

Assessment Term Report for Spring 2004

by Robert Kerbs

Summary

Many changes have come about this term due to the department's assessment efforts. The Sun laboratory was redesigned and equipment procured to directly address recommendations from students, faculty and our industry partners. A number of curriculum-related issues were discussed and debated -- bringing changes to the department's undergraduate curriculum offerings beginning in Fall 2004. The yearly advisory board meetings were arranged and conducted with some interesting and useful results. In addition, our regular portfolio collections show some continuing trends and creative teaching approaches.

Assessment Activities:

The following activities were completed this term:

1. Graduating Student Surveys were conducted.
2. Three meetings with Advisory Board members were scheduled and completed.
3. Portfolios were collected for the department's witness courses.

Portfolio Findings

1. The outcomes for 140/141 and 240/241 should be split. It was found that finer granularity is required to adequately assess each course
2. The following new outcomes should be considered for inclusion for 140:
 - a. Competence at basic OO design
 - b. Competence at writing English prose
 - c. Familiarity with class variables (static variables)
3. The following new outcomes should be considered for inclusion for 141:
 - a. Competence at basic OO design
 - b. Competence at writing English prose
 - c. Familiarity with class variables (static variables)
4. Faculty requiring students to utilize a programming style sheet results in programs that are easier to understand, however, students don't seem to follow the programming style sheet closely enough and lose points.
5. Students still don't read class texts and instead rely on instructor-provided notes primarily.

6. Evidence of social and ethical computing issues turned in for CS 420 and both sections of CS 463.

Graduating Student Survey Findings

Students responded that the department's top three strengths are:

1. Good faculty/staff - helpful, concerned, challenging, knowledgeable.
2. All aspects of CS covered; good foundation and wide selection of courses.
3. Programming projects entail hands on learning.

Students responded that the department's top three weaknesses are:

1. Not enough programming projects/hands on/real life applications.
2. Professors (don't know what the specific issue is).
3. Need more variety in programming languages

Advisory Board Findings

During this term we met with our advisory board; some important comments follow below (other comments may be reviewed by viewing the department's accreditation web site):

1. The faculty should promote internship positions after the sophomore year. It appears several employers are using internships to ensure quality hires.
2. It might be possible to work directly with industry by locating projects that could be completed by students in a reasonable amount of time.
3. Faculty who give group assignments should be encouraged to meet with the individual groups.
4. An effort should be made to locate our alumni by either using the University's database or developing our own. Enlist them in department activities.
5. The department should conduct technical seminars that bring in outside company representatives on a regular basis.

New Recommendations

Based on findings from student portfolios, discussion with faculty, *Graduating Student Surveys*, and our advisory board, the following possible changes/actions should be taken or explored:

1. Need better instructors teaching the foundation courses. (source – student surveys and discussions with faculty)
2. There should be more real-world programming projects. (source – student surveys)
3. Need more variety in programming languages. (source – student survey's)
4. This is my last term as the Accreditation Coordinator. In passing on this responsibility I would like to make a few recommendations:
 - a. The frequency with which classes are assessed should be revisited. In many classes, it appears that we are receiving the same comments quarter-to-quarter. It might be a better use of the faculty's time if select courses were assessed each term leaving more time for analysis of the collected data.

- b. Portfolios are currently due from faculty the same time grades are. Consequently, the Accreditation Coordinator cannot begin an analysis of materials and construction of the term report until the term break. It would be suggested that these duties be accomplished in the following term.
 - c. Now that the department's assessment mechanism has been defined and implemented it is suggested that groups of full-time faculty, who teach the same courses, meet to discuss what has been learned and how things could be improved.
 - d. There are some recurring recommendations that are not easily addressed and completed. As a result, I would suggest making a new section in the term reports along the lines of *Acknowledged Recurring Recommendations*. Therefore, it would be made clear that we understand the concern but there are limitations on how far we can go in immediately solving the issue.
5. The faculty should promote internships after the sophomore year. Employers are utilizing interns to ensure quality hires.
 6. Our industrial partners should be approached to see if there are projects for students to work on.
 7. Faculty who give group projects should consider meeting with the groups to ensure major milestones are being completed and that each student is doing his/her part.
 8. A strategy for contacting and keeping in touch with our alumni should be enacted.
 9. Technical seminars that bring in industry speakers should be scheduled on a regular basis.
 10. CS 240/241 outcomes should be split in two. Currently, they are treated as one and corresponding granularity of course coverage is too broad.
 11. CS 140/141 outcomes should be split in two. Currently, they are treated as one and corresponding granularity of course coverage is too broad.
 12. CS 245 should be reworked to cover the interface design material that is not being covered in 141.

