Computer Science Department Student Learning
Outcome Assessment Report 2016-2017

1. Department/Program Mission

To create and convey knowledge in computer science through innovative research and education, and solve technological and societal problems through computing to improve the living experience of citizens in Missouri and beyond.

2. Graduate Learning Outcomes (GLO)

a. **Campus-Wide Student Learning Outcomes:**
   Programs must demonstrate that their graduates have:
   I. Knowledge: An ability to apply knowledge of subject matter within their field of study
   II. Communication: An ability to communicate effectively within their field of study.
   III. Critical Thinking: An ability to engage in productive critical thinking within their field of study.
   IV. Professional Development: An ability to develop professional within their field of study.

b. **Additional Program Specific Student Learning Outcomes (Optional)**
3. Mapping of Program’s Student Outcomes to Campus Student Learning Outcomes

Map your Graduate Student Outcomes (departmental specific or other Accreditation Commission) from your Program to the Campus GLOs (above). If you use campus GLOs, this section is not needed.

4. Methods/Instruments and Administration

During last academic year, the computer science department kept monitoring students’ performance using the GLO standard campus rubric. In this report, we present the data based on the rubric and analyze what we have learned and what we will do to advance a student’s learning at the department. In addition, we have adopted a revised Ph.D. qualifying exam requirement since last year. This report also discusses changes have been made to help our graduate students to prepare for the qualifying exam.

5. Findings

5.1 Passing Criteria

The GLO standard campus rubric is used for three exams/evaluations: master thesis, Ph.D. comprehensive exam, and Ph.D. thesis. In the Computer Science Department, a student passes any of the three exams if the student’s evaluation score is 3.75 out of 5 or 75% or above according to the rubric. The department expects that 75% of its graduate students who participated in these exams met or exceeded the passing evaluation score. Since each category in the rubric has three to five sub-categories, the score for each category is the average of the scores from each sub-category. The minimum and maximum scores for each sub-category are one and five respectively.

5.2 The Results for 2016

The results are summarized in Figure 1. There are 13 students who participated in the exams. Overall, except for two students #7 and #8 in the figures, our students exceeded the passing threshold of 75% on every sub-category. According to the data, two students obviously under-performed under the communication component. Therefore, our department has formed a sub-committee to look into additional means to improve students’ communication skills. Once we decide the means, we will implement them as a required component in our applicable graduate programs.

![Knowledge of subject matter within their field of study](image1)

(a) Knowledge of subject matter within their field of study

![Communicate effectively within their field of study](image2)

(b) Communicate effectively within their field of study
6. **Continuous Improvement Changes**

6.1 Revised Ph.D. Qualifying Exam and Course Requirements

The revised Ph.D. qualifying exam requirement intends to help our students to build solid technical foundations and the needed research background toward their eventual Ph.D. thesis work. Starting from last year, the revised Ph.D. qualifying exam consists of two main parts: broader knowledge and research readiness. The broader knowledge focuses on fundamentals in computer science knowledge. Briefly speaking, the students are required to take five courses and an average GPA of 3.5 or above from these courses is mandatory to pass this requirement. In addition, at least three of these courses need to be on 5000 level. However, our graduate degree requirements place heavy emphasis on 6000 level research oriented courses. Thus, in order to provide students the flexibility and serve the object of the qualifying exam, we decided to modify our degree requirements on both MS and Ph.D. levels to better prepare our graduate students on computer science foundations.

6.2 Publication Requirement for Ph.D. students

The GLO rubric does not directly address paper publications as a requirement for Ph.D. students. Based on the feedback from our faculty, it is very important for a Ph.D. student to have high quality publications before thesis defense. As a result, we revised our Ph.D. requirement to include peer-reviewed paper publications. Evaluation metrics include:

- **Critical Thinking**
- **Professional Development**
- **Final Evaluation Score**

Figure 1: Academic Year 2016-2017 Statistics
• Conference or journal reputations
• The number of publications the student is the main contributor
• Evaluations based on the thesis committee

In the coming year, we will formalize these metrics and find proper ways to extend the GLO standard campus rubric to reflect the metrics.

6.3 Future Plan

We will continue monitoring the performance of our students based on the GLO standard campus rubric. Hopefully, by year 3 after adopting the standard rubric, we will have a better picture regarding our students’ learning outcomes. As for this academic year, we are satisfied with the performance of our students according to the evaluation results.

As stated in our previous report, we wanted to study means to monitor and evaluate all graduate students. We had several discussions on this issue last year, and we have built consensus among our faculty members about the benefit of evaluating all graduate students. On the other hand, we have to balance a faculty member’s workload, such that evaluating all graduate students should not become a distraction on their current research and teaching activities. We will continue to discuss this issue and develop appropriate solutions in the coming year.