

Assessment: Program Four Column

Program (PBE) - Paper Engineering BS

Program Learning Outcomes	Measurement Scale	Results	Actions																																								
<p>ABET - a. Knowledge 11-12 - An ability to apply knowledge of mathematics, science, and engineering</p> <p>Outcome Year(s): 2011 - 2012</p> <p>PLO Target Met?: 3 - Met expectations</p>	<p>Exam/Quiz - In Course - %, An exam is given at the first day of class in PSE 370 (Mass and energy balances) that covers general chemistry, physics, and calculus for the PSE 370 course.</p> <p>The exam should help students identify their deficiencies and prepare them for the upcoming assignments in the course.</p> <p>Target: We expect that 80% of the students will score 75% or above on the exam. We expect all students to score 60% or above.</p> <p>Rubric: No rubric used</p>	<p>Reporting Period: 2011 - 2012</p> <p>Target Met: Evaluation - Met Target</p> <p>PSE 370 Prerequisite Exam (a): Chemistry Physics, Calculus</p> <table border="1" data-bbox="949 673 1612 966"> <thead> <tr> <th>Year</th> <th>Students</th> <th>Average</th> <th>Above 75%</th> <th>Above 60%</th> </tr> </thead> <tbody> <tr> <td>Benchmark</td> <td></td> <td>score</td> <td>80%</td> <td>100%</td> </tr> <tr> <td>2007</td> <td>10</td> <td>60.9%</td> <td>20%</td> <td>50%</td> </tr> <tr> <td>2008</td> <td>25</td> <td>77.8.%</td> <td>60%</td> <td>84%</td> </tr> <tr> <td>2009</td> <td>34</td> <td>80.8.%</td> <td>59%</td> <td>82%</td> </tr> <tr> <td>2010</td> <td>24</td> <td>79.9%</td> <td>63%</td> <td>100%</td> </tr> <tr> <td>2011</td> <td>37</td> <td>85.6%</td> <td>86%</td> <td>95%</td> </tr> <tr> <td>2012</td> <td>N/A</td> <td>N/A%</td> <td></td> <td></td> </tr> </tbody> </table> <p>The prerequisite exam in PSE 370 serves multiple purposes. First of all, it identifies to students those areas in which a review of basic material may be needed. It also serves to inform students more strongly of the expectations of knowledge going into the class.</p> <p>In general, students over the past five (5) years have been prepared for PSE 370, which represents the first engineering course taken by most of the students. Over this time frame, only in 2011 and 2010 students exceeded the benchmark. No concerning weaknesses were found amongst all students, indicating that the Chemistry, Physics, and Calculus courses are appropriately preparing students for their engineering classes. Any systematic weaknesses would be communicated to the instructors of these courses, although this has not been necessary. (11/20/2012)</p>	Year	Students	Average	Above 75%	Above 60%	Benchmark		score	80%	100%	2007	10	60.9%	20%	50%	2008	25	77.8.%	60%	84%	2009	34	80.8.%	59%	82%	2010	24	79.9%	63%	100%	2011	37	85.6%	86%	95%	2012	N/A	N/A%			<p>Action: No action planned for this outcome. (11/20/2012)</p>
Year	Students	Average	Above 75%	Above 60%																																							
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2012	N/A	N/A%																																									

Program Learning Outcomes

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Exam/Quiz - In Course - %, Pre-requisite exam in PSE 468. A quiz was administered in the first week of the class to ensure general papermaking knowledge for the PSE 468 course.

Target: We expect that 80% of the students will score 75% or above on the exam. We expect all students to score 60% or above.

Rubric: No rubric used

Reporting Period: 2011 - 2012

Target Met: Evaluation - Met Target

PSE 468 Prerequisite Exam (a): Engineering calculations, Papermaking Knowledge

Year	Students	Average	Above 75%	Above 60%
Benchmark		score	80%	100%
2007*	8	N/A	N/A	N/A
2008**	N/A	N/A	N/A	N/A
2009	7	74.7	71.4%	71.4%
2010	10	75.8	40%	80%
2011	7	90.6	85.7%	100%
2012	11	87.4	90.9%	100%

Action: There is no action planned for this outcome. (11/20/2012)

The prerequisite exam in PSE 468 serves multiple purposes. First of all, it identifies to students those areas in which a review of basic material may be needed. It also serves to more strongly inform students of the expectations of knowledge going into the class.

In general, students over the past four years have been well prepared, with some exceptions for 2009 and 2010 for PSE 468, which represents the final papermaking capstone engineering course taken by every student in the Paper Engineering program in their senior year. Over the four year time frame, two (2) students in 2009 and two (2) students in 2010 fell below the 60% level on the prerequisite exam (score of 56 in 2009 and score of 63 in 2010). These students went on to pass the course with a grade of a ?B-? in 2009 and a grade of ?B and B-? in 2010. No systematic weaknesses were found amongst all students, indicating that the Chemistry, Physics, Calculus and papermaking courses are appropriately preparing students for their final papermaking engineering classes. Any systematic weaknesses would be communicated to the instructors of these courses, although this has not been necessary.

*During the 2007 PSE468 course no assessment data were

Program Learning Outcomes	Measurement Scale	Results	Actions
		<p>generated. **Course not offered due to low enrollment. Students that would have taken the course in 2008 took the course in 2007 or 2009. (11/20/2012)</p> <hr/> <p>Presentation/Performance - A, B, C, D - In PSE 468 evaluation seminar at the conclusion of the paper machine run, the students give seminars and field questions regarding their plan, performance, and results of the product design experience. Each team has approximately 30 minutes for a presentation and 60 minutes for questions and discussion. A panel of faculty and staff, including the course instructor and the TA, independently rate the students' abilities to analyze and present data from the paper machine runs. The ratings were specifically broken out with respect to the PSE student outcomes ?a, b, c, e, I and k?. Target: We expect the average grade to be a B- on Run A and a B on the Run B. We expect 80% of the students to achieve a grade of C or better on Run A and 90% of the students to achieve a grade of C or better on Run B for student outcomes ?a, b, c, e, i, and k? Rubric: No rubric used</p>	<p>Action: There is no action planned. (11/20/2012)</p>
	<p>Survey of Students - 5 - Exceptionally satisfied 4 - Satisfied 3 - Minimally meet 2 - Approaching to the outcome 1 - Did not meet Target: It is expected that the students perform at a benchmark</p>	<p>Reporting Period: 2011 - 2012 Target Met: Evaluation - Met Target Achieved responses indicate that 100% of the interviewed students for years 2009 to 2011 agreed that the program outcome was achieved at a level of equal of above the benchmark. In 2008 the outcome was at 74% below the 80% benchmark. (11/20/2012) Related Documents:</p>	<p>Action: No action planned. (11/20/2012)</p>

Program Learning Outcomes	Measurement Scale	Results	Actions
	<p>level of 80% for outcomes .</p> <p>Rubric: No rubric used</p> <p>Survey of alumni - I - Introduced R - Re-inforced E - Expert Target: It is expected that the survey participants identify the Paper Engineering program needs at a minimum of an introductory level (I). Rubric: No rubric used</p> <p>Group Project - In PSE 468, students cross evaluat each other on their performance in the capstone (lab) project. 0 through 10 Target: At least 6.5 Notes: Student cross evaluation of outcome a through l overall. Rubric: No rubric used</p>	<p>Exit-PEN.docx</p> <p>Reporting Period: 2011 - 2012 Target Met: Evaluation - Met Target of 15 responded: 4 (I), 3 (R), and 8 (E). Therefore, at least an introductory level has been achieved. (11/20/2012) Related Documents: Alumni-PEN.docx</p> <p>Reporting Period: 2011 - 2012 Target Met: Evaluation - Met Target Above 6.5 (11/20/2012) Related Documents: PSE 468 - cross-rating.docx</p>	<p>Action: No action planned. (11/20/2012)</p> <p>Action: No action planned. (11/20/2012)</p>
<p>ABET - b. Experiments 11-12 - An ability to design and conduct experiments, as well as to analyze and interpret data Outcome Year(s): 2011 - 2012 PLO Target Met?: 3 - Met expectations</p>	<p>Presentation/Performance - A, B, C, D - In PSE 468 evaluation seminar at the conclusion of the paper machine run, the students give seminars and field questions regarding their plan, performance, and results of the product design experience. Each team has approximately 30 minutes for a presentation and 60 minutes for questions and discussion. A panel of faculty and staff, including the course instructor and the TA, independently rate the students' abilities to analyze and present data from the paper machine runs. The ratings were specifically broken out with respect to the PSE student outcomes ?a, b, c, e, l and k?. Target: We expect the average grade</p>	<p>Reporting Period: 2011 - 2012 Target Met: Evaluation - Met Target all students met the expectations of receiving above a grade of ?C? on the presentations, except 30% of the students in Run A and 90% of the students for Run B in 2010. (11/20/2012) Related Documents: PSE 468 - Student Seminar.docx</p>	<p>Action: No action planned. (11/20/2012)</p>

Program Learning Outcomes	Measurement Scale	Results	Actions
	<p>to be a B- on Run A and a B on the Run B. We expect 80% of the students to achieve a grade of C or better on Run A and 90% of the students to achieve a grade of C or better on Run B for student outcomes ?a, b, c, e, i, and k?</p> <p>Rubric: No rubric used</p>		
	<p>Survey of Students - 5 - Exceptionally satisfied 4 - Satisfied 3 - Minimally meet 2 - Approaching to the outcome 1 - Did not meet Target: It is expected that the students perform at a benchmark level of 80% for outcomes .</p>	<p>Reporting Period: 2011 - 2012 Target Met: Evaluation - Met Target Achieved responses indicate that 100% of the interviewed students for years 2009 and 2011 agreed that the program outcome was achieved at a level of equal of above the benchmark. In 2007 and 2009 the outcome was at 71% and 75% below the 80% benchmark. (11/20/2012) Related Documents: Exit-PEN.docx</p>	<p>Action: No action planned. (11/20/2012)</p>
	<p>Course Grade - A, B, C, D Target: Average C Rubric: No rubric used</p>	<p>Reporting Period: 2011 - 2012 Target Met: Evaluation - Met Target all students met the expectations of receiving a grade of ?C? or above for their report. (11/20/2012) Related Documents: abdefgijk-PEN468-grade.docx</p>	<p>Action: No action planned. (11/20/2012)</p>
	<p>Capstone Assignment/Project - % - The three main guiding threads in a design project are scope, schedule and budget, which are progressively refined and made more detailed as the design progresses over the semester. Thus, at the very beginning of a design project, the students have to make a rough cost estimation and potential profitability analysis of their project (along with a preliminary scope and schedule) in order to arrive at decision of whether to proceed further or not. This is further assessed by in-class interaction and exploration with the</p>	<p>Reporting Period: 2011 - 2012 Target Met: Evaluation - Met Target The design team scores in the different categories shown in Table I8-2 are used to assess these outcomes. It can be concluded from Table I8-2, and Table , and Table I8-5 that, in general, students satisfied this outcome satisfactorily. During the year 2007, the percentage of design teams at or above the benchmark level was 100% in almost all of the categories (Table). There was a drop in performance in 2008-09 to 33%, an increase in 2010 to 67%, with maintenance of this level in 2011. Table I8-5 shows that over a 5-year period (2007-2011), the design team performance was a little below or exceeded the benchmark level in the different categories with the overall score of 82.84 exceeding the benchmark level of 80. (11/20/2012) Related Documents:</p>	<p>Action: Continue to watch the trend and improve on the design course. (11/20/2012)</p>

<i>Program Learning Outcomes</i>	<i>Measurement Scale</i>	<i>Results</i>	<i>Actions</i>
	<p>students on the future direction of the design project, and by evaluation of the design team's weekly class presentations and written summaries (10% of total grade) and engineering log book (10% of total grade). The overall progress of a design team is assessed from two mid-semester progress reports (25% of total grade) and one final technical design report (45% of total grade).</p> <p>This capstone design course (PSE 481) involves the execution of a real-world engineering design project during the fall semester at RockTenn Solvay Mill (previously Solvay Paperboard), a paperboard mill located in Solvay, New York. Each design team maintains an engineering logbook containing all relevant approaches, data and calculations in an organized fashion. Every week, each team submits a brief written summary of its progress and makes a brief in-class presentation. There are extensive discussions and communication between the design teams, instructors, mill personnel, and external vendors with continuous monitoring of the progress of a design team towards the design goal. The results of the work of each team are summarized in a technical design report, which is submitted near the end of the semester. Two mid-semester progress reports are also required. In addition, at the end</p>	<p>bc-PSE 481.docx</p>	

*Program Learning
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Measurement Scale

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of the semester, each design team makes a presentation of its completed project to the Paper and Bioprocess Engineering department and prepares a poster of its project. The students undergo safety training at the mill so that they can operate safely in an industrial environment and professional and ethical responsibilities of engineers have been communicated via videos and in-class discussion.

Most classes are held at the mill site. In 2009, Ms. Shiuli Mahmud, PBE graduate student, made a presentation to the class that was titled "Six Sigma and Managing Changes Effectively." During 2009-2011 the class watched a video called "Inferno: Dust Explosion at Imperial Sugar" available at the website of the U.S. Chemical Safety Board (www.csb.gov). Dr. Jose Iribarne, co-instructor of this course and currently Director, Mill Strategic Projects & Technology, RockTenn Corporate Engineering, usually offers a class presentation on project management issues (titled "Project Management 101") to the students. In 2011, the class also watched the following safety video: "Fatal exposure: Tragedy at DuPont and videos on engineering ethics."

Target: It is expected that the students perform at a benchmark level of 80% in the different instrument categories shown in Table 18-2.