Prior Recommendations in Progress

[2003 Fall] Department should consider requiring an entry-level examination before students are admitted into the computer science program.

[2003 Fall] There should be the capability for students to join informal study groups.

[2003 Winter] Program Outcomes — while comparing our Program Outcomes against portfolio materials Program Outcome one seemed too broad for careful auditing. This outcome should be revisited for analysis.

[2003 Winter] Program Outcomes must be tuned so that auditing is straightforward.

[2003 Winter] More instructors should require an English-language preface to each submitted program.

[2003 Winter] Oral and written communication standards should be enforced in CS courses. One method to accomplish this would be through the assignment of additional writing assignments. For example, we could require additional essays, weekly journal entries, homework and exams that include essay writing, or projects that require a written entry. Another approach might be to require more

- group projects and presentations. Faculty would need to monitor and coach student writing.
- [2003 Winter] We should intervene as early as possible for students who exhibit writing deficiencies. Such students should be directed to the University's Writing Center for tutoring help.
- [2003 Winter] More courses should require written communication. More exam questions should require paragraph or longer responses in English. More programming assignments should require prose descriptions of the code being submitted.
- [2003 Winter] Introduce case studies in selected courses to teach students to solve systems-type problems.
Status – this issue has been passed on to the curriculum committee for analysis.
- [2003 Winter] Encourage more students to seek co-op/internship opportunities in their junior and senior years.
- [2003 Winter] Incorporate web-based search into courses involving term papers, presentations, or substantive projects.
- [2003 Winter] Expose students to benefits of gaining certification in specialized areas.

Recommendations Completed

- [2003 Spring] The department's Sun Laboratory has been redesigned to accommodate group projects. The entire laboratory is being installed Summer, 2004. This effort addresses the following recommendations:
- Retool courses at all levels to increase communication, teamwork, and process requirements.
 - Refocus program around "software design & build" theme.
 - More courses should emphasize the software life-cycle, starting at the introductory level.
- [2003 Spring] Reorganize core/elective coursework to ensure competency in two languages (currently Java and C++) upon graduation. CS 256 (C++ programming) is now a required course.
- [2004 Spring] Objects first versus imperative programming first. This issue was addressed by the curriculum committee and ultimately the department. It was decided that a change to imperative-first programming should start in Fall, 2004.
- [2004 Spring] Dr. Barry Soroka was selected to be the Accreditation Coordinator for the next two years.
- [2004 Winter] CS 380 *learning outcomes* were created.
- [2004 Winter] CS 435 – the curriculum committee looked into the prospect of narrowing the range of topics covered in this class. It was decided that the instructor teaching the course should decide which topics should be covered in more detail than others.
- [2004 Winter] CS 210 – Instructors teaching this course were informed that students were coming out of this class without adequate knowledge/expertise in sequential circuit design. The instructors agreed to explicitly cover this material and ensure that adequate coverage is given.

- [2004 Winter] Department-wide programming style-sheet. It was decided that this would be too restrictive. Consequently, it is recommended that instructors utilize some type of style sheet to help students learn to program in a comprehensible way.
- [2004 Winter] Accreditation web site expanded to include *Advisory Board Meeting Minutes* and *Graduating Student Surveys*.
- [2004 Winter] A locking filing cabinet to house student assessment documentation was procured and installed in the department's conference room. Consequently, the paperwork burden was reduced to faculty members as they no longer need to block out student's names on collected materials.
- [2003 Fall] Learning outcomes created for CS 431 and CS 463.
- [2003 Fall] Faculty given option to utilize alternative sampling technique called ESP.
- [2003 Fall] Accreditation web site created.
- [2003 Spring] An Assessment Coordinator was selected for the coming year.
- [2003 Winter] Identified need for faculty Assessment Coordinator with at least 4 WTU release per quarter.