TABLE 1. Planning Improvement Actions – Bachelor of Science in Computer Science Fall 2009/Spring 2010

<table>
<tr><td colspan="2">Planning Improvement actions</td></tr>
<tr><td>OUTCOME</td><td>METHODS/ANALYSIS/ACTIONS</td></tr>
<tr><td rowspan="4">(c) An ability to design, implement, and evaluate a computer based system, process, component, or program to meet desired needs.</td><td>METHODS
The program outcomes are demonstrated by looking at the student achievement in coursework and exam questions connected to the learning outcomes. This outcome is supported by various required courses and sample results are presented below in the RESULTS/EVIDENCE-DATA.
In addition, the Teacher Course Evaluation (TCE) an anonymous questionnaire distributed to the students in every course at the end of each semester, provide responses to questions directly related to the Program Outcomes.</td></tr>
<tr><td>RESULTS/EVIDENCE DATA
The connection between course outcomes and program outcomes has been made in the faculty evaluation of each course, which is a component of the course portfolio. Outcome (c) is evaluated based on results from the CS-470 (Operating System). The results (the statistical means) of the student responses to the supplemental questions (indirect assessment) relevant to Outcome (c) for Fall 2009 are listed in the table below. The left column represents the students' responses, the right column indicates the instructor' cumulative evaluation based on the direct data (assignments) and/or other observations. In the direct assessment assignments such as homework, projects and exams were used. For example, Q39, the instructor assessment is based on scores from exam questions and on homework 1 which dealt with scheduling. For Q42, the instructor assessment is based on responses to exam questions and on projects that required students to use OS system calls to implement applications.
<table>
<tr><th>TCE</th><th>students</th><th>instructor</th></tr>
<tr><td>Q39</td><td>4.3</td><td>4.1</td></tr>
<tr><td>Q42</td><td>4.0</td><td>3.9</td></tr>
<tr><td>Q44</td><td>4.1</td><td>4.1</td></tr>
<tr><td>Q45</td><td>4.1</td><td>4.1</td></tr>
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The overall grades for the class: 50% of the class receiving A's and over 90% receiving C or better.
Q39. Understand process management
Q42. Understand and apply some OS interfaces for application development
Q44. Improve my ability to analyze a problem, and identify and define the computing requirements appropriate to its solution;
Q45. Improve my ability to apply design and development principles in the construction of software systems of varying complexity.</td></tr>
<tr><td>ANALYSIS
The above cumulative results from the direct assessment methods (course assignments, the final exam and the final grades) and (indirect) from the TCE questionnaire demonstrate that the students and the instructor met the benchmark for the course outcomes and - connected to them - Outcome (c). In general the final grades show that most of the class mastered the material (i.e., the various components of the OS taught throughout the semester). Outcome (c) is directly connected with course outcomes measured with Q39, Q42, Q44 and Q45 and the results meet the target.
The instructor for CS470 – Fall 2009 stated that it seemed the students posessed much better programming skills than in past years. However, debugging programs still appears to be difficult to students. Most students still use a "try this and then try that" approach to debugging until something works. Furthermore, the instructor concluded that based on the other questions related to the course learning outcomes that demonstrate mastery of the material and the student's own response, it seems their ability pertaining to Q44 and Q45 did indeed improve.</td></tr>
<tr><td>IMPROVEMENT ACTIONS
Put more stress on teaching program debugging abilities.</td></tr>
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