Rubric: No rubric used

Program Learning Outcomes	Measurement Scale	Results	Actions
	<p>Related Documents: bc-PSE 481.docx</p> <p>Group Project - In PSE 468, students cross evaluate each other on their performance in the capstone (lab) project. 0 through 10 Target: At least 6.5 Notes: Student cross evaluation of a through I overall. Rubric: No rubric used</p>	<p>Reporting Period: 2011 - 2012 Target Met: Evaluation - Met Target Above 6.5 exclusively. (11/20/2012) Related Documents: PSE 468 - cross-rating.docx</p>	<p>Action: No action planned. (11/20/2012)</p>
<p>ABET - c. Design 11-12 - An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability Outcome Year(s): 2011 - 2012 PLO Target Met?: 3 - Met expectations</p>	<p>Presentation/Performance - A, B, C, D - In PSE 468 evaluation seminar at the conclusion of the paper machine run, the students give seminars and field questions regarding their plan, performance, and results of the product design experience. Each team has approximately 30 minutes for a presentation and 60 minutes for questions and discussion. A panel of faculty and staff, including the course instructor and the TA, independently rate the students' abilities to analyze and present data from the paper machine runs. The ratings were specifically broken out with respect to the PSE student outcomes ?a, b, c, e, I and k?. Target: We expect the average grade to be a B- on Run A and a B on the Run B. We expect 80% of the students to achieve a grade of C or better on Run A and 90% of the students to achieve a grade of C or better on Run B for student outcomes ?a, b, c, e, i, and k? Rubric: No rubric used</p>	<p>Reporting Period: 2011 - 2012 Target Met: Evaluation - Met Target All students met the expectation of receiving above a grade of ?C? on the presentations, except 30% of the students in Run A and 90% of the students for Run B in 2010. (11/20/2012) Related Documents: PSE 468 - Student Seminar.docx</p>	<p>Action: No action planned. (11/20/2012)</p>

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	<p>Survey of Students - 5 - Exceptionally satisfied 4 - Satisfied 3 - Minimally meet 2 - Approaching to the outcome 1 - Did not meet Target: It is expected that the students perform at a benchmark level of 80% for outcomes .</p>	<p>Reporting Period: 2011 - 2012 Target Met: Evaluation - Met Target Achieved responses indicate that 100% of the interviewed students for years 2008, 2009, and 2011 agreed that the program outcome was achieved at a level of equal of above the benchmark. In 2010 the outcome was at 65% below the 80% benchmark. (11/20/2012) Related Documents: Exit-PEN.docx</p>	<p>Action: No action planned. (11/20/2012)</p>
	<p>Survey of alumni - I - Introduced R - Re-inforced E - Expert Target: It is expected that the survey participants identify the Paper Engineering program needs at a minimum of an introductory level (I).</p>	<p>Reporting Period: 2011 - 2012 Target Met: Evaluation - Met Target of the 17 responded: 5(I), 4(R) and 8(E). Therefore, all responded agree that an introductory level has been achieved. (11/20/2012) Related Documents: Alumni-PEN.docx</p>	<p>Action: No action needed. (11/20/2012)</p>
	<p>Capstone Assignment/Project - % - The three main guiding threads in a design project are scope, schedule and budget, which are progressively refined and made more detailed as the design progresses over the semester. Thus, at the very beginning of a design project, the students have to make a rough cost estimation and potential profitability analysis of their project (along with a preliminary scope and schedule) in order to arrive at decision of whether to proceed further or not. This is further assessed by in-class interaction and exploration with the students on the future direction of the design project, and by evaluation of the design team?s weekly class presentations and written summaries (10% of total grade) and engineering log book (10% of total grade). The overall progress of a</p>	<p>Reporting Period: 2011 - 2012 Target Met: Evaluation - Met Target The design team scores in the different categories shown in Table I8-2 are used to assess these outcomes. It can be concluded from Table I8-2, and Table , and Table I8-5 that, in general, students satisfied this outcome satisfactorily. During the year 2007, the percentage of design teams at or above the benchmark level was 100% in almost all of the categories (Table). There was a drop in performance in 2008-09 to 33%, an increase in 2010 to 67%, with maintenance of this level in 2011. Table I8-5 shows that over a 5-year period (2007-2011), the design team performance was a little below or exceeded the benchmark level in the different categories with the overall score of 82.84 exceeding the benchmark level of 80 (11/20/2012) Related Documents: bc-PSE 481.docx</p>	<p>Action: No action planned. (11/20/2012)</p>

*Program Learning
Outcomes*

Measurement Scale

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design team is assessed from two mid-semester progress reports (25% of total grade) and one final technical design report (45% of total grade).

This capstone design course (PSE 481) involves the execution of a real-world engineering design project during the fall semester at RockTenn Solvay Mill (previously Solvay Paperboard), a paperboard mill located in Solvay, New York. Each design team maintains an engineering logbook containing all relevant approaches, data and calculations in an organized fashion. Every week, each team submits a brief written summary of its progress and makes a brief in-class presentation. There are extensive discussions and communication between the design teams, instructors, mill personnel, and external vendors with continuous monitoring of the progress of a design team towards the design goal. The results of the work of each team are summarized in a technical design report, which is submitted near the end of the semester. Two mid-semester progress reports are also required. In addition, at the end of the semester, each design team makes a presentation of its completed project to the Paper and Bioprocess Engineering department and prepares a poster of its project. The students undergo safety training at the mill so that they can operate

Program Learning Outcomes	Measurement Scale	Results	Actions
	<p>safely in an industrial environment and professional and ethical responsibilities of engineers have been communicated via videos and in-class discussion.</p> <p>Most classes are held at the mill site. In 2009, Ms. Shiuli Mahmud, PBE graduate student, made a presentation to the class that was titled "Six Sigma and Managing Changes Effectively." During 2009-2011 the class watched a video called "Inferno: Dust Explosion at Imperial Sugar" available at the website of the U.S. Chemical Safety Board (www.csb.gov). Dr. Jose Iribarne, co-instructor of this course and currently Director, Mill Strategic Projects & Technology, RockTenn Corporate Engineering, usually offers a class presentation on project management issues (titled "Project Management 101") to the students. In 2011, the class also watched the following safety video: "Fatal exposure: Tragedy at DuPont and videos on engineering ethics.</p> <p>Target: It is expected that the students perform at a benchmark level of 80% in the different instrument categories shown in Table I8-2.</p>	<p>Reporting Period: 2011 - 2012</p> <p>Target Met: Evaluation - Met Target Above 6.5 exclusively. (11/20/2012)</p> <p>Related Documents: PSE 468 - cross-rating.docx</p>	<p>Action: No action planned. (11/20/2012)</p>
	<p>Group Project - In PSE 468, students cross evaluate each other on their performance in the capstone (lab) project.</p> <p>0 through 10</p> <p>Target: At least 6.5</p> <p>Notes: Student cross evaluation of a through I overall.</p>		

Program Learning Outcomes	Measurement Scale	Results	Actions
<p>ABET - d. Teamwork 11-12 - An ability to function on multi-disciplinary teams Outcome Year(s): 2011 - 2012 PLO Target Met?: 3 - Met expectations</p>	<p>Rubric: No rubric used</p> <p>Presentation/Performance - A, B, C, D - In PSE 468 evaluation seminar at the conclusion of the paper machine run, the students give seminars and field questions regarding their plan, performance, and results of the product design experience. Each team has approximately 30 minutes for a presentation and 60 minutes for questions and discussion. A panel of faculty and staff, including the course instructor and the TA, independently rate the students' abilities to analyze and present data from the paper machine runs. The ratings were specifically broken out with respect to the PSE student outcomes ?a, b, c, e, I and k?. Target: We expect the average grade to be a B- on Run A and a B on the Run B. We expect 80% of the students to achieve a grade of C or better on Run A and 90% of the students to achieve a grade of C or better on Run B for student outcomes ?a, b, c, e, i, and k? Rubric: No rubric used</p>	<p>Reporting Period: 2011 - 2012 Target Met: Evaluation - Met Target All students met the expectations of receiving a grade of ?C? or above for their report. (11/20/2012) Related Documents: abdefgijk-PEN468-grade.docx</p>	<p>Action: No action planned. (11/20/2012)</p>
<p>Survey of Students - 5 - Exceptionally satisfied 4 - Satisfied 3 - Minimally meet 2 - Approaching to the outcome 1 - Did not meet Target: It is expected that the students perform at a benchmark level of 80% for outcomes . Rubric: No rubric used</p>	<p>Reporting Period: 2011 - 2012 Target Met: Evaluation - Met Target Achieved responses indicate that 100% of the interviewed students agreed that the program outcome was achieved at a level of equal of above the benchmark of 70%. (11/20/2012) Related Documents: Exit-PEN.docx</p>	<p>Action: No action planned. (11/20/2012)</p>	

Program Learning Outcomes	Measurement Scale	Results	Actions
	<p>Group Project - In PSE 468, students cross evaluate each other on their performance in the capstone (lab) project. 0 through 10 Target: At least 6.5 Notes: Student cross evaluation of a through I overall. Rubric: No rubric used</p> <p>Capstone Assignment/Project - % - The real-world design problem is undertaken generally in groups of two students in each team. It is emphasized in the first class handout that proper planning and scheduling, and equitable division of responsibilities within each team are essential for the successful completion of the design project. The progress of each design team is regularly monitored through the semester via weekly class meetings, student weekly reports, progress reports, and engineering logbook as mentioned earlier. Target: It is expected that the students perform at a benchmark level of 80% (36/45) in the category "Technical design report" shown in Table I8-2 Rubric: No rubric used</p>	<p>Reporting Period: 2011 - 2012 Target Met: Evaluation - Met Target Above 6.5 exclusively. (11/20/2012) Related Documents: PSE 468 - cross-rating.docx</p> <p>Reporting Period: 2011 - 2012 Target Met: Evaluation - Met Target The successful solution of the design problem, as exemplified in the final technical design report submitted by each team (45% of total grade), which makes specific recommendations to RockTenn Solvay Mill, is used to assess this outcome. It can be observed from Table I8-2, , and Table that students satisfied this outcome very well since the percentage of design teams at or above the benchmark level was 100% during the period 2007 (Table). We note that in 2011, the class consisted of 3 students, respectively; this resulted in design teams that were constituted of only one person. In 2007 there was only one design team (consisting of 3 members). Table I8-5 shows that over an 5-year period (2007-2011), the average score for the technical design report was 36.43 (out of 45) and it ranged from 36.00-45.00, which can be compared to the benchmark level of 36. (11/20/2012) Related Documents: bc-PSE 481.docx</p>	<p>Action: No action planned. (11/20/2012)</p> <p>Action: No action planned. (11/20/2012)</p>
<p>ABET - e. Problem-solving 11-12 - An ability to identify, formulate, and solve engineering problems Outcome Year(s): 2011 - 2012 PLO Target Met?: 3 - Met expectations</p>	<p>Presentation/Performance - A, B, C, D - In PSE 468 evaluation seminar at the conclusion of the paper machine run, the students give seminars and field questions regarding their plan, performance, and results of the product design experience. Each team has approximately 30 minutes</p>	<p>Reporting Period: 2011 - 2012 Target Met: Evaluation - Met Target All students met the expectations of receiving a grade of "C" or above for their report. (11/20/2012) Related Documents: PSE 468 - Student Seminar.docx</p>	<p>Action: No action planned. (11/20/2012)</p>

Program Learning Outcomes	Measurement Scale	Results	Actions
	<p>for a presentation and 60 minutes for questions and discussion. A panel of faculty and staff, including the course instructor and the TA, independently rate the students' abilities to analyze and present data from the paper machine runs. The ratings were specifically broken out with respect to the PSE student outcomes ?a, b, c, e, I and k?.</p> <p>Target: We expect the average grade to be a B- on Run A and a B on the Run B. We expect 80% of the students to achieve a grade of C or better on Run A and 90% of the students to achieve a grade of C or better on Run B for student outcomes ?a, b, c, e, i, and k?.</p> <p>Rubric: No rubric used</p>		
	<p>Survey of Students - 5 - Exceptionally satisfied 4 - Satisfied 3 - Minimally meet 2 - Approaching to the outcome 1 - Did not meet</p> <p>Target: It is expected that the students perform at a benchmark level of 80% for outcomes .</p> <p>Rubric: No rubric used</p>	<p>Reporting Period: 2011 - 2012 Target Met: Evaluation - Met Target Achieved responses indicate that 100% of the interviewed students agreed that the program outcome was achieved at a level of equal of above the benchmark of 80%. (11/20/2012)</p> <p>Related Documents: Exit-PEN.docx</p>	<p>Action: No action planned. (11/20/2012)</p>
	<p>Course Grade - A, B, C, D Target: Average C Rubric: No rubric used</p>	<p>Reporting Period: 2011 - 2012 Target Met: Evaluation - Met Target all students met the expectations of receiving above a grade of ?C? on the presentations, except 30% of the students in Run A and 90% of the students for Run B in 2010. (11/20/2012)</p> <p>Related Documents: a-b-c-e-k-PSE 468.docx</p>	<p>Action: No action planned. (11/20/2012)</p>
	<p>Capstone Assignment/Project - % - The real-world design problem is</p>	<p>Reporting Period: 2011 - 2012 Target Met: Evaluation - Met Target</p>	<p>Action: No action planned. (11/20/2012)</p>

Program Learning Outcomes	Measurement Scale	Results	Actions
	<p>undertaken generally in groups of two students in each team. It is emphasized in the first class handout that proper planning and scheduling, and equitable division of responsibilities within each team are essential for the successful completion of the design project. The progress of each design team is regularly monitored through the semester via weekly class meetings, student weekly reports, progress reports, and engineering logbook as mentioned earlier.</p> <p>Target: It is expected that the students perform at a benchmark level of 80% (36/45) in the category "Technical design report" shown in Table I8-2</p> <p>Rubric: No rubric used</p>	<p>The successful solution of the design problem, as exemplified in the final technical design report submitted by each team (45% of total grade), which makes specific recommendations to RockTenn Solvay Mill, is used to assess this outcome. It can be observed from Table I8-2, , and Table that students satisfied this outcome very well since the percentage of design teams at or above the benchmark level was 100% during the period 2007 (Table). We note that in 2011, the class consisted of 3 students, respectively; this resulted in design teams that were constituted of only one person. In 2007 there was only one design team (consisting of 3 members). Table I8-5 shows that over an 5-year period (2007-2011), the average score for the technical design report was 36.43 (out of 45) and it ranged from 36.00-45.00, which can be compared to the benchmark level of 36. (11/20/2012)</p> <p>Related Documents: abdefgijk-PEN468-grade.docx</p>	
<p>ABET - f. Ethics 11-12 - An understanding of professional and ethical responsibility.</p> <p>Outcome Year(s): 2011 - 2012</p> <p>PLO Target Met?: 3 - Met expectations</p>	<p>Group Project - In PSE 468, students cross evaluate each other on their performance in the capstone (lab) project. 0 through 10</p> <p>Target: At least 6.5</p> <p>Notes: Student cross evaluation of a through I overall.</p> <p>Rubric: No rubric used</p>	<p>Reporting Period: 2011 - 2012</p> <p>Target Met: Evaluation - Met Target Above 6.5 exclusively. (11/20/2012)</p> <p>Related Documents: PSE 468 - cross-rating.docx</p>	<p>Action: No action planned. (11/20/2012)</p>
	<p>Presentation/Performance - A, B, C, D - The students in PSE 468 (Papermaking Processes) must produce a final report for each of the two large paper semi commercial paper machine runs plus a grade specific report for each paper grade produced on the large paper machine. Each report encompasses the paper grades produced.</p>	<p>Reporting Period: 2011 - 2012</p> <p>Target Met: Evaluation - Met Target all students met the expectations of receiving a grade of "C" or above for their report. (11/20/2012)</p> <p>Related Documents: abdefgijk-PEN468-grade.docx</p>	<p>Action: No action planned. (11/20/2012)</p>

Program Learning Outcomes	Measurement Scale	Results	Actions
<p>Target: We expect that the mean written quality of the report to be above average (score = 3.0) based on the rubric given. We also expect that all sections will be average (score = 2).</p> <p>Rubric: No rubric used</p>	<p>Survey of Students - 5 - Exceptionally satisfied 4 - Satisfied 3 - Minimally meet 2 - Approaching to the outcome 1 - Did not meet</p> <p>Target: It is expected that the students perform at a benchmark level of 80% for outcomes .</p>	<p>Reporting Period: 2011 - 2012</p> <p>Target Met: Evaluation - Met Target Achieved responses indicate that the interviewed students agreed for year 2010 to 2011 that the program outcome was achieved at a level of equal of above the benchmark of 80%. In 2008 the outcome was at 77% below the 80% benchmark. (11/20/2012)</p> <p>Related Documents: Exit-PEN.docx</p>	<p>Action: No action planned. (11/20/2012)</p>
<p>Group Project - In PSE 468, students cross evaluat each other on their performance in the capstone (lab) project. 0 through 10</p> <p>Target: At least 6.5</p> <p>Notes: Student cross evaluation of a through l overall.</p> <p>Rubric: No rubric used</p>	<p>Course Assignment - Seminar grade: A, B, C, D</p> <p>Target: above C</p> <p>Rubric: No rubric used</p>	<p>Reporting Period: 2011 - 2012</p> <p>Target Met: Evaluation - Met Target Above 6.5 exclusively. (11/20/2012)</p> <p>Related Documents: PSE 468 - cross-rating.docx</p>	<p>Action: No action planned. (11/20/2012)</p>
<p>Course Assignment - PSE 132 - Ethics seminar reflection paper: Exceptional Satisfactory</p> <p>and ethical responsibility survey in class: 1 None 2</p>	<p>Course Assignment - PSE 132 - Ethics seminar reflection paper: Exceptional Satisfactory</p> <p>and ethical responsibility survey in class: 1 None 2</p>	<p>Reporting Period: 2011 - 2012</p> <p>Target Met: Evaluation - Met Target 100% students demonstrated at least satisfactory in reflection paper, and all scored at least adequate in survey. (11/21/2012)</p> <p>Related Documents: PSE 132 Orientation Seminar Outcome.docx</p>	<p>Action: No action planned. (11/21/2012)</p>

