Executive Summary

This document summarizes the results of a Computer Science employer survey distributed during Spring quarter 2010. Alumni and employer surveys are issued approximately once every three years to assess performance against Educational Objectives. Alumni surveys were distributed during Fall quarter 2009 and are discussed in a separate report.

Educational Objectives are broad statements that describe the career and professional accomplishments that the program prepares students to achieve post-graduation, whereas Program Outcomes are narrower statements that describe the abilities that students should have at the time of graduation. Program Outcomes are assessed by a variety of mechanisms as described in the department Assessment Plan. The total number of surveys distributed was 93, with 26 responses received at the time this report was prepared. The survey instrument is shown in Appendix A.

Of the 26 surveys returned, 22 were able to complete the survey and 4 did not because they had not recently employed any of our graduates. None of the latter 4 offered any comments on the EWU Computer Science program in Question 13. Nine other respondents offered comments in response to Question 13, all of which are provided below.

Collectively, the responses provide employer opinion for at least 30 EWU Computer Science graduates hired within the last 3 years. One of the respondents was unable to say how many EWU Computer Science graduates they had employed in the last 3 years. A histogram of the number of EWU Computer Science graduates employed within the last 3 years is provided in the following chart:
Survey responses to each question are summarized in the sections that follow. Each survey response was weighted equally.

The responses are consistent with the preceding alumni survey responses in indicating that the department is performing well against Educational Objectives. The employer surveys also indicate that EWU CS graduates are well prepared for the workplace and compare favorably with graduates from other institutions. No deficiencies were noted and thus no corrective actions are proposed by the department’s assessment committee.

**Educational Objectives**

Our students will be prepared to…

1. grow their roles in the community and the organization that employs them (survey Question 4).
2. pursue and apply lifelong learning (survey Question 9).
3. act on the recognition that all decisions have an impact on the organization and customer (survey Question 5).
4. contribute with an understanding that there is more to a product than software, and that product development is an ongoing process (survey Questions 6 and 7).
5. communicate with non-technical, as well as technical, people, and to discuss customer needs at the customer’s level (survey Question 8).
6. expand their technical competence beyond the fundamentals in areas such as software and interface development, databases, concurrent systems, systems integration, and software components of computer science (survey Question 10).

The possible responses to the survey questions regarding these objectives were: Strongly Agree (SA), Agree (A), Neutral (N), Disagree (D), Strongly Disagree (SD), and “Our experience has been too variable to make a generalization.”
There were 22 responses to each question except for number 10 (Objective 6). Question 10 received 21 responses. The results for all questions are summarized in the following chart:

For each question over 90% of the employers agreed with the statement, and the rest were neutral. None disagreed with the statements. The data thus supports a conclusion that the department is performing well with respect to Educational Objectives.

**Preparation for the Workplace**

The survey also asked one question (Q11) regarding our graduates’ general preparation for the workplace, and one question (Q12) regarding how our graduates compare in that respect to those from other institutions.

The results on general preparation for the workplace (Q11) are shown in the following chart. There were 22 respondents:
82% of the respondents indicated that in general our graduates are well or very well prepared. All respondents indicated that our graduates are adequately prepared or better. None indicated that our graduates were poorly prepared.

The results comparing the general preparation of our graduates to those from other institutions (Q12) are shown in the following chart. There were 18 respondents. Four respondents indicated that the question was not applicable.
94% of the respondents indicated that in general our graduates are similarly or better prepared compared to graduates of other institutions. One respondent (5.6%, rounded to 6% in the chart) indicated that our students (two hired in the last 3 years) are poorly prepared compared to those from other institutions. That respondent answered “adequately” to the preceding question and also offered this comment in response to Question 13:

“EWU graduates struggle with their written communications.”

We thus infer that the respondent’s intention was to indicate that, in general, our graduates are adequately prepared, but less well so compared to those from other institutions when it comes to written communication. Because any indication of substandard performance relative to other institutions is a potential concern, we further look at the standard deviation on this response using a binomial distribution. We define a “successful” result as one indicating that our graduates are similarly or better prepared compared to those from other institutions, and an “unsuccessful” or “failed” result as one that indicates otherwise. The population proportion of success, p, will then follow a binomial distribution with mean p and variance \( p(1-p)/n \), and we use the data above to provide an (unbiased) estimate of p, \( \hat{p} \). We also estimate the standard deviation of \( \hat{p} \).

The sample of respondents who indicated our graduates were similarly or better prepared is:

\[ \hat{p} = \frac{17}{18} = 0.94. \]

The estimated proportion of failures is then:

\[ \hat{q} = (1-\hat{p}) = 0.06 \]

An estimate of the standard deviation of \( \hat{p} \) is:

\[ \hat{s} = \sqrt{0.94(1-0.94)/18} = 0.056 \]

We further note that \( n\hat{q} = 18(0.06) = 1.08 \). Because this is less than 10 our sample data cannot support the usual normal approximation for the binomial test and we therefore cannot claim to extract a confidence interval on \( \hat{p} \) from this estimate of standard deviation. We nevertheless note that the estimated success ratio plus or minus two standard deviations is:

82.8% to 99.6%

Based on that range, and that the expressed concern relates to a comparison to other institutions rather than a judgment of actual preparation level, we do not recommend any action on this data.

