILE loop. I can improve that by assigning more in-class labs on this topic.

Outcome 2: Identify appropriate use of simple programming constructs including conditional logic.

- Assessment Plan

    o   Assessment Tool: Test Questions

    o   Assessment Date: Winter 2017

    o   Course section(s)/other population: All sections

    o   Number students to be assessed: All students

    o   How the assessment will be scored: Answer key

    o   Standard of success to be used for this assessment: 70% of the students who take the exam will score better than 70%

    o   Who will score and analyze the data: Departmental faculty

1. Indicate the Semester(s) and year(s) assessment data were collected for this report.

Fall (indicate years below)	Winter (indicate years below)	SP/SU (indicate years below)
	2019	

2. Provide assessment sample size data in the table below.

# of students enrolled	# of students assessed
100	72

3. If the number of students assessed differs from the number of students enrolled, please explain why all enrolled students were not assessed, e.g. absence, withdrawal, or did not complete activity.

All students in all sections (excluding the students who audited the sections) were assessed. Seven students withdrew or dropped the course

4. Describe how students from all populations (day students on campus, DL, MM, evening, extension center sites, etc.) were included in the assessment based on your selection criteria.

All students in sections (excluding the students who audited the sections) were assessed. The sections were Face-2-Face day sections, and one section was taught online.

5. Describe the process used to assess this outcome. Include a brief description of this tool and how it was scored.

Quizzes / tests that included questions on conditional logic.

6. Briefly describe assessment results based on data collected for this outcome and tool during the course assessment. Discuss the extent to which students achieved this learning outcome and indicate whether the standard of success was met for this outcome and tool.

Met Standard of Success: Yes

65 out of 72 students (90%) scored 74% (37 of 50 points) or higher on the quizzes. The standard of success was that 80% of the students would score 70% or higher. Students met the standard of success for this outcome.

7. Based on your interpretation of the assessment results, describe the areas of strength in student achievement of this learning outcome.

65 out of 72 students (90%) were able to understand conditional logic, especially the area of the IF statement. They demonstrated this throughout the semester using the quizzes and the machine problems they were assigned. Most of their strengths were in topics such as the IF statement.

8. Based on your analysis of student performance, discuss the areas in which student achievement of this learning outcome could be improved. If student met standard of success, you may wish to identify your plans for continuous improvement.

The students met the standard of success, but still they need to improve in some topics of conditional logic such as SWITCH. I can improve this by assigning more in-class labs on this topic.

Outcome 3: Identify appropriate use of simple object-oriented concepts such as constructors, functions and overriding functions.

- Assessment Plan

  o Assessment Tool: Test Questions

  o Assessment Date: Winter 2017

  o Course section(s)/other population: All sections

  o Number students to be assessed: All students

  o How the assessment will be scored: Answer key.

  o Standard of success to be used for this assessment: 70% of the students who take the exam will score better than 70%

  o Who will score and analyze the data: Departmental faculty

1. Indicate the Semester(s) and year(s) assessment data were collected for this report.

Fall (indicate years below)	Winter (indicate years below)	SP/SU (indicate years below)
	2019	

2. Provide assessment sample size data in the table below.

# of students enrolled	# of students assessed
100	72

3. If the number of students assessed differs from the number of students enrolled, please explain why all enrolled students were not assessed, e.g. absence, withdrawal, or did not complete activity.

All students in all sections (excluding the students who audited the sections) were assessed. Seven students withdrew or dropped the course

4. Describe how students from all populations (day students on campus, DL, MM, evening, extension center sites, etc.) were included in the assessment based on your selection criteria.

All students in all sections (excluding the students who audited the sections) were assessed. The sections were Face-2-Face day sections, and one section was taught online.

5. Describe the process used to assess this outcome. Include a brief description of this tool and how it was scored.

Quizzes / Tests that included questions on Object Oriented concepts and Constructors.

6. Briefly describe assessment results based on data collected for this outcome and tool during the course assessment. Discuss the extent to which students achieved this learning outcome and indicate whether the standard of success was met for this outcome and tool.

