# BS Computer Science

## Annual Summary Cycle - Year 3 (2013-2014)

### Program Learning Outcomes

<table>
<thead>
<tr>
<th>Program Learning Outcomes</th>
<th>Outcome Measures</th>
<th>Number of Students Assessed</th>
<th>% Did Not Meet</th>
<th>% Met</th>
<th>% Exceeded</th>
</tr>
</thead>
<tbody>
<tr>
<td>5. Demonstrate an ability to communicate effectively orally and in writing with a range of audiences.</td>
<td>Portfolio of student projects and programs</td>
<td>133</td>
<td>18.11 %</td>
<td>51.20 %</td>
<td>30.69 %</td>
</tr>
<tr>
<td>6. Be prepared for entry-level employment or master degree.</td>
<td>Portfolio of student projects and programs</td>
<td>228</td>
<td>26.35 %</td>
<td>48.38 %</td>
<td>25.21 %</td>
</tr>
</tbody>
</table>

**Comments:** During the academic year 2013-2014, two program learning outcomes were assessed as per the proposed three-year cycle. Courses taught in Fall 2013 and Spring 2014 were sampled and for each sampled class both PLOs were assessed. Assignments, projects, quizzes and tests from each class were used to determine the percentage of student who did not perform well, the percentage of students who did well, and the percentage of students who excelled the expectations with respect to assessing the PLOs.

Totally 133 students contributed in assessing PLO 5. 51.20 % of the students exhibited the ability to effectively communicate orally and in writing. The assessment was done based on presentations in class projects, writing project reports, group discussions in the programming fundamentals, designing algorithms, capstone projects, computational methods, and other areas of computer science. 30.69 % of the students demonstrated excellence, while 18.11 % did not show convincing evidence. The examination of this data indicates that 82% (51.20 + 30.69) of the students demonstrated that they can communicate in technical areas while 18% need improvement in communication skills. Examination of courses included in this assessment reveals that students need to improve in Programming, Capstone Projects, and Concepts Of Programming Languages.

Totally 228 students contributed in assessing PLO 6. 48.38 % of the students exhibited the skill that they are ready to enter the work force or continue in the graduate program in the computer science or related areas. 25.21 % of students demonstrated excellence, while 26.03 % may find it difficult to find good jobs. The examination of this data indicates that 73.59 % (48.38 + 25.21) of students demonstrated that they can enter into the work force or may enroll in graduate schools while 26.35 % may need to improve their skills. Looking at the raw data it seems students did poor in several classes. It is necessary to discuss with faculty a plan to improve students’ performance in these classes.

As we notice that the percentages in each category for PLO 5 and PLO 6 differ, it is concluded that students showed they acquired skills from one or more classes in Computer Science, and accomplished the work by oral communication or in writing or both. For both PLOs, approximately 74-82 % of the students demonstrated that they have the communication skills and can be successful in the job market or may be accepted to graduate schools. The classes like Capstone Project, Database Design, Ethics in Computer Profession, and Computer Security, contributed to the assessment of communication skills.

This is the first cycle of the program learning outcomes assessment and hence cannot be compared to show improvement over previous years. It will be done during the second cycle of assessment.
Program: BS Computer Science

Learning Outcome: 1. Demonstrate breadth of knowledge in areas of computer science, including programming fundamentals, algorithms, computer architecture & organization, operating systems, and database management systems.

Proposed Action: To evaluate breadth of knowledge in area of design and analysis algorithms.

Rationale for Proposed Action: Development algorithms is one of the vital skills for computer science majors.

<table>
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<tr>
<th>Target Timeline</th>
<th>Expected Results</th>
<th>Individual Responsible</th>
<th>Resources Needed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spring 2015</td>
<td>Analysis of students’ survey outcomes (D2L)</td>
<td>Alexander Yemelyanov, Arvind Shah</td>
<td>none</td>
</tr>
</tbody>
</table>

Additional Comments: CSCI 4500: Design & Analysis Algorithms – Fall 2014
**Program**: BS Computer Science  
**Contact**: Arvind Shah, Boris Peltsverger

**Learning Outcome**: 2. Demonstrate an ability to apply knowledge of computing and mathematics, analyze given problems, and implement solutions.

**Proposed Action**: To evaluate students' ability to analyze given problems, and implement solutions in the capstone project class.

