Discipline	Course Number	Title
Computer Science	141	CPS 141 07/30/2019-Introduction to Programming Using Python
Division	Department	Faculty Preparer
Business and Computer Technologies	Computer Science & Information Technology	Michael Galea
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 and use simple programming control structures including selection and iteration.

- Assessment Plan

    o   Assessment Tool: Departmentally-developed final exam

    o   Assessment Date: Winter 2020

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

    o   Number students to be assessed: All students

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

o   Standard of success to be used for this assessment: At least 70% of students must score 75% or higher

o   Who will score and analyze the data: Department faculty and external sources (if available)

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)
2018	2019	

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

# of students enrolled	# of students assessed
97	91

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.

Have no idea.

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.

The sample includes all sections offered during the designated semesters.

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

This assessment is based on a project which consisted of a number of small programming problems. The student accrued points only if the program functioned to the specification of the problem.

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
Two metrics for this outcome are provided in the attachment. The first metric includes all students. The second metric includes only students with a non-zero score. In both cases, the standard for success was met, indicating that a majority of students who complete this assessment achieved the outcome.

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

> The success rate for this outcome was well beyond the standard of success, indicating that the majority of students achieved this outcome.

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.

> Based on the results and the number of students attempting the assessment related to the outcome, there is no need for significant improvement.

Outcome 2: Identify and use intrinsic data structures and objects using custom classes.

- Assessment Plan

    o   Assessment Tool: Departmentally-developed final exam

    o   Assessment Date: Winter 2020

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

    o   Number students to be assessed: All students

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

    o   Standard of success to be used for this assessment: At least 70% of students must score 75% or higher

    o   Who will score and analyze the data: Department faculty and external sources (if available)

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)
2018	2019	

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

# of students enrolled	# of students assessed
97	91

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.

No clue.

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.

The sample includes all sections offered during the designated semesters.

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

This assessment is based on a project which consisted of a number of small but advanced programming problems. The student accrued points only if the program functioned to the specification of the problem.

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

Two metrics for this outcome are provided in the attachment. The first metric includes all students. The second metric includes only students with a non-zero score. In the former case, the success rate is slightly below the standard for success. In the latter case, which included only non-zero scores, the success rate was over 91%, indicating that a majority of students who complete this assessment achieved the outcome.

Note, a zero score typically means that the student did not submit the assessment. Since the project consisted of multiple problems, it is highly unlikely that a student would submit an assignment where all problems were incorrect.

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

The first success metric, which includes all student scores, had a success rate of 68.8%, slightly below the standard of success. The outcome is based on an assignment very late in the semester. Approximately 25% of the students did not complete the assignment. There are two possible causes for the lack of submissions: 1) The student abandoned the class; 2) The student was still active but chose not to submit. The former is the more probable cause.

Looking at the second metric where zero scores were excluded, the success rate far exceeds that standard of success. This means that the outcome is being achieved by the more motivated and serious student.

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.

Given the success rate for the second metric, which far exceeds the standard of success, no significant improvement in either the content or the assessment is necessary at this time. However, 25% of the students not submitting, for whatever reason, is problematic. But this is more related to retention than to content.

Outcome 3: Identify the appropriate use of simple design patterns in programming.

- Assessment Plan

    o Assessment Tool: Departmentally-developed final exam

    o Assessment Date: Winter 2020

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

    o Number students to be assessed: All students

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

    o Standard of success to be used for this assessment: At least 70% of students must score 75% or higher

    o Who will score and analyze the data: Department faculty and external sources (if available)

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)
2018	2019	

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

# of students enrolled	# of students assessed
97	91

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.

Still no clue.

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.

The sample includes all sections offered during the designated semesters.

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

This assessment is based on the midterm skills exam. The rationale for using the midterm exam is that the outcome refers to the "use of simple design patterns" which is assessed in the midterm exam. The final exam requires the student to identify and use more advanced design patterns.

The midterm skills exam consisted of two programming problems. The student received all points for the problem when their program met all the specifications of the problem. In most cases (instructor specific), partial credit was given when some of the specifications were met.

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>

As for other outcomes, two metrics for this outcome are provided in the attachment. The first metric includes all students, the second only students with a non-zero score. In both cases, the standard of success was met, indicating that the students completing this assessment achieved this learning outcome.

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

The success rate for this outcome was well beyond the standard of success, indicating that the majority of students achieved this outcome.

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.

Based upon the results and the number of students attempting the assessment related to the outcome, there is no need for significant improvement.

Outcome 4: Use built-in and library functions and write basic functions.