Program Learning Outcomes	Measurement Scale	Results	Actions
	3 Adequate 4 5 Exceptional Target: At least satisfied in ethical responsibility reflection paper and adequate in survey. Rubric: No rubric used		
	Field Placement/Internship Evaluation - PSE 304/5 internship survey: 1 through 5 Target: At least average 3 Rubric: No rubric used	Reporting Period: 2011 - 2012 Target Met: Evaluation - Met Target The student performance in the industrial internship is an excellent test of knowledge of ethical and professional responsibility. The supervisors work in close contact with students in an environment that requires adaptation to engineering professionalism required for a manufacturing facility. Supervisors have rated our students well for their dependability, attendance and punctuality as indicated by scores that well exceed expectations. Professional judgment scores were below 4.00 during 2008-2010 but exceeded the benchmark in 2011. The score for this category may vary depending on the mean class ranking of the cohort being surveyed (average age and maturity). Professional judgment can improve over the course of a single internship, and certainly develops as students repeat the internship experience. Performance of this can be addressed in pre-internship meetings where through e.g. role plays the ethical and professional judgment will be increased. We also note that at present, training in professional ethics is provided to the students in PSE 304/305 in the spring semester (before they leave for their internship) by Dr. William P. Tully, Provost/VP Academic Affairs Emeritus and Professor Emeritus, Environmental Resources and Forest Engineering of SUNY-ESF. As part of this training, the students are shown a video on professional ethics titled ?Incident at Morales? and are given a six-item survey in which they have to submit paragraph(s) on an aspect of professional ethics. This formed 5% of their final grade in 2009, 2010 and 2011 with average scores of 4.125/5, 4.563/5 and 3.625/5 (for students who submitted the ethics assignment), respectively. The decrease in this category in 2011 is due to a low score obtained by one student and	Action: No action planned. (11/21/2012)

Program Learning Outcomes	Measurement Scale	Results	Actions
		<p>does not reflect the general trend. The Code of Ethics for Engineers (by the National Society of Professional Engineers) is also given to the students as a class handout. Our metric indicates that we are continuing to meet most targets for Outcome (f). Attention should be given to improving our students' awareness of professional judgment. (11/21/2012)</p> <p>Related Documents: PSE 304 Outcome f.docx</p>	
<p>ABET - g. Communication 11-12 - Ability to communicate effectively</p> <p>Outcome Year(s): 2011 - 2012</p> <p>PLO Target Met?: 3 - Met expectations</p>	<p>Exam/Quiz - In Course - A quiz was administered after industrial (guest) seminar which is relevant to the outcome in the course: A, B, C, D</p> <p>Target: At least C</p> <p>Rubric: No rubric used</p>	<p>Reporting Period: 2011 - 2012</p> <p>Target Met: Evaluation - Met Target</p> <p>As can be seen from the above data, student outcomes (Ethics), i (Life-long Learning), j (Contemporary issues) were achieved by students in the years 2009 to 2012 by achieving a average Seminar grade of B-(2.7) or better. All students except one in 2010 met the expectation of receiving a seminar grade of C (2.0). (11/21/2012)</p> <p>Related Documents: PSE 468 - Industrial Seminar.docx</p>	<p>Action: No action planned. (11/21/2012)</p>
	<p>Survey of Students - 5 - Exceptionally satisfied 4 - Satisfied 3 - Minimally meet 2 - Approaching to the outcome 1 - Did not meet</p> <p>Target: It is expected that the students perform at a benchmark level of 80% for outcomes .</p>	<p>Reporting Period: 2011 - 2012</p> <p>Target Met: Evaluation - Met Target</p> <p>Achieved responses indicate that 100% of the interviewed students for years 2009 and 2011 agreed that the program outcome was achieved at a level of equal or above the benchmark. In 2008 and 2011 the outcome was at 77% and 75% below the 80% benchmark. (11/20/2012)</p> <p>Related Documents: Exit-PEN.docx</p>	<p>Action: No action planned. (11/20/2012)</p>
	<p>Group Project - In PSE 468, students cross evaluate each other on their performance in the capstone (lab) project. 0 through 10</p> <p>Target: At least 6.5</p> <p>Notes: Student cross evaluation of a through I overall.</p> <p>Rubric: No rubric used</p>	<p>Reporting Period: 2011 - 2012</p> <p>Target Met: Evaluation - Met Target</p> <p>Above 6.5 exclusively. (11/20/2012)</p> <p>Related Documents: PSE 468 - cross-rating.docx</p>	<p>Action: No action planned. (11/20/2012)</p>
	<p>Presentation/Performance - A, B, C,</p>	<p>Reporting Period: 2011 - 2012</p>	<p>Action: No action planned.</p>

Program Learning Outcomes	Measurement Scale	Results	Actions
	<p>D - The students in PSE 468 (Papermaking Processes) must produce a final report for each of the two large paper semi commercial paper machine runs plus a grade specific report for each paper grade produced on the large paper machine. Each report encompasses the paper grades produced.</p> <p>Target: We expect that the mean written quality of the report to be above average (score = 3.0) based on the rubric given. We also expect that all sections will be average (score = 2).</p> <p>Rubric: Rubric attached in Related Docs</p> <p>Related Documents: PSE 468 - Report.docx</p>	<p>Target Met: Evaluation - Met Target All students met the expectations of receiving a grade of ?C? or above for their report (11/21/2012)</p> <p>Related Documents: PSE 468 - Report.docx</p>	<p>(11/21/2012)</p>
	<p>Capstone Assignment/Project - % - The real-world design problem is undertaken generally in groups of two students in each team. It is emphasized in the first class handout that proper planning and scheduling, and equitable division of responsibilities within each team are essential for the successful completion of the design project. The progress of each design team is regularly monitored through the semester via weekly class meetings, student weekly reports, progress reports, and engineering logbook as mentioned earlier.</p> <p>Target: It is expected that the students perform at a benchmark level of 80% in the instrumental categories that involve oral and written communication (weekly</p>	<p>Reporting Period: 2011 - 2012</p> <p>Target Met: Evaluation - Met Target</p> <p>This outcome is assessed by monitoring and evaluating weekly class presentations and written summaries, progress reports, technical design report, design-team e-mails, and communications with mill personal and external vendors. In addition, each team presents their design to the Paper and Bioprocess Engineering (PBE) department and develops a poster of their design towards the end of the semester. The attendees at the design seminar evaluate the presentation. From the data presented in Table I8-2, Table , and Table I8-5, it can be concluded that in general the students met this outcome at a reasonably high level. It can be seen from Table I8-2 and Table that:</p> <p>(a) the design teams during 2007-2011 (except for one team in 2011) did not attain the benchmark in the weekly summary category;</p> <p>(b) In 2008 and 2010 one design team did not meet the benchmark for progress reports #1 and #2,</p> <p>(c) on average, from 2007-2011, 25% of teams met the benchmark for progress report #1 while 66.6% of teams</p>	<p>Action: No action planned. (11/21/2012)</p>

Program Learning Outcomes	Measurement Scale	Results	Actions
	<p>summary and class presentation, progress reports #1 and #2, technical design report, project presentation and poster) shown in Table I8-2. It is expected that the design team performance, as assessed by Dr. J. Iribarne (Director, Mill Strategic Projects & Technology, RockTenn Corporate Engineering), be at a benchmark level of 80% in the following instrumental categories: weekly class presentations of team progress, two mid-semester progress reports, final technical design report, and team presentation of their design project.</p> <p>Rubric: No rubric used</p>	<p>achieved the benchmark for progress report #2. Also, during 2009 and 2011 one of the design teams fell below the benchmark in the 'project presentation' category although the team scores in this category are equal or above the benchmark level (Table). Overall, as can be seen from Table I8-5, on average, during 2007-2011, scores in the top three categories (weekly summary, engineering logbook, progress report #1) were a little below the benchmark while those in last three categories (progress report #2, technical design report and project presentation) exceeded the benchmark level, which indicates that communication became increasingly more effective with the progress of the design project. Table I8-5 also shows that the average total score of 82.84 is above the benchmark level of 80, which indicates that this outcome was satisfied.</p> <p>Further evidence of good communication skills is available in the PBE 481 course notebooks and in student technical design reports, which contain examples of e-mail messages and communications between the design teams and mill personnel and external vendors.</p> <p>The design problems are real engineering projects at RockTenn Solvay Mill with a good potential of being implemented. Classes are held at the mill site and the students perform their projects in a mill environment. The students also undergo safety training in the mill so that they can operate safely in an industrial setting. (11/21/2012)</p> <p>Related Documents: PSE 481.docx</p>	
<p>ABET - h. Broad education 11-12 - The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context Outcome Year(s): 2011 - 2012 PLO Target Met?: 3 - Met expectations</p>	<p>Survey of Students - 5 - Exceptionally satisfied 4 - Satisfied 3 - Minimally meet 2 - Approaching to the outcome 1 - Did not meet Target: It is expected that the students perform at a benchmark level of 80% for outcomes .</p>	<p>Reporting Period: 2011 - 2012 Target Met: Evaluation - Met Target Achieved responses indicate that 100% of the interviewed students agreed that the program outcome was achieved at a level of equal of above the benchmark of 70% for the years 2010 and 2011. For the years 2008 and 2009 no opinion was given. (11/20/2012) Related Documents: Exit-PEN.docx</p>	<p>Action: No action planned. (11/20/2012)</p>

Program Learning Outcomes	Measurement Scale	Results	Actions
	<p>Survey of alumni - I - Introduced R - Re-inforced E - Expert Target: It is expected that the survey participants identify the Paper Engineering program needs at a minimum of an introductory level (I).</p>	<p>Reporting Period: 2011 - 2012 Target Met: Evaluation - Met Target of 4 alumni responded: 2 (I) and 2 (R). (11/21/2012)</p>	<p>Action: No action planned. (11/21/2012)</p>
	<p>Group Project - In PSE 468, students cross evaluate each other on their performance in the capstone (lab) project. 0 through 10 Target: At least 6.5 Notes: Student cross evaluation of a through I overall. Rubric: No rubric used</p>	<p>Reporting Period: 2011 - 2012 Target Met: Evaluation - Met Target Above 6.5 exclusively. (11/20/2012) Related Documents: PSE 468 - cross-rating.docx</p>	<p>Action: No action planned. (11/20/2012)</p>
	<p>Field Placement/Internship Evaluation - PSE 304/5 internship survey: 1 through 5 Target: At least average 3</p>	<p>Reporting Period: 2011 - 2012 Target Met: Evaluation - Met Target The ?academic preparedness? of the students met the expectations in the most recent years that this survey was administered. This suggests that the students possessed sufficient knowledge of contemporary societal and global issues in the opinion of engineering professionals who are keenly aware of the importance of this outcome. To further support this view, a question on the survey directly addressed the performance of students with regard to ?Broad societal issues regarding the paper industry (?big picture?)?. Comments were not provided for all students. In those cases where answers were provided, comments reflected, ?developing,? ?learning,? ?showed promise,? ?N/A,? ?OK,?? good general understanding,? ?Knows recycled paper. Would benefit from some experience in a pulp mill, caustic area or recovery boiler,? etc. over 2007-2011. In general, it is felt that Outcomes (h) and (j) are directly linked to Outcome (i) ? Life-long Learning, especially the need to adapt to changes in broad societal issues. Our metric indicates that we are continuing to meet our targets for both of these outcomes. (11/21/2012) Related Documents:</p>	<p>Action: No action planned. (11/21/2012)</p>

Program Learning Outcomes	Measurement Scale	Results	Actions
PSE 304 Outcome h-j.docx			
<p>ABET - i. Life-long learning 11-12 - A recognition of the need for, and an ability to engage in life-long learning</p> <p>Outcome Year(s): 2011 - 2012</p> <p>PLO Target Met?: 3 - Met expectations</p>	<p>Survey of Students - 5 - Exceptionally satisfied 4 - Satisfied 3 - Minimally meet 2 - Approaching to the outcome 1 - Did not meet</p> <p>Target: It is expected that the students perform at a benchmark level of 80% for outcomes .</p>	<p>Reporting Period: 2011 - 2012</p> <p>Target Met: Evaluation - Met Target</p> <p>Achieved responses indicate that 100% of the interviewed students agreed for the years 2010 to 2011 that the program outcome was achieved at a level of equal of above the benchmark of 80%. For the year 2008 the outcome was at 77% below the 80% benchmark. (11/20/2012)</p> <p>Related Documents: Exit-PEN.docx</p>	<p>Action: No action planned. (11/20/2012)</p>
	<p>Survey of alumni - I - Introduced R - Re-inforced E - Expert</p> <p>Target: It is expected that the survey participants identify the Paper Engineering program needs at a minimum of an introductory level (I).</p>	<p>Reporting Period: 2011 - 2012</p> <p>Target Met: Evaluation - Met Target</p> <p>of 3 alumni responded: 1 (I), 1 (R), and 1 (E) (11/21/2012)</p>	<p>Action: No action planned. (11/21/2012)</p>
	<p>Group Project - In PSE 468, students cross evaluat each other on their performance in the capstone (lab) project. 0 through 10</p> <p>Target: At least 6.5</p> <p>Notes: Student cross evaluation of a through I overall.</p> <p>Rubric: No rubric used</p>	<p>Reporting Period: 2011 - 2012</p> <p>Target Met: Evaluation - Met Target</p> <p>Above 6.5 exclusively. (11/20/2012)</p> <p>Related Documents: PSE 468 - cross-rating.docx</p>	<p>Action: No action planned. (11/20/2012)</p>
	<p>Course Assignment - Seminar grade: A, B, C, D</p> <p>Target: above C</p>	<p>Reporting Period: 2011 - 2012</p> <p>Target Met: Evaluation - Met Target</p> <p>Above C (11/20/2012)</p> <p>Related Documents: PSE 468 - fij.docx</p>	<p>Action: No planned action. (11/20/2012)</p>
	<p>Field Placement/Internship Evaluation - PSE 304/5 internship survey: 1 through 5</p> <p>Target: At least average 3</p>	<p>Reporting Period: 2011 - 2012</p> <p>Target Met: Evaluation - Met Target</p> <p>Outcome (i) ? Life-long Learning was assessed using the attitude and learning potential of students in the industrial work environment. Two questions on the EEF survey measured student performance by external review. For the</p>	<p>Action: No action planned. (11/21/2012)</p>