Met Standard of Success: <u>Yes</u>
62 out of 72 students (86%) scored 70% (35 of 50 points) or higher on the quizzes. The standard of success was that 70% of the students would score 70% or higher. Students met the standard of success for this outcome.

7. Based on your interpretation of the assessment results, describe the areas of strength in student achievement of this learning outcome.

62 out of 72 students (86%) were able to understand object oriented concepts, especially the area of the CLASS statement. They demonstrated this at the end of the semester using the quizzes and the machine problems they were assigned. Most of their strength were in topics such as designing a CLASS.

8. Based on your analysis of student performance, discuss the areas in which student achievement of this learning outcome could be improved. If student met standard of success, you may wish to identify your plans for continuous improvement.

The students met the standard of success, but still they need to improve in some topics of CLASSES, such as connecting class to objects. I can improve this by assigning a simpler machine problem and easier questions on the quiz.

Outcome 4: Identify appropriate use of Arrays.

- Assessment Plan

    o Assessment Tool: Test Questions

    o Assessment Date: Winter 2017

    o Course section(s)/other population: All sections

    o Number students to be assessed: All students

    o How the assessment will be scored: Answer key.

    o Standard of success to be used for this assessment: 70% of the students who take the exam will score better than 70%

    o Who will score and analyze the data: Departmental faculty

1. Indicate the Semester(s) and year(s) assessment data were collected for this report.

Fall (indicate years below)	Winter (indicate years below)	SP/SU (indicate years below)
	2019	

2. Provide assessment sample size data in the table below.

# of students enrolled	# of students assessed
100	72

3. If the number of students assessed differs from the number of students enrolled, please explain why all enrolled students were not assessed, e.g. absence, withdrawal, or did not complete activity.

All students in all sections (excluding the students who audited the sections) were assessed. Four students withdrew or dropped the course

4. Describe how students from all populations (day students on campus, DL, MM, evening, extension center sites, etc.) were included in the assessment based on your selection criteria.

All students in all sections (excluding the students who audited the sections) were assessed. The sections were Face-2-Face day section, and one section was taught online.

5. Describe the process used to assess this outcome. Include a brief description of this tool and how it was scored.

Quizzes / Tests that included questions on Arrays.

6. Briefly describe assessment results based on data collected for this outcome and tool during the course assessment. Discuss the extent to which students achieved this learning outcome and indicate whether the standard of success was met for this outcome and tool.

Met Standard of Success: Yes

62 out of 72 students (87.5%) scored 90% (45 points) or higher on the quizzes. The standard of success was that 70% of the students would score 70% or higher. Students met the standard of success for this outcome.

7. Based on your interpretation of the assessment results, describe the areas of strength in student achievement of this learning outcome.

65 out of 72 students (92%) were able to identify the user of ARRAYS, especially the area of creating them. They demonstrated this throughout the semester using the quizzes and the machine problems they were assigned. Most of their strengths were in topics such as creating arrays and using them.

8. Based on your analysis of student performance, discuss the areas in which student achievement of this learning outcome could be improved. If student met standard of success, you may wish to identify your plans for continuous improvement.

The students met the standard of success and have nothing to improve, but the material is changing very rapidly, especially with new technology. Therefore, my plan is to stay up-to-date with the C++ standard Library and teach them the latest and the greatest.

Outcome 5: Develop C++ code that uses concepts and constructs.

- Assessment Plan

    o Assessment Tool: Programming exercises

    o Assessment Date: Winter 2017

    o Course section(s)/other population: All sections

    o Number students to be assessed: 25% of all students with a minimum of one full section.

    o How the assessment will be scored: Departmentally-developed rubric

    o Standard of success to be used for this assessment: 70% of the students will create a program that successfully executes.

    o Who will score and analyze the data: Departmental faculty

1. Indicate the Semester(s) and year(s) assessment data were collected for this report.

Fall (indicate years below)	Winter (indicate years below)	SP/SU (indicate years below)
	2019	

2. Provide assessment sample size data in the table below.

# of students enrolled	# of students assessed
100	72

3. If the number of students assessed differs from the number of students enrolled, please explain why all enrolled students were not assessed, e.g. absence, withdrawal, or did not complete activity.

