

Student Portfolio Evaluation

The student portfolio represents a longitudinal study of a student's work over his/her entire career. These will be used to measure student quality and hence they are an output measure. They should be reviewed yearly for each student in the evaluation set. It is important to give feedback to the students concerning the evaluation. It is important to give feed back to instructors concerning strengths and weaknesses of the students in a general sense (for example, if all of the students are weak in applying probability concepts, then this must be told to the instructor of the course where the material was covered) so **that we can tie this output measure to process improvement.**

The evaluation of portfolios should be done by a committee and should be a cumulative evaluation. The committee can be made up of a combination of College and Department faculty, industry representatives, alumni, and graduate students. The committee will be given ABET criteria A through K and will be asked to evaluate the student in each area (probably a or similar 1-5) scale. We could provide example portfolios to set the grading standard.

Portfolio evaluation provides an overview measure of the student on the ABET categories and hence is different than GPA measures. We will be able to track performance over time to see where in the curriculum do our students improve in each criteria. It is possible that the committee will have no comment on a criteria since it has not yet been covered in the curriculum. It is critical that the committee remain constant for a group of students or that care be taken so that the standards are not changed over the time of the evaluation since we will be comparing numbers over time.

A sample size of 10 or 15% of the students is reasonable. I don't think that we will want to test hypotheses, but we will want to exhibit what the entire distribution of student accomplishments. For large departments, 10 evaluations per year will give a satisfactory picture and I would not use less than 5 students per year. There should be at most 60 portfolios in the pipeline. The students should be selected randomly during their first year. It is important that the freshman sample size be large enough so that we will have a sufficient number by the senior year (given our 50% success rate, you need on the order of 20 initially to get 10 out in 4-5 years). I would select students so that the high school GPA, (or SAT or class rank) of the sample represents the GPA of the population. We don't want to bias the sample with inappropriate selection early, and high school GPA is one of the better measures of student success.

In addition to the career portfolios, we could collect "yearly" portfolios. This would be a "snapshot in time" measure to see what the student accomplished during the year. This idea would be necessary if we had a larger drop rate than expected or if we wanted to study a part of the process more. The yearly portfolio would be similar to the current ABET "course notebook" idea, except it would cover a student as opposed to a course.

Note that portfolio evaluation is largely qualitative, subjective, and time consuming. We can get more precise if we have guidelines for the particular scores, however I believe that is unlikely to occur. We have to ensure that the review committee has credibility and has little to no interest in the outcome of the review. This suggests that outside reviewers should be used when possible (departments can review work from students in other departments, industry and alumni reviewers).

ABET Portfolio Material

Freshman Year

- resume
- education plan developed in 102
- student self assessment of strengths, weaknesses, and preparation for college
- 3rd design project report from 102
- video presentation from 102

Sophomore Year

- resume
- SAPR for advanced standing
- student self assessment of progress to date, strengths and weaknesses
- project report from any class
- pre-requisite tests or assignments
- > 3 homework assignments from a course with engineering science and analysis
- final exam from a course with engineering science and analysis
- > 1 assignment/report that includes design work
- lab report that includes the design, operation, analysis, and presentation of an experiment

Junior Year

- resume
- end of year SAPR
- student self assessment of progress to date, strengths and weaknesses
- project report from any class
- pre-requisite tests or assignments
- > 3 homework assignments from 1 course with engineering science and analysis
- final exam from 2 courses with engineering science and analysis
- > 1 assignment/report that includes design work
- lab report that includes the design, operation, analysis, and presentation of an experiment

Senior Year

- resume
- final SAPR after graduation
- student self assessment of progress to date, strengths and weaknesses
- career plan
- senior project report
- pre-requisite tests or assignments
- > 3 homework assignments from 1 course with engineering science and analysis
- > 1 assignment/report that includes design work
- exit exam or final exam from 2 courses in the department
- video presentation

Appendix

- undergraduate research reports
- honors thesis
- co-op or internship reports

Optional

- student home page
- H&SS course project reports
- English 101/102 assignments
- UDWPE results