Program Learning Outcomes	Measurement Scale	Results	Actions
		<p>11 years shown above, students met the expectations that project the ability to continue life-long learning. The score in the category ?attitude? was 4.00 in 2011, and although it was below 4.00 in 2010 (and also in 2009); in general, as can be seen from the table, students met the expectations that project the ability to continue life-long learning. Further, in the most recent years, students were generally observed to improve performance over the course of their internship. This is a clear indication of continued growth and learning outside of the academic environment. Our metric indicates that we are continuing to meet our targets for Outcome (i). (11/21/2012)</p> <p>Related Documents: PSE 304 Outcome i.docx</p>	
	<p>Exam/Quiz - In Course - A quiz was administered after industrial (guest) seminar which is relevant to the outcome in the course: A, B, C, D Target: At least C</p>	<p>Reporting Period: 2011 - 2012 Target Met: Evaluation - Met Target As can be seen from the above data, student outcomes ?f (Ethics), i (Life-long Learning), j (Contemporary issues)? were achieved by students in the years 2009 to 2012 by achieving a average Seminar grade of B-(2.7) or better. All students except one in 2010 met the expectation of receiving a seminar grade of C (2.0). (11/21/2012)</p> <p>Related Documents: PSE 468 - Industrial Seminar.docx</p>	<p>Action: No action planned. (11/21/2012)</p>
	<p>Presentation/Performance - A, B, C, D - The students in PSE 468 (Papermaking Processes) must produce a final report for each of the two large paper semi commercial paper machine runs plus a grade specific report for each paper grade produced on the large paper machine. Each report encompasses the paper grades produced. Target: We expect that the mean written quality of the report to be above average (score = 3.0) based on the rubric given. We also expect that all sections will be average</p>	<p>Reporting Period: 2011 - 2012 Target Met: Evaluation - Met Target Students can demonstrate an understanding of the need for life-long learning by improving their performance during the course of a semester. All students in PSE 468 must produce a final report for each of the two large paper semi commercial paper machine runs encompassing the paper grades produced. Since the reports are assessed essentially the same way for Run A and Run B, an improvement in performance for the reports for Run A to Run B can demonstrate the ability for life-long learning The students generally demonstrated improvement from Run A to Run B with respect to the quality of the report presented. Since the outcomes were individually assessed by the instructor the students showed on average, an</p>	<p>Action: No action planned. (11/21/2012)</p>

Program Learning Outcomes	Measurement Scale	Results	Actions
	<p>(score = 2). Rubric: Rubric attached in Related Docs Related Documents: PSE 468 - Report.docx</p>	<p>improvement (on a 4-point scale) of 0.30 for the year 2009 and 1.00 for the year 2010. For the year 2011 student could not show an improvement since the second large papermachine run (Run B) could not be performed due to a severe thunderstorm damage which caused heavy flooding and resulted in 6 weeks of pilot plant shut down. In 2012 the student average did not show an improvement since their performance was already superior in Run A. Overall students demonstrated that they learn from their experience on the first run, demonstrating an ability and understanding of life-long learning (11/21/2012) Related Documents: PSE 468 - Report.docx</p>	
<p>ABET - j. Contemporary issues 11-12 - A knowledge of contemporary issues Outcome Year(s): 2011 - 2012 PLO Target Met?: 3 - Met expectations</p>	<p>Survey of Students - 5 - Exceptionally satisfied 4 - Satisfied 3 - Minimally meet 2 - Approaching to the outcome 1 - Did not meet Target: It is expected that the students perform at a benchmark level of 80% for outcomes .</p>	<p>Reporting Period: 2011 - 2012 Target Met: Evaluation - Met Target Achieved responses indicate that 100% of the interviewed students indicated that the program outcome below the benchmark of 70%. (11/20/2012) Related Documents: Exit-PEN.docx</p>	<p>Action: No action planned. (11/20/2012)</p>
	<p>Survey of alumni - I - Introduced R - Re-inforced E - Expert Target: It is expected that the survey participants identify the Paper Engineering program needs at a minimum of an introductory level (I).</p>	<p>Reporting Period: 2011 - 2012 Target Met: Evaluation - Met Target of 6 alumni responded: 1 (I), 4 (R) and 1 (E). (11/21/2012)</p>	<p>Action: No action planned. (11/21/2012)</p>
	<p>Group Project - In PSE 468, students cross evaluat each other on their performance in the capstone (lab) project. 0 through 10 Target: At least 6.5 Notes: Student cross evaluation of a through I overall. Rubric: No rubric used</p>	<p>Reporting Period: 2011 - 2012 Target Met: Evaluation - Met Target Above 6.5 exclusively. (11/20/2012) Related Documents: PSE 468 - cross-rating.docx</p>	<p>Action: No action planned. (11/20/2012)</p>

Program Learning Outcomes	Measurement Scale	Results	Actions
	<p>Course Assignment - Seminar grade: A, B, C, D Target: above C</p>	<p>Reporting Period: 2011 - 2012 Target Met: Evaluation - Met Target Above C (11/20/2012) Related Documents: PSE 468 - fij.docx</p>	<p>Action: No action planned. (11/20/2012)</p>
	<p>Field Placement/Internship Evaluation - PSE 304/5 internship survey: 1 through 5 Target: At least average 3</p>	<p>Reporting Period: 2011 - 2012 Target Met: Evaluation - Met Target The ?academic preparedness? of the students met the expectations in the most recent years that this survey was administered. This suggests that the students possessed sufficient knowledge of contemporary societal and global issues in the opinion of engineering professionals who are keenly aware of the importance of this outcome. To further support this view, a question on the survey directly addressed the performance of students with regard to ?Broad societal issues regarding the paper industry (?big picture?)?. Comments were not provided for all students. In those cases where answers were provided, comments reflected, ?developing,? ?learning,? ?showed promise,? ?N/A,? ?OK,?? good general understanding,? ?Knows recycled paper. Would benefit from some experience in a pulp mill, caustic area or recovery boiler,? etc. over 2007-2011. In general, it is felt that Outcomes (h) and (j) are directly linked to Outcome (i) ? Life-long Learning, especially the need to adapt to changes in broad societal issues. Our metric indicates that we are continuing to meet our targets for both of these outcomes. (11/21/2012) Related Documents: PSE 304 Outcome h-j.docx</p>	<p>Action: No action planned. (11/21/2012)</p>
	<p>Exam/Quiz - In Course - A quiz was administered after industrial (guest) seminar which is relevant to the outcome in the course: A, B, C, D Target: At least C</p>	<p>Reporting Period: 2011 - 2012 Target Met: Evaluation - Met Target As can be seen from the above data, student outcomes ?f (Ethics), i (Life-long Learning), j (Contemporary issues)? were achieved by students in the years 2009 to 2012 by achieving a average Seminar grade of B-(2.7) or better. All students except one in 2010 met the expectation of receiving a seminar grade of C (2.0). (11/21/2012) Related Documents: PSE 468 - Industrial Seminar.docx</p>	<p>Action: No action planned. (11/21/2012)</p>

Program Learning Outcomes	Measurement Scale	Results	Actions
	<p>Presentation/Performance - A, B, C, D - The students in PSE 468 (Papermaking Processes) must produce a final report for each of the two large paper semi commercial paper machine runs plus a grade specific report for each paper grade produced on the large paper machine. Each report encompasses the paper grades produced.</p> <p>Target: We expect that the mean written quality of the report to be above average (score = 3.0) based on the rubric given. We also expect that all sections will be average (score = 2).</p>	<p>Reporting Period: 2011 - 2012</p> <p>Target Met: Evaluation - Met Target All students met the expectations of receiving a grade of ?C? or above for their report. (11/21/2012)</p> <p>Related Documents: PSE 468 - Report.docx</p>	<p>Action: No action planned. (11/21/2012)</p>
<p>ABET - k. Engineering tools 11-12 - An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice</p> <p>Outcome Year(s): 2011 - 2012</p> <p>PLO Target Met?: 3 - Met expectations</p>	<p>Presentation/Performance - A, B, C, D - In PSE 468 evaluation seminar at the conclusion of the paper machine run, the students give seminars and field questions regarding their plan, performance, and results of the product design experience. Each team has approximately 30 minutes for a presentation and 60 minutes for questions and discussion. A panel of faculty and staff, including the course instructor and the TA, independently rate the students' abilities to analyze and present data from the paper machine runs. The ratings were specifically broken out with respect to the PSE student outcomes ?a, b, c, e, I and k?.</p> <p>Target: We expect the average grade to be a B- on Run A and a B on the Run B. We expect 80% of the students to achieve a grade of C or better on Run A and 90% of the</p>	<p>Reporting Period: 2011 - 2012</p> <p>Target Met: Evaluation - Met Target Students can demonstrate an understanding and ability of the need for life-long learning by improving their performance during the course of a semester. All students in PSE 468 must give a seminar and answer questions in a discussion-type setting based on their results of two semi-commercial paper machine runs (Run A and Run B). Since their performance is assessed essentially the same way in Run A and Run B, an improvement in performance from Run A to Run B can demonstrate the ability for life-long learning. The students generally demonstrated improvement from Run A to Run B with respect to the quality of the seminar and discussion based on their results and analysis. Since the outcomes were individually assessed by the faculty and staff, the students showed on average, an improvement (on a 4-point scale) of 0.12 for the year 2009 and 0.40 for the year 2011 and 0.29 for the year 2012. For 2010, the student average did not show an improvement. However one student in class showed an improvement in the seminar from Run A to Run B.</p> <p>Overall students demonstrated that they learn from their experience on the first run, demonstrating an ability and</p>	<p>Action: No action planned. (11/21/2012)</p>

Program Learning Outcomes	Measurement Scale	Results	Actions
students to achieve a grade of C or better on Run B for student outcomes ?a, b, c, e, i, and k?		understanding of life-long learning. (11/21/2012) Related Documents: PSE 468 - Student Seminar.docx	
Survey of Students - 5 - Exceptionally satisfied 4 - Satisfied 3 - Minimally meet 2 - Approaching to the outcome 1 - Did not meet Target: It is expected that the students perform at a benchmark level of 80% for outcomes .		Reporting Period: 2011 - 2012 Target Met: Evaluation - Met Target Achieved responses indicate that 100% of the interviewed students agreed for the year 2010 that the program outcome was achieved at a level of equal of above the benchmark of 80%. For the year 2011 the outcome was at 76% below the 80% benchmark. For the years 2008 and 2009 no opinion was given. (11/20/2012) Related Documents: Exit-PEN.docx	Action: No action planned. (11/20/2012)
Survey of alumni - I - Introduced R - Re-inforced E - Expert Target: It is expected that the survey participants identify the Paper Engineering program needs at a minimum of an introductory level (I).		Reporting Period: 2011 - 2012 Target Met: Evaluation - Met Target of 15 alumni responded: 3 (I), 6 (R) and 6 (E). (11/21/2012)	Action: No action planned. (11/21/2012)
Group Project - In PSE 468, students cross evaluat each other on their performance in the capstone (lab) project. 0 through 10 Target: At least 6.5 Notes: Student cross evaluation of a through I overall. Rubric: No rubric used		Reporting Period: 2011 - 2012 Target Met: Evaluation - Met Target Above 6.5 exclusively. (11/20/2012) Related Documents: PSE 468 - cross-rating.docx	Action: No action planned. (11/20/2012)
Presentation/Performance - A, B, C, D - The students in PSE 468 (Papermaking Processes) must produce a final report for each of the two large paper semi commercial paper machine runs plus a grade specific report for each paper grade produced on the large paper machine. Each report encompasses		Reporting Period: 2011 - 2012 Target Met: Evaluation - Met Target All students met the expectations of receiving a grade of ?C? or above for their report. (11/21/2012) Related Documents: PSE 468 - Report.docx	Action: No action planned. (11/21/2012)

Program Learning Outcomes	Measurement Scale	Results	Actions
	<p>the paper grades produced.</p> <p>Target: We expect that the mean written quality of the report to be above average (score = 3.0) based on the rubric given. We also expect that all sections will be average (score = 2).</p> <p>Capstone Assignment/Project - % - The real-world design problem is undertaken generally in groups of two students in each team. It is emphasized in the first class handout that proper planning and scheduling, and equitable division of responsibilities within each team are essential for the successful completion of the design project. The progress of each design team is regularly monitored through the semester via weekly class meetings, student weekly reports, progress reports, and engineering logbook as mentioned earlier.</p> <p>Target: It is expected that the students perform at a benchmark level of 80% (36/45) in the category "Technical design report" shown in Table I8-2</p> <p>Rubric: No rubric used</p>	<p>Reporting Period: 2011 - 2012</p> <p>Target Met: Evaluation - Met Target</p> <p>The successful solution of the design problem, as exemplified in the final technical design report submitted by each team (45% of total grade), which makes specific recommendations to RockTenn Solvay Mill, is used to assess this outcome. It can be observed from Table I8-2, , and Table that students satisfied this outcome very well since the percentage of design teams at or above the benchmark level was 100% during the period 2007 (Table). We note that in 2011, the class consisted of 3 students, respectively; this resulted in design teams that were constituted of only one person. In 2007 there was only one design team (consisting of 3 members). Table I8-5 shows that over an 5-year period (2007-2011), the average score for the technical design report was 36.43 (out of 45) and it ranged from 36.00-45.00, which can be compared to the benchmark level of 36.</p> <p>Since spreadsheets and process flow diagrams are widely used in a mill environment in order to convey information, present data, and perform calculations, the student teams were expected to become proficient in the use of these tools in the execution of their design projects. The team progress reports and final technical design reports amply demonstrate that outcome (k) was attained. (11/21/2012)</p> <p>Related Documents: PSE 481.docx</p>	<p>Action: No action planned. (11/21/2012)</p>
<p>ABET - I. Industrial Experience 11-12 - an ability to worked in an industrial or research position within pulp, paper or related fields.</p> <p>Outcome Year(s): 2011 - 2012</p>	<p>Group Project - In PSE 468, students cross evaluate each other on their performance in the capstone (lab) project.</p> <p>0 through 10</p>	<p>Reporting Period: 2011 - 2012</p> <p>Target Met: Evaluation - Met Target Above 6.5 exclusively. (11/20/2012)</p> <p>Related Documents: PSE 468 - cross-rating.docx</p>	<p>Action: No action planned. (11/20/2012)</p>

Program Learning Outcomes	Measurement Scale	Results	Actions
<p>PLO Target Met?: 3 - Met expectations</p>	<p>Target: At least 6.5 Notes: Student cross evaluation of a through I overall. Rubric: No rubric used</p>	<p>Reporting Period: 2011 - 2012 Target Met: Evaluation - Met Target Achieved responses indicate that 100% of the interviewed students agreed that the program outcome was achieved at a level of equal of above the 80% benchmark. (11/20/2012) Related Documents: Exit-PEN.docx</p>	<p>Action: No action planned. (11/20/2012)</p>
	<p>Survey of Students - 5 - Exceptionally satisfied 4 - Satisfied 3 - Minimally meet 2 - Approaching to the outcome 1 - Did not meet Target: It is expected that the students perform at a benchmark level of 80% for outcomes . Rubric: No rubric used</p> <p>Field Placement/Internship Evaluation - PSE 304/5 internship survey: 1 through 5 Target: At least average 3</p>	<p>Reporting Period: 2011 - 2012 Target Met: Evaluation - Met Target Clearly, the internship experience focuses on providing our students with an immersive exposure to working in an industrial experience. Survey responses by internship supervisors assess our students? ability to adapt to the industrial work environment and meet Outcome (I). The survey results indicate the following:</p> <ol style="list-style-type: none"> 1. Students are well prepared, academically for the experience, as perceived by their engineering supervisor. 2. Students exceed expectations in all of the critical outcomes essential to performance in an industrial engineering position, with the exceptions of ?Attitude? and ?Judgment,? although these outcomes achieved the benchmark of 4 in 2011. 3. The overall performance of our students continues to exceed expectations and is rated highly by engineering supervisors in sponsoring companies. Improvement in ?judgment? can be addressed as described in the following section while Improvement in ?attitude? may be achieved by attentive coaching of students before they begin their internship experience ? both aspects being the focus of pre-internship meetings. Our metric indicates that we are continuing to meet our targets for Outcome (I). (11/21/2012) 	<p>Action: No action planned. (11/21/2012)</p>

Program Learning Outcomes	Measurement Scale	Results	Actions
	<p>Portfolio Review - PSE 304 is required Target: PSE 304 is required Rubric: No rubric used</p>	<p>Related Documents: PSE 304 Outcome I.docx</p> <hr/> <p>Reporting Period: 2011 - 2012 Target Met: Evaluation - Met Target PSE 304 is a required curriculum component before graduation. (11/26/2012)</p>	
<p>ABET - a. Knowledge 12-14 - An ability to apply knowledge of mathematics, science, and engineering Outcome Year(s): 2012 - 2013, 2013 - 2014 PLO Target Met?: 3 - Met expectations</p>	<p>Exam/Quiz - In Course - %, An exam is given at the first day of class in PSE 370 (Mass and energy balances) that covers general chemistry, physics, and calculus for the PSE 370 course. The exam should help students identify their deficiencies and prepare them for the upcoming assignments in the course. Target: We expect that 80% of the students will score 75% or above on the exam. We expect all students to score 60% or above.</p>		
	<p>Exam/Quiz - In Course - %, Pre-requisite exam in PSE 468. A quiz was administered in the first week of the class to ensure general papermaking knowledge for the PSE 468 course. Target: We expect that 80% of the students will score 75% or above on the exam. We expect all students to score 60% or above.</p>	<p>Reporting Period: 2013 - 2014 Target Met: Evaluation - Met Target This outcome is addressed with Exam #1 (Take home). It applies knowledge of, science and engineering as it relates to paper making. It indentifies students that have a deficiency in some areas and a review of the basic material may be needed. It also informs the students of the expectations of knowledge going into this class. The average score was 97.23. 100% of the students had a score above 75, were as 100% of the students had a score above 60%. (05/08/2014)</p>	
	<p>Presentation/Performance - A, B, C, D - In PSE 468 evaluation seminar at the conclusion of the paper machine run, the students give seminars and field questions regarding their plan, performance, and results of the</p>	<p>Reporting Period: 2013 - 2014 Target Met: Evaluation - Met Target Students need to work in teams throughout the class assignments. The student work is evaluated in a final seminar were each team presents their work, followed by an oral examination involving the entire class in a questions</p>	

Program Learning Outcomes	Measurement Scale	Results	Actions
	<p>product design experience. Each team has approximately 30 minutes for a presentation and 60 minutes for questions and discussion. A panel of faculty and staff, including the course instructor and the TA, independently rate the students' abilities to analyze and present data from the paper machine runs. The ratings were specifically broken out with respect to the PSE student outcomes ?a, b, c, e, l and k?.</p> <p>Target: We expect the average grade to be a B- on Run A and a B on the Run B. We expect 80% of the students to achieve a grade of C or better on Run A and 90% of the students to achieve a grade of C or better on Run B for student outcomes ?a, b, c, e, i, and k?</p> <hr/> <p>Survey of Students - 5 - Exceptionally satisfied 4 - Satisfied 3 - Minimally meet 2 - Approaching to the outcome 1 - Did not meet</p> <p>Target: It is expected that the students perform at a benchmark level of 80% for outcomes .</p> <p>Rubric: Rubric attached in Related Docs</p> <hr/> <p>Group Project - In PSE 468, students cross evaluate each other on their performance in the capstone (lab) project. 0 through 10 Target: At least 6.5 Notes: Student cross evaluation of outcome a through l overall.</p>	<p>and discussions related to the paper machine run.</p> <p>The average score of both seminars was 92.14. The average score of the first seminar was 90.85 (A) and 93.43 (A) for the second oral examination which showed an improvement from the first to the second paper machine run. All Students were above the minimum 75% expectancy. (05/08/2014)</p>	

Program Learning Outcomes	Measurement Scale	Results	Actions
<p>ABET - b. Experiments 12-14 - An ability to design and conduct experiments, as well as to analyze and interpret data</p> <p>Outcome Year(s): 2012 - 2013, 2013 - 2014</p> <p>PLO Target Met?: 3 - Met expectations</p>	<p>Presentation/Performance - A, B, C, D - In PSE 468 evaluation seminar at the conclusion of the paper machine run, the students give seminars and field questions regarding their plan, performance, and results of the product design experience. Each team has approximately 30 minutes for a presentation and 60 minutes for questions and discussion. A panel of faculty and staff, including the course instructor and the TA, independently rate the students' abilities to analyze and present data from the paper machine runs. The ratings were specifically broken out with respect to the PSE student outcomes ?a, b, c, e, I and k?.</p> <p>Target: We expect the average grade to be a B- on Run A and a B on the Run B. We expect 80% of the students to achieve a grade of C or better on Run A and 90% of the students to achieve a grade of C or better on Run B for student outcomes ?a, b, c, e, i, and k?</p> <hr/> <p>Survey of Students - 5 - Exceptionally satisfied 4 - Satisfied 3 - Minimally meet 2 - Approaching to the outcome 1 - Did not meet</p> <p>Target: It is expected that the students perform at a benchmark level of 80% for outcomes .</p> <p>Rubric: Rubric attached in Related Docs</p> <hr/> <p>Course Grade - A, B, C, D</p> <p>Target: Average C</p>	<p>Reporting Period: 2013 - 2014</p> <p>Target Met: Evaluation - Met Target</p> <p>Students need to work in teams throughout the class assignments. The student work is evaluated in a final seminar where each team presents their work, followed by an oral examination involving the entire class in a questions and discussions related to the paper machine run.</p> <p>The average score of both seminars was 92.14. The average score of the first seminar was 90.85 (A-) and 93.43 (A-) for the second oral examination which showed an improvement from the first to the second paper machine run. All Students were above the minimum 75% expectancy. (05/08/2014)</p>	

Program Learning Outcomes	Measurement Scale	Results	Actions
	<p>Group Project - In PSE 468, students cross evaluate each other on their performance in the capstone (lab) project. 0 through 10 Target: At least 6.5 Notes: Student cross evaluation of a through I overall.</p>	<p>Reporting Period: 2013 - 2014 Target Met: Evaluation - Met Target Students are asked to fill out a confidential self & peer assessment for the individual paper machine runs. The average score from both paper machine runs was 76.13. (76.1%) of the students had a score above 75, were as (96.1%) of the students had a score above 60%. However, the 75% benchmark was missed by 4.1% (5 students for the first and second PM run. The 100% benchmark was missed by 3.9% (1 student in the second PM run). (05/08/2014)</p>	
	<p>Capstone Assignment/Project - % - The three main guiding threads in a design project are scope, schedule and budget, which are progressively refined and made more detailed as the design progresses over the semester. Thus, at the very beginning of a design project, the students have to make a rough cost estimation and potential profitability analysis of their project (along with a preliminary scope and schedule) in order to arrive at decision of whether to proceed further or not. This is further assessed by in-class interaction and exploration with the students on the future direction of the design project, and by evaluation of the design team's weekly class presentations and written summaries (10% of total grade) and engineering log book (10% of total grade). The overall progress of a design team is assessed from two mid-semester progress reports (25% of total grade) and one final technical design report (45% of total grade).</p>		

*Program Learning
Outcomes*

Measurement Scale

Results

Actions

This capstone design course (PSE 481) involves the execution of a real-world engineering design project during the fall semester at RockTenn Solvay Mill (previously Solvay Paperboard), a paperboard mill located in Solvay, New York. Each design team maintains an engineering logbook containing all relevant approaches, data and calculations in an organized fashion. Every week, each team submits a brief written summary of its progress and makes a brief in-class presentation. There are extensive discussions and communication between the design teams, instructors, mill personnel, and external vendors with continuous monitoring of the progress of a design team towards the design goal. The results of the work of each team are summarized in a technical design report, which is submitted near the end of the semester. Two mid-semester progress reports are also required. In addition, at the end of the semester, each design team makes a presentation of its completed project to the Paper and Bioprocess Engineering department and prepares a poster of its project. The students undergo safety training at the mill so that they can operate safely in an industrial environment and professional and ethical responsibilities of engineers have been communicated via videos and in-class discussion.

<i>Program Learning Outcomes</i>	<i>Measurement Scale</i>	<i>Results</i>	<i>Actions</i>
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Most classes are held at the mill site. In 2009, Ms. Shiuli Mahmud, PBE graduate student, made a presentation to the class that was titled "Six Sigma and Managing Changes Effectively." During 2009-2011 the class watched a video called "Inferno: Dust Explosion at Imperial Sugar" available at the website of the U.S. Chemical Safety Board (www.csb.gov). Dr. Jose Iribarne, co-instructor of this course and currently Director, Mill Strategic Projects & Technology, RockTenn Corporate Engineering, usually offers a class presentation on project management issues (titled "Project Management 101") to the students. In 2011, the class also watched the following safety video: "Fatal exposure: Tragedy at DuPont and videos on engineering ethics."
Target: It is expected that the students perform at a benchmark level of 80% in the different instrument categories shown in Table I8-2.

<p>ABET - c. Design 12-14 - An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability Outcome Year(s): 2012 - 2013, 2013 - 2014 PLO Target Met?: 3 - Met expectations</p>	<p>Presentation/Performance - A, B, C, D - In PSE 468 evaluation seminar at the conclusion of the paper machine run, the students give seminars and field questions regarding their plan, performance, and results of the product design experience. Each team has approximately 30 minutes for a presentation and 60 minutes for questions and discussion. A panel of faculty and staff, including the course instructor and the TA,</p>	<p>Reporting Period: 2013 - 2014 Target Met: Evaluation - Met Target Students have to design research and develop and produce a four paper products under economic, environmental, health and safety, manufacturability and sustainability issues. The average score of the instructor assessment for both paper machine runs was 93.04 (A-). The average score of the first seminar was 92.62 and 93.46 for the second oral examination which showed an improvement from the first to the second paper machine run. All Students were above the minimum 75% expectancy.</p>	
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Program Learning Outcomes	Measurement Scale	Results	Actions
	<p>independently rate the students' abilities to analyze and present data from the paper machine runs. The ratings were specifically broken out with respect to the PSE student outcomes ?a, b, c, e, I and k?.</p> <p>Target: We expect the average grade to be a B- on Run A and a B on the Run B. We expect 80% of the students to achieve a grade of C or better on Run A and 90% of the students to achieve a grade of C or better on Run B for student outcomes ?a, b, c, e, i, and k?</p> <hr/> <p>Survey of Students - 5 - Exceptionally satisfied 4 - Satisfied 3 - Minimally meet 2 - Approaching to the outcome 1 - Did not meet</p> <p>Target: It is expected that the students perform at a benchmark level of 80% for outcomes .</p> <hr/> <p>Capstone Assignment/Project - % - The three main guiding threads in a design project are scope, schedule and budget, which are progressively refined and made more detailed as the design progresses over the semester. Thus, at the very beginning of a design project, the students have to make a rough cost estimation and potential profitability analysis of their project (along with a preliminary scope and schedule) in order to arrive at decision of whether to proceed further or not. This is further assessed by in-class interaction and exploration with the</p>	<p>(05/08/2014)</p>	

*Program Learning
Outcomes*

Measurement Scale

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Actions

students on the future direction of the design project, and by evaluation of the design team's weekly class presentations and written summaries (10% of total grade) and engineering log book (10% of total grade). The overall progress of a design team is assessed from two mid-semester progress reports (25% of total grade) and one final technical design report (45% of total grade).

This capstone design course (PSE 481) involves the execution of a real-world engineering design project during the fall semester at RockTenn Solvay Mill (previously Solvay Paperboard), a paperboard mill located in Solvay, New York. Each design team maintains an engineering logbook containing all relevant approaches, data and calculations in an organized fashion. Every week, each team submits a brief written summary of its progress and makes a brief in-class presentation. There are extensive discussions and communication between the design teams, instructors, mill personnel, and external vendors with continuous monitoring of the progress of a design team towards the design goal. The results of the work of each team are summarized in a technical design report, which is submitted near the end of the semester. Two mid-semester progress reports are also required. In addition, at the end

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Outcomes*

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of the semester, each design team makes a presentation of its completed project to the Paper and Bioprocess Engineering department and prepares a poster of its project. The students undergo safety training at the mill so that they can operate safely in an industrial environment and professional and ethical responsibilities of engineers have been communicated via videos and in-class discussion.

Most classes are held at the mill site. In 2009, Ms. Shiuli Mahmud, PBE graduate student, made a presentation to the class that was titled "Six Sigma and Managing Changes Effectively." During 2009-2011 the class watched a video called "Inferno: Dust Explosion at Imperial Sugar" available at the website of the U.S. Chemical Safety Board (www.csb.gov). Dr. Jose Iribarne, co-instructor of this course and currently Director, Mill Strategic Projects & Technology, RockTenn Corporate Engineering, usually offers a class presentation on project management issues (titled "Project Management 101") to the students. In 2011, the class also watched the following safety video: "Fatal exposure: Tragedy at DuPont and videos on engineering ethics."

Target: It is expected that the students perform at a benchmark level of 80% in the different instrument categories shown in Table 18-2.

Group Project - In PSE 468, students **Reporting Period:** 2013 - 2014

Program Learning Outcomes	Measurement Scale	Results	Actions
	<p>cross evaluate each other on their performance in the capstone (lab) project. 0 through 10 Target: At least 6.5 Notes: Student cross evaluation of a through I overall.</p>	<p>Target Met: Evaluation - Met Target Students are asked to fill out a confidential self & peer assessment for the individual paper machine runs. The average score from both paper machine runs was 76.13. (76.1%) of the students had a score above 75, were as (96.1%) of the students had a score above 60%. However, the 75% benchmark was missed by 4.1% (5 students for the first and second PM run. The 100% benchmark was missed by 3.9% (1 student in the second PM run).</p> <p>(05/08/2014)</p>	
<p>ABET - d. Teamwork 12-14 - An ability to function on multi-disciplinary teams Outcome Year(s): 2012 - 2013, 2013 - 2014 PLO Target Met?: 3 - Met expectations</p>	<p>Presentation/Performance - A, B, C, D - In PSE 468 evaluation seminar at the conclusion of the paper machine run, the students give seminars and field questions regarding their plan, performance, and results of the product design experience. Each team has approximately 30 minutes for a presentation and 60 minutes for questions and discussion. A panel of faculty and staff, including the course instructor and the TA, independently rate the students' abilities to analyze and present data from the paper machine runs. The ratings were specifically broken out with respect to the PSE student outcomes ?a, b, c, e, I and k? Target: We expect the average grade to be a B- on Run A and a B on the Run B. We expect 80% of the students to achieve a grade of C or better on Run A and 90% of the students to achieve a grade of C or better on Run B for student outcomes ?a, b, c, e, i, and k?</p>	<p>Reporting Period: 2013 - 2014 Target Met: Evaluation - Met Target Student use engineering tools to solve the assigned problems. This outcome is assessed during the oral examination. The average score of both large paper machine run oral evaluations was 92.14 (A-). (100%) of the students had a score above 75, were as (100%) of the students had a score above 60%.</p> <p>(05/08/2014)</p>	

Survey of Students - 5 -

Program Learning Outcomes	Measurement Scale	Results	Actions
	<p>Exceptionally satisfied 4 - Satisfied 3 - Minimally meet 2 - Approaching to the outcome 1 - Did not meet</p> <p>Target: It is expected that the students perform at a benchmark level of 80% for outcomes .</p>		
	<p>Group Project - In PSE 468, students cross evaluate each other on their performance in the capstone (lab) project. 0 through 10 Target: At least 6.5 Notes: Student cross evaluation of a through I overall.</p>	<p>Reporting Period: 2013 - 2014 Target Met: Evaluation - Met Target Students are asked to fill out a confidential self & peer assessment for the individual paper machine runs. The average score from both paper machine runs was 76.13. (76.1%) of the students had a score above 75, were as (96.1%) of the students had a score above 60%. However, the 75% benchmark was missed by 4.1% (5 students for the first and second PM run. The 100% benchmark was missed by 3.9% (1 student in the second PM run). (05/08/2014)</p>	
	<p>Capstone Assignment/Project - % - The real-world design problem is undertaken generally in groups of two students in each team. It is emphasized in the first class handout that proper planning and scheduling, and equitable division of responsibilities within each team are essential for the successful completion of the design project. The progress of each design team is regularly monitored through the semester via weekly class meetings, student weekly reports, progress reports, and engineering logbook as mentioned earlier. Target: It is expected that the students perform at a benchmark level of 80% (36/45) in the category ?Technical design report? shown in</p>		

Program Learning Outcomes	Measurement Scale	Results	Actions
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Table I8-2

<p>ABET - e. Problem-solving 12-14 - An ability to identify, formulate, and solve engineering problems</p> <p>Outcome Year(s): 2012 - 2013, 2013 - 2014</p> <p>PLO Target Met?: 3 - Met expectations</p>	<p>Presentation/Performance - A, B, C, D - In PSE 468 evaluation seminar at the conclusion of the paper machine run, the students give seminars and field questions regarding their plan, performance, and results of the product design experience. Each team has approximately 30 minutes for a presentation and 60 minutes for questions and discussion. A panel of faculty and staff, including the course instructor and the TA, independently rate the students' abilities to analyze and present data from the paper machine runs. The ratings were specifically broken out with respect to the PSE student outcomes ?a, b, c, e, I and k?.</p> <p>Target: We expect the average grade to be a B- on Run A and a B on the Run B. We expect 80% of the students to achieve a grade of C or better on Run A and 90% of the students to achieve a grade of C or better on Run B for student outcomes ?a, b, c, e, i, and k?</p>	<p>Reporting Period: 2013 - 2014</p> <p>Target Met: Evaluation - Met Target</p> <p>Students are asked to fill out a confidential self & peer assessment for the individual paper machine runs. The average score from both paper machine runs was 76.13. (76.1%) of the students had a score above 75, were as (96.1%) of the students had a score above 60%. However, the 75% benchmark was missed by 4.1% (5 students for the first and second PM run). The 100% benchmark was missed by 3.9% (1 student in the second PM run). (05/08/2014)</p>	
	<p>Survey of Students - 5 - Exceptionally satisfied 4 - Satisfied 3 - Minimally meet 2 - Approaching to the outcome 1 - Did not meet</p> <p>Target: It is expected that the students perform at a benchmark level of 80% for outcomes .</p>		
	<p>Capstone Assignment/Project - % - The real-world design problem is</p>		

Program Learning Outcomes	Measurement Scale	Results	Actions
	<p>undertaken generally in groups of two students in each team. It is emphasized in the first class handout that proper planning and scheduling, and equitable division of responsibilities within each team are essential for the successful completion of the design project. The progress of each design team is regularly monitored through the semester via weekly class meetings, student weekly reports, progress reports, and engineering logbook as mentioned earlier.</p> <p>Target: It is expected that the students perform at a benchmark level of 80% (36/45) in the category ?Technical design report? shown in Table I8-2</p>		
	<p>Course Grade - A, B, C, D Target: Average C</p>	<p>Reporting Period: 2013 - 2014 Target Met: Evaluation - Met Target</p> <p>Program outcome s are incorporated in the class assignment were students are asked to develop paper products from the laboratory stage for a test run on our 12? paper machine and upscale the results to our semi commercial 48? paper machine. Students have to solve a variety of problems relates to the specific development of the paper product and the problems involved in operating a paper machine to produce the paper product.</p> <p>The average large paper machine run score was 95.85. The average score of the first paper machine grade developments was 94.49 and for the second paper development project 97.20, which showed an improvement from the first to the second paper machine run. All Students were above the minimum 75% expectancy. (05/08/2014)</p>	
	<p>Group Project - In PSE 468, students cross evaluat each other on their performance in the capstone (lab) project.</p>	<p>Reporting Period: 2013 - 2014 Target Met: Evaluation - Met Target</p> <p>Students are asked to fill out a confidential self & peer</p>	

Program Learning Outcomes	Measurement Scale	Results	Actions
	0 through 10 Target: At least 6.5 Notes: Student cross evaluation of a through I overall.	assessment for the individual paper machine runs. The average score from both paper machine runs was 76.13. (76.1%) of the students had a score above 75, were as (96.1%) of the students had a score above 60%. However, the 75% benchmark was missed by 4.1% (5 students for the first and second PM run. The 100% benchmark was missed by 3.9% (1 student in the second PM run). (05/08/2014)	
ABET - f. Ethics 12-14 - An understanding of professional and ethical responsibility. Outcome Year(s): 2012 - 2013, 2013 - 2014 PLO Target Met?: 3 - Met expectations	Presentation/Performance - A, B, C, D - The students in PSE 468 (Papermaking Processes) must produce a final report for each of the two large paper semi commercial paper machine runs plus a grade specific report for each paper grade produced on the large paper machine. Each report encompasses the paper grades produced. Target: We expect that the mean written quality of the report to be above average (score = 3.0) based on the rubric given. We also expect that all sections will be average (score = 2).	Reporting Period: 2013 - 2014 Target Met: Evaluation - Met Target Students must produce a final report for each of the two large paper machine runs plus a specific report for each paper grade. It is expected that the quality of the reports are above average (score of 80%). The average score of the report was 91.50 for both grades. This year student put a high effort into their reports. The first seminar report was 89.00 (B+) and 94.0 (A) for the second report which showed an improvement from the first to the second report preparation. All Students were above the minimum 75% expectancy. (05/08/2014)	
	Survey of Students - 5 - Exceptionally satisfied 4 - Satisfied 3 - Minimally meet 2 - Approaching to the outcome 1 - Did not meet Target: It is expected that the students perform at a benchmark level of 80% for outcomes .		
	Group Project - In PSE 468, students cross evaluat each other on their performance in the capstone (lab) project.	Reporting Period: 2013 - 2014 Target Met: Evaluation - Met Target Students are asked to fill out a confidential self & peer assessment for the individual paper machine runs.	

Program Learning Outcomes	Measurement Scale	Results	Actions
	<p>0 through 10 Target: At least 6.5 Notes: Student cross evaluation of a through I overall.</p> <hr/> <p>Course Assignment - PSE 132 - Ethics seminar reflection paper: Exceptional Satisfactory</p> <p>and ethical responsibility survey in class: 1 None 2 3 Adequate 4 5 Exceptional Target: At least satisfied in ethical responsibility reflection paper and adequate in survey.</p> <hr/> <p>Field Placement/Internship Evaluation - PSE 304/5 internship survey: 1 through 5 Target: At least average 3</p>	<p>The average score from both paper machine runs was 76.13. (76.1%) of the students had a score above 75, were as (96.1%) of the students had a score above 60%. However, the 75% benchmark was missed by 4.1% (5 students for the first and second PM run. The 100% benchmark was missed by 3.9% (1 student in the second PM run). (05/08/2014)</p>	
<p>ABET - g. Communication 12-14 - An ability to communicate effectively Outcome Year(s): 2012 - 2013, 2013 - 2014 PLO Target Met?: 3 - Met expectations</p>	<p>Survey of Students - 5 - Exceptionally satisfied 4 - Satisfied 3 - Minimally meet 2 - Approaching to the outcome 1 - Did not meet Target: It is expected that the students perform at a benchmark level of 80% for outcomes .</p> <hr/> <p>Group Project - In PSE 468, students cross evaluat each other on their</p>	<p>Reporting Period: 2013 - 2014</p>	

Program Learning Outcomes	Measurement Scale	Results	Actions
	<p>performance in the capstone (lab) project. 0 through 10 Target: At least 6.5 Notes: Student cross evaluation of a through I overall.</p>	<p>Target Met: Evaluation - Met Target Students are asked to fill out a confidential self & peer assessment for the individual paper machine runs. The average score from both paper machine runs was 76.13. (76.1%) of the students had a score above 75, were as (96.1%) of the students had a score above 60%. However, the 75% benchmark was missed by 4.1% (5 students for the first and second PM run. The 100% benchmark was missed by 3.9% (1 student in the second PM run). (05/08/2014)</p>	
	<p>Capstone Assignment/Project - % - The real-world design problem is undertaken generally in groups of two students in each team. It is emphasized in the first class handout that proper planning and scheduling, and equitable division of responsibilities within each team are essential for the successful completion of the design project. The progress of each design team is regularly monitored through the semester via weekly class meetings, student weekly reports, progress reports, and engineering logbook as mentioned earlier. Target: It is expected that the students perform at a benchmark level of 80% in the instrumental categories that involve oral and written communication (weekly summary and class presentation, progress reports #1 and #2, technical design report, project presentation and poster) shown in Table I8-2. It is expected that the design team performance, as assessed by Dr. J. Iribarne (Director, Mill Strategic Projects & Technology, RockTenn</p>		

Program Learning Outcomes	Measurement Scale	Results	Actions
	<p>Corporate Engineering), be at a benchmark level of 80% in the following instrumental categories: weekly class presentations of team progress, two mid-semester progress reports, final technical design report, and team presentation of their design project.</p> <p>Presentation/Performance - A, B, C, D - The students in PSE 468 (Papermaking Processes) must produce a final report for each of the two large paper semi commercial paper machine runs plus a grade specific report for each paper grade produced on the large paper machine. Each report encompasses the paper grades produced.</p> <p>Target: We expect that the mean written quality of the report to be above average (score = 3.0) based on the rubric given. We also expect that all sections will be average (score = 2).</p>	<p>Reporting Period: 2013 - 2014</p> <p>Target Met: Evaluation - Met Target</p> <p>Students must produce a final report for each of the two large paper machine runs plus a specific report for each paper grade. It is expected that the quality of the reports are above average (score of 80%).</p> <p>The average score of the report was 91.50 (A-) for both grades. This year student put a high effort into their reports. The first seminar report was 89.00 (B+) and 94.0 (A) for the second report which showed an improvement from the first to the second report preparation. All Students were above the minimum 75% expectancy.</p> <p>(05/08/2014)</p>	
<p>ABET - h. Broad education 12-14 - The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context</p> <p>Outcome Year(s): 2012 - 2013, 2013 - 2014</p> <p>PLO Target Met?: 3 - Met expectations</p>	<p>Survey of Students - 5 - Exceptionally satisfied 4 - Satisfied 3 - Minimally meet 2 - Approaching to the outcome 1 - Did not meet</p> <p>Target: It is expected that the students perform at a benchmark level of 80% for outcomes .</p>		
	<p>Group Project - In PSE 468, students cross evaluate each other on their performance in the capstone (lab) project. 0 through 10</p>	<p>Reporting Period: 2013 - 2014</p> <p>Target Met: Evaluation - Met Target</p> <p>Students are asked to fill out a confidential self & peer assessment for the individual paper machine runs. The average score from both paper machine runs was</p>	

Program Learning Outcomes	Measurement Scale	Results	Actions
	<p>Target: At least 6.5 Notes: Student cross evaluation of a through I overall.</p>	<p>76.13. (76.1%) of the students had a score above 75, were as (96.1%) of the students had a score above 60%. However, the 75% benchmark was missed by 4.1% (5 students for the first and second PM run. The 100% benchmark was missed by 3.9% (1 student in the second PM run). (05/08/2014)</p>	
	<p>Field Placement/Internship Evaluation - PSE 304/5 internship survey: 1 through 5 Target: At least average 3</p>		
<p>ABET - i. Life-long learning 12-14 - A recognition of the need for, and an ability to engage in life-long learning Outcome Year(s): 2012 - 2013, 2013 - 2014 PLO Target Met?: 3 - Met expectations</p>	<p>Survey of Students - 5 - Exceptionally satisfied 4 - Satisfied 3 - Minimally meet 2 - Approaching to the outcome 1 - Did not meet Target: It is expected that the students perform at a benchmark level of 80% for outcomes .</p>		
	<p>Group Project - In PSE 468, students cross evaluate each other on their performance in the capstone (lab) project. 0 through 10 Target: At least 6.5 Notes: Student cross evaluation of a through I overall.</p>	<p>Reporting Period: 2013 - 2014 Target Met: Evaluation - Met Target Students are asked to fill out a confidential self & peer assessment for the individual paper machine runs. The average score from both paper machine runs was 76.13. (76.1%) of the students had a score above 75, were as (96.1%) of the students had a score above 60%. However, the 75% benchmark was missed by 4.1% (5 students for the first and second PM run. The 100% benchmark was missed by 3.9% (1 student in the second PM run). (05/08/2014)</p>	
	<p>Field Placement/Internship Evaluation - PSE 304/5 internship survey: 1 through 5 Target: At least average 3</p>		

Program Learning Outcomes	Measurement Scale	Results	Actions
	<p>Presentation/Performance - A, B, C, D - The students in PSE 468 (Papermaking Processes) must produce a final report for each of the two large paper semi commercial paper machine runs plus a grade specific report for each paper grade produced on the large paper machine. Each report encompasses the paper grades produced.</p> <p>Target: We expect that the mean written quality of the report to be above average (score = 3.0) based on the rubric given. We also expect that all sections will be average (score = 2).</p>	<p>Reporting Period: 2013 - 2014</p> <p>Target Met: Evaluation - Met Target</p> <p>This outcome is incorporated into the mandatory seminar of the course, which consists of approximately 10 selected presentations from industry covering various topics of papermaking including safety, new developments and the actual state of the papermaking industry. Each seminar runs approximately 2 hours. At the end of the seminar, students have to take a quiz that tests their knowledge of the presented materials. The students are expected to incorporate their assignments into the seminar discussion and gather information that might be necessary for their assignments. The average score was 84.17 (B) (76.9%) of the students had a score above 75, were as (100%) of the students had a score above 60%. However, the 80% benchmark of students with a score above 75% was missed by 4.1%. (05/08/2014)</p>	
<p>ABET - j. Contemporary issues 12-14 - A knowledge of contemporary issues</p> <p>Outcome Year(s): 2012 - 2013, 2013 - 2014</p> <p>PLO Target Met?: 3 - Met expectations</p>	<p>Survey of Students - 5 -</p> <p>Exceptionally satisfied 4 - Satisfied 3 - Minimally meet 2 - Approaching to the outcome 1 - Did not meet</p> <p>Target: It is expected that the students perform at a benchmark level of 80% for outcomes .</p>		
	<p>Group Project - In PSE 468, students cross evaluat each other on their performance in the capstone (lab) project. 0 through 10</p> <p>Target: At least 6.5</p> <p>Notes: Student cross evaluation of a through I overall.</p>	<p>Reporting Period: 2013 - 2014</p> <p>Target Met: Evaluation - Met Target</p> <p>Students are asked to fill out a confidential self & peer assessment for the individual paper machine runs. The average score from both paper machine runs was 76.13. (76.1%) of the students had a score above 75, were as (96.1%) of the students had a score above 60%. However, the 75% benchmark was missed by 4.1% (5 students for the first and second PM run. The 100% benchmark was missed by 3.9% (1 student in the second PM run). (05/08/2014)</p>	
	<p>Field Placement/Internship</p>		

Program Learning Outcomes	Measurement Scale	Results	Actions
	<p>Evaluation - PSE 304/5 internship survey: 1 through 5 Target: At least average 3</p> <p>Presentation/Performance - A, B, C, D - The students in PSE 468 (Papermaking Processes) must produce a final report for each of the two large paper semi commercial paper machine runs plus a grade specific report for each paper grade produced on the large paper machine. Each report encompasses the paper grades produced. Target: We expect that the mean written quality of the report to be above average (score = 3.0) based on the rubric given. We also expect that all sections will be average (score = 2).</p>	<p>Reporting Period: 2013 - 2014 Target Met: Evaluation - Met Target Students must produce a final report for each of the two large paper machine runs plus a specific report for each paper grade. It is expected that the quality of the reports are above average (score of 80%). The average score of the report was 91.50 (A-) for both grades. This year student put a high effort into their reports. The first seminar report was 89.00 (B+) and 94.0 (A) for the second report which showed an improvement from the first to the second report preparation. All Students were above the minimum 75% expectancy. (05/08/2014)</p>	
<p>ABET - k. Engineering tools 12-14 - An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice Outcome Year(s): 2012 - 2013, 2013 - 2014 PLO Target Met?: 3 - Met expectations</p>	<p>Presentation/Performance - A, B, C, D - In PSE 468 evaluation seminar at the conclusion of the paper machine run, the students give seminars and field questions regarding their plan, performance, and results of the product design experience. Each team has approximately 30 minutes for a presentation and 60 minutes for questions and discussion. A panel of faculty and staff, including the course instructor and the TA, independently rate the students' abilities to analyze and present data from the paper machine runs. The ratings were specifically broken out with respect to the PSE student outcomes ?a, b, c, e, I and k?. Target: We expect the average grade</p>	<p>Reporting Period: 2013 - 2014 Target Met: Evaluation - Met Target Student use engineering tools to solve the assigned problems. This outcome is assessed during the oral examination. The average score of both large paper machine run oral evaluations was 92.14 (A). (100%) of the students had a score above 75, were as (100%) of the students had a score above 60%. (05/08/2014)</p>	

Program Learning Outcomes	Measurement Scale	Results	Actions
	<p>to be a B- on Run A and a B on the Run B. We expect 80% of the students to achieve a grade of C or better on Run A and 90% of the students to achieve a grade of C or better on Run B for student outcomes ?a, b, c, e, i, and k?</p>		
	<p>Survey of Students - 5 - Exceptionally satisfied 4 - Satisfied 3 - Minimally meet 2 - Approaching to the outcome 1 - Did not meet Target: It is expected that the students perform at a benchmark level of 80% for outcomes .</p>		
	<p>Group Project - In PSE 468, students cross evaluat each other on their performance in the capstone (lab) project. 0 through 10 Target: At least 6.5 Notes: Student cross evaluation of a through I overall.</p>	<p>Reporting Period: 2013 - 2014 Target Met: Evaluation - Met Target Student use engineering tools to solve the assigned problems. This outcome is assessed during the oral examination. The average score of both large paper machine run oral evaluations was 92.14. (100%) of the students had a score above 75, were as (100%) of the students had a score above 60%. (05/08/2014)</p>	
	<p>Capstone Assignment/Project - % - The real-world design problem is undertaken generally in groups of two students in each team. It is emphasized in the first class handout that proper planning and scheduling, and equitable division of responsibilities within each team are essential for the successful completion of the design project. The progress of each design team is regularly monitored through the semester via weekly class meetings,</p>		

Program Learning Outcomes	Measurement Scale	Results	Actions
	<p>student weekly reports, progress reports, and engineering logbook as mentioned earlier.</p> <p>Target: It is expected that the students perform at a benchmark level of 80% (36/45) in the category ?Technical design report? shown in Table I8-2</p>		
<p>ABET - I. Industrial Experience 12-14 - an ability to worked in an industrial or research position within pulp, paper or related fields.</p> <p>Outcome Year(s): 2012 - 2013, 2013 - 2014</p> <p>PLO Target Met?: 3 - Met expectations</p>	<p>Group Project - In PSE 468, students cross evaluat each other on their performance in the capstone (lab) project.</p> <p>0 through 10</p> <p>Target: At least 6.5</p> <p>Notes: Student cross evaluation of a through I overall.</p>	<p>Reporting Period: 2013 - 2014</p> <p>Target Met: Evaluation - Met Target</p> <p>Students are asked to fill out a confidential self & peer assessment for the individual paper machine runs. The average score from both paper machine runs was 76.13. (76.1%) of the students had a score above 75, were as (96.1%) of the students had a score above 60%. However, the 75% benchmark was missed by 4.1% (5 students for the first and second PM run. The 100% benchmark was missed by 3.9% (1 student in the second PM run). (05/08/2014)</p>	
	<p>Survey of Students - 5 -</p> <p>Exceptionally satisfied</p> <p>4 - Satisfied</p> <p>3 - Minimally meet</p> <p>2 - Approaching to the outcome</p> <p>1 - Did not meet</p> <p>Target: It is expected that the students perform at a benchmark level of 80% for outcomes .</p>		
	<p>Field Placement/Internship Evaluation - PSE 304/5 internship survey:</p> <p>1 through 5</p> <p>Target: At least average 3</p>		
	<p>Portfolio Review - PSE 304 is required</p> <p>Target: PSE 304 is required</p>		
<p>ABET - a. Knowledge 14-15 - An</p>	<p>Exam/Quiz - In Course - %, An exam</p>		

<i>Program Learning Outcomes</i>	<i>Measurement Scale</i>	<i>Results</i>	<i>Actions</i>
<p>ability to apply knowledge of mathematics, science, and engineering</p> <p>Outcome Status: Active</p> <p>Outcome Year(s): 2014 - 2015</p> <p>Start Date: 02/01/2015</p>	<p>is given at the first day of class in PSE 370 (Mass and energy balances) that covers general chemistry, physics, and calculus for the PSE 370 course.</p> <p>The exam should help students identify their deficiencies and prepare them for the upcoming assignments in the course.</p> <p>Target: We expect that 80% of the students will score 75% or above on the exam. We expect all students to score 60% or above.</p> <hr/> <p>Exam/Quiz - In Course - %, Pre-requisite exam in PSE 468. A quiz was administered in the first week of the class to ensure general papermaking knowledge for the PSE 468 course.</p> <p>Target: We expect that 80% of the students will score 75% or above on the exam. We expect all students to score 60% or above.</p> <hr/> <p>Presentation/Performance - A, B, C, D - In PSE 468 evaluation seminar at the conclusion of the paper machine run, the students give seminars and field questions regarding their plan, performance, and results of the product design experience. Each team has approximately 30 minutes for a presentation and 60 minutes for questions and discussion. A panel of faculty and staff, including the course instructor and the TA, independently rate the students' abilities to analyze and present data from the paper machine runs. The ratings were specifically broken out with respect to the PSE student</p>		

Program Learning Outcomes	Measurement Scale	Results	Actions
	<p>outcomes ?a, b, c, e, I and k?.</p> <p>Target: We expect the average grade to be a B- on Run A and a B on the Run B. We expect 80% of the students to achieve a grade of C or better on Run A and 90% of the students to achieve a grade of C or better on Run B for student outcomes ?a, b, c, e, i, and k?</p> <hr/> <p>Survey of Students - 5 - Exceptionally satisfied 4 - Satisfied 3 - Minimally meet 2 - Approaching to the outcome 1 - Did not meet</p> <p>Target: It is expected that the students perform at a benchmark level of 80% for outcomes .</p> <hr/> <p>Group Project - In PSE 468, students cross evaluat each other on their performance in the capstone (lab) project. 0 through 10</p> <p>Target: At least 6.5</p> <p>Notes: Student cross evaluation of outcome a through I overall.</p>		
<p>ABET - b. Experiments 14-15 - An ability to design and conduct experiments, as well as to analyze and interpret data</p> <p>Outcome Status: Active</p> <p>Outcome Year(s): 2014 - 2015</p> <p>Start Date: 02/01/2015</p>	<p>Presentation/Performance - A, B, C, D - In PSE 468 evaluation seminar at the conclusion of the paper machine run, the students give seminars and field questions regarding their plan, performance, and results of the product design experience. Each team has approximately 30 minutes for a presentation and 60 minutes for questions and discussion. A panel of faculty and staff, including the course instructor and the TA, independently rate the students?</p>		

Program Learning Outcomes	Measurement Scale	Results	Actions
		<p>abilities to analyze and present data from the paper machine runs. The ratings were specifically broken out with respect to the PSE student outcomes ?a, b, c, e, I and k?.</p> <p>Target: We expect the average grade to be a B- on Run A and a B on the Run B. We expect 80% of the students to achieve a grade of C or better on Run A and 90% of the students to achieve a grade of C or better on Run B for student outcomes ?a, b, c, e, i, and k?</p> <hr/> <p>Survey of Students - 5 - Exceptionally satisfied 4 - Satisfied 3 - Minimally meet 2 - Approaching to the outcome 1 - Did not meet</p> <p>Target: It is expected that the students perform at a benchmark level of 80% for outcomes .</p> <hr/> <p>Course Grade - A, B, C, D Target: Average C</p> <hr/> <p>Group Project - In PSE 468, students cross evaluat each other on their performance in the capstone (lab) project. 0 through 10 Target: At least 6.5 Notes: Student cross evaluation of a through I overall.</p> <hr/> <p>Capstone Assignment/Project - % - The three main guiding threads in a design project are scope, schedule and budget, which are progressively refined and made more detailed as the design progresses over the semester. Thus, at the very</p>	

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beginning of a design project, the students have to make a rough cost estimation and potential profitability analysis of their project (along with a preliminary scope and schedule) in order to arrive at decision of whether to proceed further or not. This is further assessed by in-class interaction and exploration with the students on the future direction of the design project, and by evaluation of the design team's weekly class presentations and written summaries (10% of total grade) and engineering log book (10% of total grade). The overall progress of a design team is assessed from two mid-semester progress reports (25% of total grade) and one final technical design report (45% of total grade).

This capstone design course (PSE 481) involves the execution of a real-world engineering design project during the fall semester at RockTenn Solvay Mill (previously Solvay Paperboard), a paperboard mill located in Solvay, New York. Each design team maintains an engineering logbook containing all relevant approaches, data and calculations in an organized fashion. Every week, each team submits a brief written summary of its progress and makes a brief in-class presentation. There are extensive discussions and communication between the design teams, instructors, mill personnel, and

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Outcomes*

Measurement Scale

Results

Actions

external vendors with continuous monitoring of the progress of a design team towards the design goal. The results of the work of each team are summarized in a technical design report, which is submitted near the end of the semester. Two mid-semester progress reports are also required. In addition, at the end of the semester, each design team makes a presentation of its completed project to the Paper and Bioprocess Engineering department and prepares a poster of its project. The students undergo safety training at the mill so that they can operate safely in an industrial environment and professional and ethical responsibilities of engineers have been communicated via videos and in-class discussion.

Most classes are held at the mill site. In 2009, Ms. Shiuli Mahmud, PBE graduate student, made a presentation to the class that was titled "Six Sigma and Managing Changes Effectively." During 2009-2011 the class watched a video called "Inferno: Dust Explosion at Imperial Sugar" available at the website of the U.S. Chemical Safety Board (www.csb.gov). Dr. Jose Iribarne, co-instructor of this course and currently Director, Mill Strategic Projects & Technology, RockTenn Corporate Engineering, usually offers a class presentation on project management issues (titled "Project Management 101") to the students. In 2011, the class also watched the

Program Learning Outcomes	Measurement Scale	Results	Actions
	<p>following safety video: ?Fatal exposure: Tragedy at DuPont and videos on engineering ethics.</p> <p>Target: It is expected that the students perform at a benchmark level of 80% in the different instrument categories shown in Table 18-2.</p>		
<p>ABET - c. Design 14-15 - An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability</p> <p>Outcome Status: Active</p> <p>Outcome Year(s): 2014 - 2015</p> <p>Start Date: 02/01/2015</p>	<p>Presentation/Performance - A, B, C, D - In PSE 468 evaluation seminar at the conclusion of the paper machine run, the students give seminars and field questions regarding their plan, performance, and results of the product design experience. Each team has approximately 30 minutes for a presentation and 60 minutes for questions and discussion. A panel of faculty and staff, including the course instructor and the TA, independently rate the students' abilities to analyze and present data from the paper machine runs. The ratings were specifically broken out with respect to the PSE student outcomes ?a, b, c, e, I and k?.</p> <p>Target: We expect the average grade to be a B- on Run A and a B on the Run B. We expect 80% of the students to achieve a grade of C or better on Run A and 90% of the students to achieve a grade of C or better on Run B for student outcomes ?a, b, c, e, i, and k?</p> <p>Survey of Students - 5 - Exceptionally satisfied 4 - Satisfied 3 - Minimally meet 2 - Approaching to the outcome</p>		

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Outcomes*

Measurement Scale

Results

Actions

1 - Did not meet

Target: It is expected that the students perform at a benchmark level of 80% for outcomes .

Capstone Assignment/Project - % -

The three main guiding threads in a design project are scope, schedule and budget, which are progressively refined and made more detailed as the design progresses over the semester. Thus, at the very beginning of a design project, the students have to make a rough cost estimation and potential profitability analysis of their project (along with a preliminary scope and schedule) in order to arrive at decision of whether to proceed further or not. This is further assessed by in-class interaction and exploration with the students on the future direction of the design project, and by evaluation of the design team's weekly class presentations and written summaries (10% of total grade) and engineering log book (10% of total grade). The overall progress of a design team is assessed from two mid-semester progress reports (25% of total grade) and one final technical design report (45% of total grade).

This capstone design course (PSE 481) involves the execution of a real-world engineering design project during the fall semester at RockTenn Solvay Mill (previously Solvay Paperboard), a paperboard mill located in Solvay, New York. Each

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Outcomes*

Measurement Scale

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Actions

design team maintains an engineering logbook containing all relevant approaches, data and calculations in an organized fashion. Every week, each team submits a brief written summary of its progress and makes a brief in-class presentation. There are extensive discussions and communication between the design teams, instructors, mill personnel, and external vendors with continuous monitoring of the progress of a design team towards the design goal. The results of the work of each team are summarized in a technical design report, which is submitted near the end of the semester. Two mid-semester progress reports are also required. In addition, at the end of the semester, each design team makes a presentation of its completed project to the Paper and Bioprocess Engineering department and prepares a poster of its project. The students undergo safety training at the mill so that they can operate safely in an industrial environment and professional and ethical responsibilities of engineers have been communicated via videos and in-class discussion. Most classes are held at the mill site. In 2009, Ms. Shiuli Mahmud, PBE graduate student, made a presentation to the class that was titled "Six Sigma and Managing Changes Effectively." During 2009-2011 the class watched a video called "Inferno: Dust Explosion at

Program Learning Outcomes	Measurement Scale	Results	Actions
	<p>Imperial Sugar? available at the website of the U.S. Chemical Safety Board (www.csb.gov). Dr. Jose Iribarne, co-instructor of this course and currently Director, Mill Strategic Projects & Technology, RockTenn Corporate Engineering, usually offers a class presentation on project management issues (titled ?Project Management 101?) to the students. In 2011, the class also watched the following safety video: ?Fatal exposure: Tragedy at DuPont and videos on engineering ethics.</p> <p>Target: It is expected that the students perform at a benchmark level of 80% in the different instrument categories shown in Table I8-2.</p> <p>Group Project - In PSE 468, students cross evaluat each other on their performance in the capstone (lab) project. 0 through 10</p> <p>Target: At least 6.5</p> <p>Notes: Student cross evaluation of a through I overall.</p>		
<p>ABET - d. Teamwork 14-15 - An ability to function on multi-disciplinary teams</p> <p>Outcome Status: Active</p> <p>Outcome Year(s): 2014 - 2015</p> <p>Start Date: 02/01/2015</p>		<p>Presentation/Performance - A, B, C, D - In PSE 468 evaluation seminar at the conclusion of the paper machine run, the students give seminars and field questions regarding their plan, performance, and results of the product design experience. Each team has approximately 30 minutes for a presentation and 60 minutes for questions and discussion. A panel of faculty and staff, including the course instructor and the TA,</p>	

Program Learning Outcomes	Measurement Scale	Results	Actions
	<p>independently rate the students' abilities to analyze and present data from the paper machine runs. The ratings were specifically broken out with respect to the PSE student outcomes ?a, b, c, e, I and k?.</p> <p>Target: We expect the average grade to be a B- on Run A and a B on the Run B. We expect 80% of the students to achieve a grade of C or better on Run A and 90% of the students to achieve a grade of C or better on Run B for student outcomes ?a, b, c, e, i, and k?.</p>		
	<p>Survey of Students - 5 - Exceptionally satisfied 4 - Satisfied 3 - Minimally meet 2 - Approaching to the outcome 1 - Did not meet</p> <p>Target: It is expected that the students perform at a benchmark level of 80% for outcomes .</p>		
	<p>Group Project - In PSE 468, students cross evaluate each other on their performance in the capstone (lab) project. 0 through 10</p> <p>Target: At least 6.5</p> <p>Notes: Student cross evaluation of a through I overall.</p>		
	<p>Capstone Assignment/Project - % - The real-world design problem is undertaken generally in groups of two students in each team. It is emphasized in the first class handout that proper planning and scheduling, and equitable division of responsibilities within each team are</p>		

Program Learning Outcomes	Measurement Scale	Results	Actions
	<p>essential for the successful completion of the design project. The progress of each design team is regularly monitored through the semester via weekly class meetings, student weekly reports, progress reports, and engineering logbook as mentioned earlier.</p> <p>Target: It is expected that the students perform at a benchmark level of 80% (36/45) in the category ?Technical design report? shown in Table 18-2</p>		
<p>ABET - e. Problem-solving 14-15 - An ability to identify, formulate, and solve engineering problems</p> <p>Outcome Status: Active</p> <p>Outcome Year(s): 2014 - 2015</p> <p>Start Date: 02/01/2015</p>	<p>Presentation/Performance - A, B, C, D - In PSE 468 evaluation seminar at the conclusion of the paper machine run, the students give seminars and field questions regarding their plan, performance, and results of the product design experience. Each team has approximately 30 minutes for a presentation and 60 minutes for questions and discussion. A panel of faculty and staff, including the course instructor and the TA, independently rate the students' abilities to analyze and present data from the paper machine runs. The ratings were specifically broken out with respect to the PSE student outcomes ?a, b, c, e, I and k?.</p> <p>Target: We expect the average grade to be a B- on Run A and a B on the Run B. We expect 80% of the students to achieve a grade of C or better on Run A and 90% of the students to achieve a grade of C or better on Run B for student outcomes ?a, b, c, e, i, and k?</p>		

Program Learning Outcomes	Measurement Scale	Results	Actions
	<p>Survey of Students - 5 - Exceptionally satisfied 4 - Satisfied 3 - Minimally meet 2 - Approaching to the outcome 1 - Did not meet</p> <p>Target: It is expected that the students perform at a benchmark level of 80% for outcomes .</p>		
	<p>Capstone Assignment/Project - % - The real-world design problem is undertaken generally in groups of two students in each team. It is emphasized in the first class handout that proper planning and scheduling, and equitable division of responsibilities within each team are essential for the successful completion of the design project. The progress of each design team is regularly monitored through the semester via weekly class meetings, student weekly reports, progress reports, and engineering logbook as mentioned earlier.</p> <p>Target: It is expected that the students perform at a benchmark level of 80% (36/45) in the category ?Technical design report? shown in Table 18-2</p>		
	<p>Course Grade - A, B, C, D Target: Average C</p>		
	<p>Group Project - In PSE 468, students cross evaluat each other on their performance in the capstone (lab) project. 0 through 10 Target: At least 6.5 Notes: Student cross evaluation of a</p>		

Program Learning Outcomes	Measurement Scale	Results	Actions
<p>ABET - f. Ethics 14-15 - An understanding of professional and ethical responsibility. Outcome Status: Active Outcome Year(s): 2014 - 2015 Start Date: 02/01/2015</p>	<p>through I overall.</p> <p>Presentation/Performance - A, B, C, D - The students in PSE 468 (Papermaking Processes) must produce a final report for each of the two large paper semi commercial paper machine runs plus a grade specific report for each paper grade produced on the large paper machine. Each report encompasses the paper grades produced. Target: We expect that the mean written quality of the report to be above average (score = 3.0) based on the rubric given. We also expect that all sections will be average (score = 2).</p> <p>Survey of Students - 5 - Exceptionally satisfied 4 - Satisfied 3 - Minimally meet 2 - Approaching to the outcome 1 - Did not meet Target: It is expected that the students perform at a benchmark level of 80% for outcomes .</p> <p>Group Project - In PSE 468, students cross evaluat each other on their performance in the capstone (lab) project. 0 through 10 Target: At least 6.5 Notes: Student cross evaluation of a through I overall.</p> <p>Course Assignment - PSE 132 - Ethics seminar reflection paper: Exceptional Satisfactory</p>		

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Actions

and ethical responsibility survey in class:

1 None

2

3 Adequate

4

5 Exceptional

Target: At least satisfied in ethical responsibility reflection paper and adequate in survey.

Field Placement/Internship

Evaluation - PSE 304/5 internship survey:

1 through 5

Target: At least average 3

ABET - g. Communication 14-15 - An ability to communicate effectively

Outcome Status: Active

Outcome Year(s): 2014 - 2015

Start Date: 02/01/2015

Survey of Students - 5 -

Exceptionally satisfied

4 - Satisfied

3 - Minimally meet

2 - Approaching to the outcome

1 - Did not meet

Target: It is expected that the students perform at a benchmark level of 80% for outcomes .

Group Project - In PSE 468, students cross evaluate each other on their performance in the capstone (lab) project.

0 through 10

Target: At least 6.5

Notes: Student cross evaluation of a through I overall.

Capstone Assignment/Project - % -

The real-world design problem is undertaken generally in groups of two students in each team. It is emphasized in the first class handout that proper planning and scheduling,

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and equitable division of responsibilities within each team are essential for the successful completion of the design project. The progress of each design team is regularly monitored through the semester via weekly class meetings, student weekly reports, progress reports, and engineering logbook as mentioned earlier.

Target: It is expected that the students perform at a benchmark level of 80% in the instrumental categories that involve oral and written communication (weekly summary and class presentation, progress reports #1 and #2, technical design report, project presentation and poster) shown in Table I8-2. It is expected that the design team performance, as assessed by Dr. J. Iribarne (Director, Mill Strategic Projects & Technology, RockTenn Corporate Engineering), be at a benchmark level of 80% in the following instrumental categories: weekly class presentations of team progress, two mid-semester progress reports, final technical design report, and team presentation of their design project.

Presentation/Performance - A, B, C, D - The students in PSE 468 (Papermaking Processes) must produce a final report for each of the two large paper semi commercial paper machine runs plus a grade specific report for each paper grade produced on the large paper machine. Each report encompasses

Program Learning Outcomes	Measurement Scale	Results	Actions
	<p>the paper grades produced.</p> <p>Target: We expect that the mean written quality of the report to be above average (score = 3.0) based on the rubric given. We also expect that all sections will be average (score = 2).</p>		
<p>ABET - h. Broad education 14-15 - The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context</p> <p>Outcome Status: Active</p> <p>Outcome Year(s): 2014 - 2015</p> <p>Start Date: 02/01/2015</p>	<p>Survey of Students - 5 - Exceptionally satisfied 4 - Satisfied 3 - Minimally meet 2 - Approaching to the outcome 1 - Did not meet</p> <p>Target: It is expected that the students perform at a benchmark level of 80% for outcomes .</p>		
	<p>Group Project - In PSE 468, students cross evaluat each other on their performance in the capstone (lab) project. 0 through 10</p> <p>Target: At least 6.5</p> <p>Notes: Student cross evaluation of a through I overall.</p>		
	<p>Field Placement/Internship Evaluation - PSE 304/5 internship survey: 1 through 5</p> <p>Target: At least average 3</p>		
<p>ABET - i. Life-long learning 14-15 - A recognition of the need for, and an ability to engage in life-long learning</p> <p>Outcome Status: Active</p> <p>Outcome Year(s): 2014 - 2015</p> <p>Start Date: 02/01/2015</p>	<p>Survey of Students - 5 - Exceptionally satisfied 4 - Satisfied 3 - Minimally meet 2 - Approaching to the outcome 1 - Did not meet</p> <p>Target: It is expected that the students perform at a benchmark level of 80% for outcomes .</p>		

Program Learning Outcomes	Measurement Scale	Results	Actions
	<p>Group Project - In PSE 468, students cross evaluate each other on their performance in the capstone (lab) project. 0 through 10 Target: At least 6.5 Notes: Student cross evaluation of a through I overall.</p> <hr/> <p>Field Placement/Internship Evaluation - PSE 304/5 internship survey: 1 through 5 Target: At least average 3</p> <hr/> <p>Presentation/Performance - A, B, C, D - The students in PSE 468 (Papermaking Processes) must produce a final report for each of the two large paper semi commercial paper machine runs plus a grade specific report for each paper grade produced on the large paper machine. Each report encompasses the paper grades produced. Target: We expect that the mean written quality of the report to be above average (score = 3.0) based on the rubric given. We also expect that all sections will be average (score = 2).</p>		
<p>ABET - j. Contemporary issues 14-15 - A knowledge of contemporary issues</p> <p>Outcome Status: Active Outcome Year(s): 2014 - 2015 Start Date: 02/01/2015</p>	<p>Survey of Students - 5 - Exceptionally satisfied 4 - Satisfied 3 - Minimally meet 2 - Approaching to the outcome 1 - Did not meet Target: It is expected that the students perform at a benchmark level of 80% for outcomes .</p>		

Program Learning Outcomes	Measurement Scale	Results	Actions
	<p>Group Project - In PSE 468, students cross evaluate each other on their performance in the capstone (lab) project. 0 through 10 Target: At least 6.5 Notes: Student cross evaluation of a through I overall.</p> <hr/> <p>Field Placement/Internship Evaluation - PSE 304/5 internship survey: 1 through 5 Target: At least average 3</p> <hr/> <p>Presentation/Performance - A, B, C, D - The students in PSE 468 (Papermaking Processes) must produce a final report for each of the two large paper semi commercial paper machine runs plus a grade specific report for each paper grade produced on the large paper machine. Each report encompasses the paper grades produced. Target: We expect that the mean written quality of the report to be above average (score = 3.0) based on the rubric given. We also expect that all sections will be average (score = 2).</p>		
<p>ABET - k. Engineering tools 14-15 - An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice Outcome Status: Active Outcome Year(s): 2014 - 2015 Start Date: 02/01/2015</p>	<p>Presentation/Performance - A, B, C, D - In PSE 468 evaluation seminar at the conclusion of the paper machine run, the students give seminars and field questions regarding their plan, performance, and results of the product design experience. Each team has approximately 30 minutes for a presentation and 60 minutes for questions and discussion. A</p>		

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panel of faculty and staff, including the course instructor and the TA, independently rate the students' abilities to analyze and present data from the paper machine runs. The ratings were specifically broken out with respect to the PSE student outcomes ?a, b, c, e, I and k?.

Target: We expect the average grade to be a B- on Run A and a B on the Run B. We expect 80% of the students to achieve a grade of C or better on Run A and 90% of the students to achieve a grade of C or better on Run B for student outcomes ?a, b, c, e, i, and k?.

Survey of Students - 5 -

Exceptionally satisfied

4 - Satisfied

3 - Minimally meet

2 - Approaching to the outcome

1 - Did not meet

Target: It is expected that the students perform at a benchmark level of 80% for outcomes .

Group Project - In PSE 468, students cross evaluate each other on their performance in the capstone (lab) project.

0 through 10

Target: At least 6.5

Notes: Student cross evaluation of a through I overall.

Capstone Assignment/Project - % -

The real-world design problem is undertaken generally in groups of two students in each team. It is emphasized in the first class handout that proper planning and scheduling,

Program Learning Outcomes	Measurement Scale	Results	Actions
	<p>and equitable division of responsibilities within each team are essential for the successful completion of the design project. The progress of each design team is regularly monitored through the semester via weekly class meetings, student weekly reports, progress reports, and engineering logbook as mentioned earlier.</p> <p>Target: It is expected that the students perform at a benchmark level of 80% (36/45) in the category ?Technical design report? shown in Table I8-2</p>		
<p>ABET - I. Industrial Experience 14-15 - an ability to worked in an industrial or research position within pulp, paper or related fields.</p> <p>Outcome Status: Active</p> <p>Outcome Year(s): 2014 - 2015</p> <p>Start Date: 02/01/2015</p>	<p>Group Project - In PSE 468, students cross evaluat each other on their performance in the capstone (lab) project.</p> <p>0 through 10</p> <p>Target: At least 6.5</p> <p>Notes: Student cross evaluation of a through I overall.</p>		
	<p>Survey of Students - 5 -</p> <p>Exceptionally satisfied</p> <p>4 - Satisfied</p> <p>3 - Minimally meet</p> <p>2 - Approaching to the outcome</p> <p>1 - Did not meet</p> <p>Target: It is expected that the students perform at a benchmark level of 80% for outcomes .</p>		
	<p>Field Placement/Internship Evaluation - PSE 304/5 internship survey:</p> <p>1 through 5</p> <p>Target: At least average 3</p>		
	<p>Portfolio Review - PSE 304 is</p>		

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Actions

required
Target: PSE 304 is required