

**William Paterson University of New Jersey**  
**College of Science and Health**  
**Department of Computer Science**  
**Analysis of Course Coverage and Assessment Report Data**  
**Fall 2015 – Spring 2017 Assessment Cycle**

**Course Number:** CS 3500

**Course Coordination Committee Members:** Cyril S. Ku

**Date:** May 25, 2017

**A. Course Pre-requisites/Co-Requisites**

**a) Problems/Issues Identified:**

No problem identified.

**b) Suggestions for Improvement:**

N/A

**B. Course Objectives**

**a) Problems/Issues Identified:**

No problem identified.

**b) Suggestions for Improvement**

N/A

**C. Course Student Learning Outcomes**

**a) Problems/Issues Identified:**

No problem identified.

**b) Suggestions for Improvement**

N/A

**D. Course Content**

**c) Problems/Issues Identified:**

No problem identified.

**d) Suggestions for Improvement**

N/A

**E. Assessment of the CS Program's Student Outcomes**

**1. Suggestion about Student Outcome S1:  
Effectively communicate in written and oral forms**

This course requires having a team project which the teams need to produce documentations covering the different stages of the software development life cycle. The instructor usually splits the documentation according to the different stages of requirements, specification, design, and implementation. The students need to present

their software design to the class. The presentation is graded and many questions on tests and final exam were also used to assess students' knowledge of the project. This student outcome of written and oral communications is appropriate and is assessed well.

**2. Suggestion about Student Outcome S4:**

**Work effectively as part of a team in a software or hardware project.**

One of the objectives of this course is to produce a team project. The instructor usually divides the class into several 3- to 4-person teams (dependent on enrollment). Each team needs to produce documentations for the different phases of software development. The development effort requires substantial coordination among team members. Students need to meet outside class time to work on the project. Tests and final exam include questions of team organization and management. This student outcome is appropriate for this course and is assessed sufficiently well.

**3. Suggestion about Student Outcome S11:**

**Demonstrate an ability to use software engineering principles to analyze and design large software projects.**

One of the major objectives of this course is for the students to produce a team project. The students needed to use software engineering principles to analyze and design a relatively large software project. The results of the specification, analysis, and design were documented and assessed. Substantial amount of class exercises, tests and final exam questions were used to assess students' knowledge of these software engineering principles. This student outcome is appropriate for this software engineering course and the evaluation of the outcome is well assessed.

**F. Analysis of the Course Student Outcomes Assessment Data**

The evaluations of the assessment data of the course student outcomes are listed in Section G below. Most of the outcomes achieved over 50% of the satisfactory results. L5 in Fall 2016 was only 42% satisfaction but it was good in Spring 2016 and Spring 2017. So, it might be an abnormality. L2 in Spring 2017 had low satisfaction in Exam #2 but overall it was still over 50%. The N/A satisfactions were due to the fact that the outcome was covered but not tested. The obvious improvement can be made is to have a question or two to cover the legal and ethical behaviors in software engineering.

**G. Assessment of the Course Student Outcomes**

Course: CS 3500-01: Software Engineering

Instructor: Cyril S. Ku

Semester: Spring 2016

	<b>Learning Outcomes</b>	<b>Where Measured</b>	<b>Percentage of Satisfactory Results*</b>
L1	Understand the phases of software lifecycle of requirements, design, implementation, testing, installation, and operation and maintenance.	HW#1, 2, 3 Exam#1	79%
L2	Explain software development process and object-oriented methodology.	HW#2, 3 Exam#2	71%

L3	Perform analysis of a problem to determine user needs and develop specifications of the system required that will meet user needs within economic constraints.	HW#4 Project	79%
L4	Perform design from specification and generate codes from design using UML.	Project Final Exam	71%
L5	Identify approaches and standards for software quality improvement.	Final Exam	71%
L6	Gain general concepts of software project management.	Exam#1 Project	79%
L7	Understand the legal and ethical behaviors in the software industry, as well as the professional code of conduct of a software engineer.	N/A	N/A
L8	Produce a project documentation that consists of four major parts of the software development process: requirements, specification, design, and implementation.	Project	79%

**\*Notes:**

1. For all the scores, the percentage corresponds to the number of students who receive a score of at least 70% on the question(s) related to the learning outcome.
2. Semester grade consists of composite scores of homework, projects, and exams. The grades were curved.
3. Semester grade = Homework (17%) + Projects (20%) + Exam #1 (20%) + Exam #2 (20%) + Final Exam (23%)
4. L7 was discussed and covered in lecture but it was not tested.

Course: CS 3500-60: Software Engineering  
Instructor: Cyril S. Ku  
Semester: Fall 2016

	<b>Learning Outcomes</b>	<b>Where Measured</b>	<b>Percentage of Satisfactory Results*</b>
L1	Understand the phases of software lifecycle of requirements, design, implementation, testing, installation, and operation and maintenance.	HW#1, 2, 3 Exam#1	67%
L2	Explain software development process and object-oriented methodology.	HW#2, 3 Exam#2	50%
L3	Perform analysis of a problem to determine user needs and develop specifications of the system required that will meet user needs within economic constraints.	HW#4 Project	88%
L4	Perform design from specification and generate codes from design using UML.	Project Final Exam	71%
L5	Identify approaches and standards for software quality improvement.	Final Exam	42%
L6	Gain general concepts of software project management.	Exam#1 Project	70%
L7	Understand the legal and ethical behaviors in the software industry, as well as the professional code of conduct of a software engineer.	N/A	N/A
L8	Produce a project documentation that consists of four major	Project	88%

parts of the software development process: requirements, specification, design, and implementation.		
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**\*Notes:**

1. For all the scores, the percentage corresponds to the number of students who receive a score of at least 70% on the question(s) related to the learning outcome.
2. Semester grade consists of composite scores of homework, projects, and exams. The grades were curved.
3. Semester grade = Homework (17%) + Projects (20%) + Exam #1 (20%) + Exam #2 (20%) + Final Exam (23%)
4. L7 was discussed and covered in lecture but it was not tested.

Course: CS 3500-01: Software Engineering

Instructor: Cyril S. Ku

Semester: Spring 2017

	<b>Learning Outcomes</b>	<b>Where Measured</b>	<b>Percentage of Satisfactory Results*</b>
L1	Understand the phases of software lifecycle of requirements, design, implementation, testing, installation, and operation and maintenance.	HW#1, 2, 3	55%
		Exam #1	52%
L2	Explain software development process and object-oriented methodology.	HW#2, 3	61%
		Exam #2	48%
L3	Perform analysis of a problem to determine user needs and develop specifications of the system required that will meet user needs within economic constraints.	HW#4	57%
		Project #1	83%
L4	Perform design from specification and generate codes from design using UML.	Project #2, 3	76%
		Final Exam	39%
L5	Identify approaches and standards for software quality improvement.	Final Exam	90%*
L6	Gain general concepts of software project management.	Exam#1	52%
		All Projects	87%
L7	Understand the legal and ethical behaviors in the software industry, as well as the professional code of conduct of a software engineer.	N/A*	N/A*
L8	Produce a project documentation that consists of four major parts of the software development process: requirements, specification, design, and implementation.	All Projects	87%

**\*Notes:**

1. For all the scores, the percentage corresponds to the number of students who receive a score of at least 70% on the question(s) related to the learning outcome.
2. Semester grade = Homework (15%) + Projects (20%) + Exam #1 (21%) + Exam #2 (21%) + Final Exam (23%)
3. L5 was based on one question in the final exam.
4. L7 was discussed and covered in lecture but it was not tested.