All students in all sections (excluding the students who audited the sections) were assessed. Seven students withdrew or dropped the course

4. Describe how students from all populations (day students on campus, DL, MM, evening, extension center sites, etc.) were included in the assessment based on your selection criteria.

    All students in all sections (excluding the students who audited the sections) were assessed. The sections were Face-2-Face day sections, and one section was taught online.

5. Describe the process used to assess this outcome. Include a brief description of this tool and how it was scored.

    Students completed eight machine problems to determine if they are able to develop software that uses concepts and constructs.

6. Briefly describe assessment results based on data collected for this outcome and tool during the course assessment. Discuss the extent to which students achieved this learning outcome and indicate whether the standard of success was met for this outcome and tool.

    Met Standard of Success: Yes

    Not all students attempted all programming problems. Only 347 (out of 448 possible) problems were attempted. Out of those 347 attempts, 311 (89.6%) were successful in developing those programming problems. Even if we take into account the 448 possible problems, almost 70% of the problems were solved correctly. Therefore, the students met the standard of success outlined for this outcome.

7. Based on your interpretation of the assessment results, describe the areas of strength in student achievement of this learning outcome.

    Students wrote eight C++ programs during the semester and were able to demonstrate their ability to develop C++ code that uses concepts. 92% of the machine problems attempted met the standard of success.

8. Based on your analysis of student performance, discuss the areas in which student achievement of this learning outcome could be improved. If student met standard of success, you may wish to identify your plans for continuous improvement.

    The style of the programming was different among those beginner students. Even though they met the standard of success, they need to learn the standard of writing professional programs. My plan is to help the students by focusing on that subject earlier in the semester and offering a session on the standards, so they can all use the same format.

III. Course Summary and Intended Changes Based on Assessment Results

1. Based on the previous report's Intended Change(s) identified in Section I above, please discuss how effective the changes were in improving student learning.

No previous assessment report was done.

2. Describe your overall impression of how this course is meeting the needs of students. Did the assessment process bring to light anything about student achievement of learning outcomes that surprised you?

   The course met the students' needs. Based on their achievement, I was really surprised to see the students split into two groups: one finished the course, one quit the course completely, and there was no middle ground.

   Also, I found the area that made the second group of students quit, and I will improve the material to make sure they understand it and stay in the class.

3. Describe when and how this information, including the action plan, was or will be shared with Departmental Faculty.

At the department meeting in the Fall semester.

4.
   Intended Change(s)

Intended Change	Description of the change	Rationale	Implementation Date
Course Assignments	A couple assignments were worded in such a way that the students had a hard time understanding the objectives and requirements of those assignments. I need to either replace those assignments with new ones or change the wording of those assignments.	The students will be able to solve the problems and produce the correct results.	2019
Course Assignments	We will add additional in-class labs that emphasize	The assessment demonstrated that students need more	2019

	various topics that tend to be more challenging for students (e.g. WHILE loop, SWITCH).	time to engage with these topics in class.	
Course Materials (e.g. textbooks, handouts, on-line ancillaries)	New videos and more examples need to be added to the Blackboard course.	The videos will give the students more understanding of the subjects, and they can go back and review it any time they wish.	2019
Course Materials (e.g. textbooks, handouts, on-line ancillaries)	The standard of writing professional programs will be addressed earlier in the semester.	The assessment demonstrated that beginner students need to learn the standard professional programming style. By emphasizing this earlier in the semester, beginner students will have more time to practice the format, so that by the end of the semester, all students are programming using the professional standard.	2019

5. Is there anything that you would like to mention that was not already captured?

> 6.

III. Attached Files

[c++ sheet of assessment](#)

Faculty/Preparer:	Khaled Mansour	**Date:** 06/26/2019
Department Chair:	Philip Geyer	**Date:** 06/29/2019
Dean:	Eva Samulski	**Date:** 07/01/2019
Assessment Committee Chair:	Shawn Deron	**Date:** 08/19/2019