

William Paterson University  
College of Science and Health - Department of Computer Science

Fall 2018 – Spring 2019 Assessment Cycle

Analysis of the Results of the Evaluations of the Assessment Data  
of  
the Program Student Outcome

**Program Student Outcome:**

S3: Apply computer science theory and software development fundamentals to produce computing-based solutions.

**Curriculum Committee Subgroup:** Data Structures and Algorithms

**Members:** John Najarian (Chair), Erh-Wen Hu, Gilbert Ndjatou

**Date:** May 28, 2019

**Updated On:** \_\_\_\_\_

**A. Analysis of the Results of the Evaluations of the Assessment Data**

For the assessment period Fall 2018 - Spring 2019, this student outcome was assessed in CS 3820 and CS 3420 in the fall 2018 and spring 2019 semesters.

16 and 17 students respectively took the CS 3820 course in the fall 2018 and spring 2019 semesters. It is noted that in the fall 2018 semester, only 3 students out of 16 ( 19%) did not have a good foundation in structured programming and did not also have a good programming experience. These students still did not do well on similar questions on the final exam. On the other hand, it is noted that in the spring 2019 semester, more than a third of the students in this class did not have any foundation in structured programming: the use of control blocks, counter-controlled iterations, logically-controlled iterations (with sentinel value) and multiple-way selection is a real challenge for most of them. Even those who had some foundation in structured programming could not apply it on a consistent basis as evidenced in their lab assignments. It is also noted that this issue has never been as alarming as in recent years. It is however hard to determine whether this issue is a new trend or not because of the study sample. It is therefore recommended that we monitor the situation over the next few years in order to find out if this was just an accident or a trend.

In CS 3420, 13 and 7 students respectively took the course in fall 2018 and spring 2019 semesters and only 4 of them (20 %) performed at a level less than adequate which is quite satisfactory.

**B. Suggestions for Improvement:** N/A

**C. Improvement Implemented:** N/A

**D. List all the “performance level/frequency/percentage” tables and their sources.**

a. Faculty Course Assessment Report: CS3820, Fall 2018

**Data Collected:** Each student’s level of performance on questions on a test and the final exam, and programming assignments testing their knowledge about the application of structured programming paradigm.

**Method of Collection:** Each student is given a score on questions that test their knowledge about the application of structured programming paradigm on test 3 and the final exam. They are also given a score on lab assignments where they are expected to apply structured programming paradigm.

Performance Levels	Frequency	Percentage
No Ability	1	6.3%
Some Ability	2	12.5 %
Adequate Ability	3	18.8 %
More than Adequate Ability	2	12.5 %
High Ability	8	50.0 %

**Observations:** Of the sixteen students who took the test where questions were provided to test their knowledge about the structured programming paradigm, more than half of the class had more than adequate or high ability in the application of the structured programming paradigm. Only three students did not have a good foundation in structured programming and did not also have a good programming experience, which made some of the programming language concepts discussed in the class a little bit challenging for them. These students still did not do well on similar questions on the final exam.

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b. Faculty Course Assessment Report: CS 3820, Spring 2019

**Data Collected:** Each student’s level of performance on questions on a test and the final exam, and programming assignments testing their knowledge about the application of structured programming paradigm.

**Method of Collection:** Each student is given a score on questions that test their knowledge about the application of structured programming paradigm on test 3 and the final exam. They are also given a score on lab assignments where they are expected to apply structured programming paradigm.

Performance Levels	Frequency	Percentage
No Ability	6	35.3%
Some Ability	3	17.6 %
Adequate Ability	4	23.5 %
More than Adequate Ability	2	11.8 %
High Ability	2	11.8 %

**Observations:** It is quit surprising that more than a third of the students in this class do not have any foundation in structured programming: the use of control blocks, counter-controlled iterations, logically-controlled iterations (with sentinel value) and multiple-way selection is a real challenge for most of them. Even those who had some foundation in structured programming could not apply it on a consisting basis as evidenced in their lab assignments. Over the years that I have been teaching this course, this issue has never been as alarming as in these recent years.

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c. Faculty Course Assessment Report: CS3420, Fall 2018

**Data collected:** Students' level of performance on lab assignments and questions of two tests and the final exam.

**Method of collection:** Programming projects and questions on tests and the final exam are used to assess students' ability to apply programming related concepts and practices of procedural abstraction, structured programming paradigm and object-oriented programming to the design and implementation of programs.

Performance Levels	Frequency	Percentage
No Ability	0	0.0%
Some Ability	1	7.7%
Adequate Ability	5	38.5%
More than Adequate Ability	5	38.5%
High Ability	2	15.4%

**Observations:** Besides tests and final exam, each of the 13 students are supposed to turn in 10 programs. The actual number of programs collected from students is 112 (out of 130), yielding a rather high turn-in rate of 86%.

d. Faculty Course Assessment Report: CS 3420, Spring 2019

**Data collected:** Students' level of performance on lab assignments and questions of two tests and the final exam.

**Method of collection:** Programming projects and questions on tests and the final exam are used to assess students' ability to apply programming related concepts and practices of procedural abstraction, structured programming paradigm and object-oriented programming to the design and implementation of programs.

Performance Levels	Frequency	Percentage
No Ability (F)	0	0.0%
Some Ability (D)	3	30%

Adequate Ability (C)	1	10%
More than Adequate Ability (B)	4	40%
High Ability (A)	2	20%