**Additional Comments**

Nine respondents chose to provide additional comments (Q13), as follows:

“EWU is turning out some fine undergraduates and we have enjoyed the ones we have hired in the past. Keep up the good work!”
“I’m always in need of ASP.NET C# developers. The EWU grad I hired 4 years ago got that experience outside of school--so it would be great for us if you taught that!”
(it should be noted that we do offer such a course, but it is not required)

“While we look everywhere for qualified candidates, we do look at EWU first as they are the main reason we have grown our software service line over the last 3 years. They handle responsibility well and can be depended on to be responsive in a team environment. And, very talented individuals…”

“Granted we only have hired one in the last 3 years, but we only need one IT person in this department. Our experience with this person has been great. When we hired this person, he was able to work with little training and has since mastered his job. I would definitely hire anyone else from EWU’s Computer Science program.”

“We have 2 open positions for Java developers. www.paml.com”

“EWU graduates struggle with their written communications.”

“Although our experience is only one employee, the outcome is very positive. Our EWU graduate was in a software engineering position. The assignment went well beyond programming and design skills, and included customer interfacing and software development processes. The latter skills were learned on the job.”

“We are a government entity, but we develop business-type apps. The ‘best’ employees have some level of business education/experience.”

“C/C++ weakness in those interviewed in the past 3 yrs.”
Appendix A: Survey Instrument

EASTERN
WASHINGTON UNIVERSITY

2010 Computer Science Employer Survey

1. Our organization currently employs, or has recently employed, graduates of the EWU Computer Science department (if no, please skip to question 13).
   a. Yes
   b. No

2. Approximately how long has it been, in years, since your organization hired your most recent graduate with a Computer Science degree from EWU?

3. Approximately how many EWU Computer Science graduates have you hired in the last 3 years?

4. In general, our EWU Computer Science employees have the ability to advance appropriately in our organization.
   a. Strongly Agree
   b. Agree
   c. Neutral
   d. Disagree
   e. Strongly Disagree
   f. Our experience has been too variable to make a generalization

5. In general, our EWU Computer Science employees understand that their decisions have an impact on our organization and our customers.
   a. Strongly Agree
   b. Agree
   c. Neutral
   d. Disagree
   e. Strongly Disagree
   f. Our experience has been too variable to make a generalization

6. In general, our EWU Computer Science employees contribute with an understanding that there is more to our business than the delivery of a piece of software.
   a. Strongly Agree
   b. Agree
   c. Neutral
   d. Disagree
   e. Strongly Disagree
   f. Our experience has been too variable to make a generalization
7. In general, our EWU Computer Science employees understand that product development is an ongoing process.
   a. Strongly Agree
   b. Agree
   c. Neutral
   d. Disagree
   e. Strongly Disagree
   f. Our experience has been too variable to make a generalization

8. In general, our EWU Computer Science employees are able to communicate effectively with non-technical people.
   a. Strongly Agree
   b. Agree
   c. Neutral
   d. Disagree
   e. Strongly Disagree
   f. Our experience has been too variable to make a generalization

9. In general, our EWU Computer Science employees have continued to learn.
   a. Strongly Agree
   b. Agree
   c. Neutral
   d. Disagree
   e. Strongly Disagree
   f. Our experience has been too variable to make a generalization

10. In general, our EWU Computer Science employees have expanded their technical knowledge beyond the fundamentals that they acquired as undergraduates.
    a. Strongly Agree
    b. Agree
    c. Neutral
    d. Disagree
    e. Strongly Disagree
    f. Our experience has been too variable to make a generalization

11. Please rate the general preparation of your EWU Computer Science graduates for the workplace. In general, our EWU Computer Science employees are …
    a. Very well prepared
    b. Well prepared
    c. Adequately prepared
    d. Poorly prepared
    e. Very poorly prepared
    f. Our experience has been too variable to make a generalization
12. If you employ Computer Science graduates from an institution other than EWU, please compare their overall preparation for the workplace. In general, our EWU Computer Science employees are …
   a. Much better prepared than those from other institutions
   b. Better prepared than those from other institutions
   c. Similarly prepared as those from other institutions
   d. Poorly prepared compared to those from other institutions
   e. Much more poorly prepared compared to those from other institutions
   f. Our experience has been too variable to make a generalization
   g. Not applicable

13. If you have any additional comments you’d like to make regarding EWU’s Computer Science program or its graduates, please add them here or on an attached sheet: