Assessment Plan

B.S. in COMPUTER SCIENCE
Department of Computer Science
College of Natural, Applied, and Health Sciences
Kean University

Mission:
The Computer Science Program at Kean University has goals that are aligned with the University Mission. The Computer Science faculty are devoted to instilling in their students computational understanding as a way of designing and developing computational solutions. As such, we are devoted to academic rigor, critical thought, teaching excellence and ethical scholarship.

As a department, we prepare our students to think critically and creatively to succeed in challenging careers in computing or pursue graduate degrees by applying knowledge of computing and mathematics to analyze problems for the identification, design, and implementation of computer-based solutions to adapt to the changing technological and social environments in a global economy.

Assessment Process:
Computer science students have eleven (11) required courses to take as part of the requirements for the major. These eleven required courses provide a foundation for future learning in the discipline with regard to the research and theoretical aspects of computer science as well as the various areas of study within related fields. As such, these eleven required courses are the primary vehicle for assessing the knowledge of our students. Beyond the eleven required courses, students take other computer science courses selected from a list of electives. It is unlikely that two majors take the exact same grouping of courses. Therefore, the faculty have agreed to center our assessment on the required knowledge of computer science. Each required course has assessment tools as part of the evaluation process; however, culminating assessment is done in CPS 4951. In this course, assessment data is collected from an assignment that requires students to provide the evidence of meeting program goals. Each semester, composite data from scored student assignments will be collected and analyzed to address areas of program strengths and weaknesses and to inform our decisions ultimately resulting in program improvements.

Each core course has assessment tools such as exams, problem assignments, group work products, projects, etc., as part of the evaluation process and the program has used results of assessment for making improvements to program practices aimed at increasing student learning. For example, programming assignments gathered in CPS 1231, 2232, and 2232 have led to the identification of common demarcation points in the curriculum content, as the student progress from semester-to-semester in the CS0-CS1-CS2 course sequence. Curriculum redundancy had been removed, and content has been updated appropriately for current professional practices.

The culminating assignment done in CPS 4951, the Capstone Course, has been identified as a direct measure for assessing attainment of our program Student Learning Outcomes. In CPS 4951, assessment data is collected from an assignment that requires students to provide the evidence of meeting program goals. Each semester, composite data from scored student assignments are collected and analyzed to address areas of program strengths and weaknesses and to inform our decisions ultimately resulting in program improvements. A process for gathering data utilizing an indirect measure, the Graduating Student Survey, was established. Data from the student survey will also inform our decisions regarding program improvement to increase student learning.

Program Student Learning Outcomes (SLOs) – as aligned with KU SLOs derived from the Institutional Mission* and GE SLOs.** (Data from Direct and Indirect Measures collected each semester in the Capstone Course or a designated, end-of-program course.)
Students who graduate with a BS in Computer Science should be able to:

SLO1: Apply knowledge of computing and mathematics appropriate to the discipline. (KU 1, 4) (GE K1, S1, S3, S4, S5)

**Direct Measure:** CPS 4951: Project report scored with rubric to demonstrate achievement of program goals.
**Direct Measure:** CPS 1231 embedded test questions
**Indirect Measure:** Graduating Student Survey

SLO2: Analyze a problem and identify and define the computing requirements appropriate to its solution. (KU 1, 4) (GE K1, S1, S3, S4, V2)

**Direct Measure:** CPS 4951: Project report scored with rubric to demonstrate achievement of program goals.
**Direct Measure:** CPS 1231 common lab performance
**Indirect Measure:** Graduating Student Survey

SLO3: Design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs. (KU 1, 2, 3) (GE K1, S1, S2, S3, S4, S5)

**Direct Measure:** CPS 4951: Project demonstration scored with rubric to demonstrate achievement of program goals.
**Direct Measure:** CPS 2231 embedded test questions
**Indirect Measure:** Graduating Student Survey

SLO4: Use current techniques, skills, and tools necessary for computing practice. (KU 1, 2, 4) (GE K1, S1, S2, S5, V5)

**Direct Measure:** CPS 4951: Project report and oral presentation scored with rubric to demonstrate achievement of program goals.
**Direct Measure:** CPS 2232 common lab performance
**Indirect Measure:** Graduating Student Survey

* KU Student Outcomes: *Kean University graduates should be able to:*
1. Think critically, creatively and globally;
2. Adapt to changing social, economic, and technological environments;
3. Serve as active and contributing members of their communities; and
4. Advance their knowledge in the traditional disciplines (GE) and enhance skills in professional areas (Prof. pgms)

**General Education Student Learning Outcomes**

Student Learning Outcomes – Knowledge: Students will demonstrate proficiency in knowledge and content by:
(K1) applying the scientific method to understand natural concepts and processes;
(K2) evaluating major theories and concepts in social sciences;
(K3) relating historical references to literature; and
(K4) evaluating major theories and concepts in the fine arts.

Student Learning Outcomes – Skills: Students will demonstrate the skills necessary to:
(S1) write to communicate and clarify learning;
(S2) communicate effectively through speech;
(S3) solve problems using quantitative reasoning;
(S4) think critically about concepts in multiple disciplines; and
(S5) show information literacy.

Student Learning Outcomes – Values: Students will exhibit a set of values that demonstrate:
(V1) personal responsibility;
(V2) ethical and social responsibility;
(V3) social and civic engagement;
(V4) respect for diverse cultures and perspectives; and
(V5) life-long learning.
The Computer Science curriculum prepares students to achieve the expected student learning outcomes identified by the program or discipline. The following table demonstrates how learning activities in specific courses map to these learning outcomes.

Key: I-Introduced \hspace{1cm} R-Reinforced \hspace{1cm} M-Mastery \hspace{1cm} A-Assessment evidence collected

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