Rationale for Proposed Action: The capstone projects are required to analyze given problems, and implement solutions for variety computing fields.

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</table>
| Spring 2015     | Analysis of students’ survey outcomes (D2L) | Simon Baev  
Arvind Shah | none |

**Additional Comments**: CSCI 4940: Capstone Project – Spring 2015
Program: BS Computer Science
Contact: Arvind Shah

Program Learning Outcome (PLO): 5. Demonstrate an ability to communicate effectively orally and in writing with a range of audiences.

Proposed Action: Conduct evaluations of oral and writing skills in appropriate classes and extracurricular activities. Develop a survey, which provides questions for self-evaluation of the ability to communicate effectively orally and in writing with a range of audiences.

Rationale for Proposed Action: The proposed actions will help to evaluate skills declared in the learning outcome 5.

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<td>Spring 2014</td>
<td>The number of students, who meet PLO 5 requirements, will increase.</td>
<td>Arvind Shah, Boris Peltsverger</td>
<td>GeorgiaView</td>
</tr>
</tbody>
</table>

Additional Comments
In a response to the proposed action, students were surveyed for the development of communication skills. The instructors also provided information on how their courses contributed to the proposed action.

Courses which contributed to the proposed action
The following courses were identified which contributed to the development of communication skills - (1) CSCI 4400 – Intro to Database Fall 2013), (2) CSCI 4940 – Capstone Projects (Spring 2014), and CSCI 2920 – Ethics in Computer Profession (fall 2014).

Summary of the students’ responses
The responses received from students clearly states that the courses listed above required discussions among the group members, writing technical documents that explaining the completion of tasks, and classroom presentations. In some courses, they were required to work on projects in groups which required both oral (class presentation) and written communication (technical documentation, user’s guide). Some students had an opportunity to tutor others and thereby developed the communication skills.

Summary of the instructors’ responses
Courses that contributed to the proposed action demonstrated the students' ability to communicate with a varied range of audiences, to write documentation and user’s guide, and to make a class presentation. Some classes required discussion groups which was an important component to emphasize the ability to communicate among peers. This also helped students learn from each other and develop better communication skills.
Program: BS Computer Science

Program Learning Outcome (PLO): 6. Be prepared for entry-level employment or master degree.

Proposed Action: Organize a job showcase and meetings with potential employers. Continue to offer advanced projects to CS majors and conduct professional seminars. Develop a survey, which provides questions for self-evaluation skills, which students gained in aforementioned events.

Rationale for Proposed Action: The proposed actions will help to improve and evaluate skills, required for entry-level employment, or enrollment to a master degree program.

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<td>Spring 2014</td>
<td>Students’ employability skills and ability to develop advanced projects will improve.</td>
<td>Arvind Shah&lt;br&gt;Boris Peltsverger</td>
<td>GeorgiaView</td>
</tr>
</tbody>
</table>

Additional Comments
In response to the proposed actions for academic year 2013-2014, students were surveyed for their readiness for employment and/or for graduate studies. Also, several courses were identified that contributed to prepare students for employment and/or for graduate studies.

Courses which contributed to the proposed actions
The following courses were identified that prepared students for employment and graduate study: (1) CSCI 4400 Intro to Database Fall 2013), (2) CSCI 4940 Capstone Projects (Spring 2014), 4300 Software Engineering (Spring 2014), CSCI 4310 Object Oriented Programming (Java) (Fall 2013).

Summary of the Student’s responses
The responses received from students clearly states that several courses provided knowledge that prepared them for employment. Some courses required students to work on a projects and problem solving, which gave them a challenging opportunity to learn the latest computer technologies. Students stated that the program prepared them to pursue graduate studies.

Summary of the instructors’ responses
Courses that contributed to the proposed action demonstrated the ability to work on group projects, which required complex problem solving, and prepared them with knowledge base for employment. Some classes required presentations, giving them the skills necessary for job interviews. Students are exposed to commonly used practices in software development and groupwork. In contrast, other projects (mainly oriented to web programming) not only allow students to work through all steps of software development starting from sketching basic ideas, to a working prototype, but also allow them to contribute to their professional portfolio, which can later be shared with potential employers.

In April 2014 a Job Showcase was held in the Department of Computer Science. This event gave students an opportunity to meet employers and to discuss with them job related matters.