- Assessment Plan

    o Assessment Tool: Departmentally-developed final exam

    o Assessment Date: Winter 2020

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

    o Number students to be assessed: All students

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

    o Standard of success to be used for this assessment: At least 70% of students must score 75% or higher

    o Who will score and analyze the data: Department faculty and external sources (if available)

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)
2018	2019	

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

# of students enrolled	# of students assessed
97	91

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.

Still no clue.

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.

The sample includes all sections offered during the designated semesters.

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

This assessment is based on the final skills exam. This skills exam consisted of two programming problems. The student received all points for the problem when

their program met all the specifications of the problem. In most cases (instructor specific), partial credit was given when some of the specifications were met.

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

Like the other outcomes, two metrics for this outcome are provided in the attachment. The first metric includes all students, the second includes only students with a non-zero score. The first success metric shows a success rate much below the standard of success. However, this is misleading since the final skills exam is optional for those students who accrued sufficient points in other assignments, projects, and exams to achieve the maximum grade.

Note, the student is provided some extra credit opportunities on the midterm and final analytics project. The extra credit is awarded for additional creative work that the student does on these projects.

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

The success rate for this outcome, as calculated in the second metric, exceeds the standard of success, indicating that the majority of students achieved this outcome.

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.

Based on the results and the number of students attempting the assessment related to the outcome, there is no need for significant improvement. However, since the success rate for this outcome is closer to the minimum standard of success than the success rate for other outcomes, a review of the tool used is probably in order.

A number of students opted out of completing the assessment because their accumulated points already guaranteed the maximum grade. A review of the point allocation and course policies is required to ensure that more students attempt the assessment.

Outcome 5: Derive meaning from economic, climatic, medical, and other types of data sets that impact society.

- Assessment Plan

- o Assessment Tool: Project portfolio including source code, reports and charts

- o Assessment Date: Winter 2020

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

- o Number students to be assessed: All students

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

- o Standard of success to be used for this assessment: 70% of students will score 75% or higher

- 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)
2018	2019	

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

# of students enrolled	# of students assessed
97	91

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.

That's right, I have no clue.

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.

The sample includes all sections offered during the designated semesters.

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

This assessment is based on the final data analytics project. For this project, the student was required to analyze FBI crime data for a significant number of municipalities in the US. The data set exceeded 9500 entries. The student was required to provide statistical measures using this data set. The student was also required to visualize certain metrics derived from the data set.

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
Like the other outcomes, two metrics for this outcome are provided. In both cases, the success rate exceeds the standard of success. In the second metric where zero scores are filtered, the success rate is 100%. While this number appears to be suspect, it is easily explained since the project includes extra credit for additional creative metrics and visualizations. Virtually every student who submitted this project completed additional work, including those who didn't require the extra credit for a maximum final grade.

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

The success rate for this outcome, as calculated in both metrics, exceeds the standard of success indicating that the majority of students achieved this outcome.

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.

Based on the results and the number of students attempting the assessment related to the outcome, there is no need for significant improvement. However, a number of students did not complete the assessment. Since this assessment is due late in the semester, a large percentage of the population of no completers simply abandoned the class early in the semester. For unknown reasons, the remaining portion of the population completed the class but chose not to submit the final project.

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.

There is no previous assessment report since this is a new course launched Winter 2018.

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?

This course teaches the python language which is one of the top five languages used in industry and computer science programs. For the student moving to a job

or a computer science program, this course provides the foundational skills necessary to be successful.

Not much was surprising about student achievement. For the serious student this course is very effective, as shown in the attachment. As should be noted, high attrition rates in the first computer science courses is common at many (all?) institutions. This course fits that pattern. This is evidenced by the number of students (76/80) who completed the assessment for outcome 1, which occurs very early in the semester, versus the number of students (56/75) who completed the assessment for outcome 5, which occurs near the end of the semester.

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

The information from this report will be provided to all computer science faculty during the Fall semester.

4.
Intended Change(s)

Intended Change	Description of the change	Rationale	Implementation Date
Course Assignments	This course will be reviewed in the Fall. Some assignments and projects will be updated. Additionally, the syllabus will be updated with a new point allocation for course activities.	We need to encourage more students to complete the outcome-related assessments in the second half of the semester.	2020

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

This original content for this course, with some exception, was provided by UM School of Information and first offered in Winter 2018. Since that time, content for this course has changed, while keeping the objectives remain the same. This is necessary since UMSI accepts this course for transfer as the equivalent to SI106.

III. Attached Files

Assessment Metrics
Assessment Metrics

Faculty/Preparer: Michael Galea   **Date:** 07/31/2019
Department Chair: Khaled Mansour **Date:** 08/01/2019

Dean: Eva Samulski   **Date:** 08/08/2019
Assessment Committee Chair: Shawn Deron   **Date:** 11/11/2019