Expected Outcome 1: Broad Knowledge in Polymer and Fiber Engineering

The graduates of PFEN Master’s degree will demonstrate a thorough understanding of the basic sciences broadly associated with the area of polymer and fiber engineering. The students are required to complete 30 credits towards their Master’s degree.

Assessment Method 1: Polymer and Fiber Engineering Knowledge – Faculty Evaluation

Assessment Method Description
To fulfill degree requirements for the M.S. in Polymer and Fiber Engineering, an M.S. candidate must have a written thesis of their research work approved by their graduate committee, which is made up of at least three faculty. M.S. students are required to defend their thesis successfully before their committees. The oral defenses are usually open to public as well; therefore, the defending students may get questions from non-committee members as well.

A standardized form will be completed by all members of the committee dealing with various issues including student’s demonstration of an understanding of the basic sciences associated with polymer and fiber engineering (the evaluation form is attached). The student’s performance will be ranked on the standardized assessment form as poor (1 pt), fair (2 pts), good (3 pts), very good (4 pts) and excellent (5 pts). As the success criteria, average response from the committee members to any question should be greater than or equal to 3.
POLYMER AND FIBER ENGINEERING

Evaluation of the MS students by Committee Members

a. Evaluate the student’s oral defense and thesis in terms of the student’s demonstration of an understanding of the basic sciences associated with polymer and fiber engineering

b. Evaluate the student’s oral defense and thesis in terms of the student’s ability to apply the fundamentals of polymer and fiber engineering to their research work

c. Evaluate the student’s oral defense and thesis in terms of the technical quality of the student’s research in this area

d. Evaluate the student’s written document in terms of its clarity, organization and logic, and the ability of the student to communicate technical ideas in written form

e. Evaluate the student’s oral defense in terms of the clarity of the oral presentation, organization and logic of the presentation, and the ability of the student to communicate technical ideas orally

• Response Key

  1: Poor
  2: Fair
  3: Good
  4: Very Good
  5: Excellent

Findings
Several students completed their Master’s degrees successfully. These students’ committee members responded to the following questions regarding the students’ performance.

• Evaluate the student’s oral defense and thesis in terms of the student’s demonstration of an understanding of the basic sciences associated with polymer and fiber engineering

The range of scores for this question was 3 to 5 with an average score of 4.5 which exceeded the target level.
How did you use findings for improvement?

The results were communicated to the faculty as well as other stakeholders. New classes were developed to improve the students' understanding of basic sciences in the area of polymer and fiber engineering (e.g. PFEN 5200 Polymer Processing). We will continue to look for opportunities to improve the program and the learning experience of the students.

Additional Comments

Assessment Method 2: Polymer and Fiber Engineering Knowledge – Student Survey

Assessment Method Description
Upon completion of the degree requirements for the M.S. in Polymer and Fiber Engineering, each student will be asked to fill out a graduation survey covering several items including the following question:

- To what degree did your M.S. engineering education enhance your understanding of the basic sciences broadly associated with the area of polymer and fiber engineering?

The student’s performance will be ranked on the standardized assessment form as poor (1 pt), fair (2 pts), good (3 pts), very good (4 pts) and excellent (5 pts). As the success criteria, average response from the students should be greater than or equal to 3. The student survey is attached.
POLYMER AND FIBER ENGINEERING

M.S. Student Survey

a. To what degree did your M.S. engineering education enhance your understanding of the basic sciences broadly associated with the area of polymer and fiber engineering?

b. To what degree did your M.S. engineering education (through your thesis work) develop your expertise in a specific area of polymer and fiber engineering?

c. To what degree did your M.S. engineering education enhance your ability to communicate through written documents?

d. To what degree did your M.S. engineering education enhance your ability to communicate orally?

• Response Key

  1: Poor
  2: Fair
  3: Good
  4: Very Good
  5: Excellent

Findings
The range of answers for this question was 4 to 5, with an average score of 4.33 which exceeded the target level.

How did you use findings for improvement?
The results were communicated to the faculty as well as other stakeholders. We will continue to look for opportunities to improve the program and the learning experience of the students.

Expected Outcome 2: Communications Skills
Graduates of the M.S. program will be able to communicate effectively in oral and written form.

Assessment Method 1: Communications Skills - Faculty Evaluation
Assessment Method Description

To fulfill degree requirements for the M.S. in Polymer and Fiber Engineering, an M.S. candidate must have a thesis of their research work approved by their graduate committee and must successfully defend this thesis in an oral defense. During the oral defense of the students research work, a standardized form will be completed by the committee members dealing with various issues including clarity of the written document, organization and logic of the written document, ability of the student to communicate technical ideas within the written document, clarity of the oral presentation, organization and logic of the oral presentation, and the ability of the student to communicate technical ideas in the oral presentation. The student’s performance will be ranked on the standardized assessment form as poor (1 pt), fair (2 pts), good (3 pts), very good (4 pts) and excellent (5 pts). As the success criteria, average response from the students should be greater than or equal to 3.

Findings

Several students completed their M.S. degree in Polymer and Fiber Engineering during this evaluation period. The students’ committee members responded to the following questions regarding the students’ performance.

- Evaluate the student’s written document in terms of its clarity, organization and logic, and the ability of the student to communicate technical ideas in written form

- Evaluate the student’s oral defense in terms of the clarity of the oral presentation, organization and logic of the presentation, and the ability of the student to communicate technical ideas orally

The range of answers for the first question was 3 to 5 with an average score of 4.00; the range of answers for the second question was 3 to 5 with an average score of 4.25, which exceeded the target levels.

How did you use findings for improvement?

The results were communicated to the faculty as well as other stakeholders. We will continue to look for opportunities to improve the program and the learning experience of the students.

Additional Comments
Assessment Method 2: Communications Skills - Student Survey

Assessment Method Description

Upon completion of the degree requirements for the M.S. in Polymer and Fiber Engineering, each student will be asked to fill out a graduation survey covering several items. The student’s performance will be ranked on the standardized assessment form as poor (1 pt), fair (2 pts), good (3 pts), very good (4 pts) and excellent (5 pts). As the success criteria, average response from the students should be greater than or equal to 3.

Findings
Several students completed their M.S. degree in Polymer and Fiber Engineering during this evaluation period. They were asked the following questions:

- To what degree did your M.S. engineering education enhance your ability to communicate through written documents?
- To what degree did your M.S. engineering education enhance your ability to communicate orally?

The range of answers for the first question was 4 to 5 with an average score of 4.67; the range of answers for the second question was 3 to 5, with an average score of 4.17, which exceeded the target levels.

How did you use findings for improvement?
The results were communicated to the faculty as well as other stakeholders. We will continue to look for opportunities to improve the program and the learning experience for the students.

Additional Comments

Expected Outcome 3: Research Capability
Graduates of the M.S. program will be able to demonstrate skills for planning, executing, and analyzing research.

Assessment Method 1: Research Capability – Faculty Evaluation

Assessment Method Description
Master students are required to publish a thesis or complete a project approved by their graduate committee, which should be made up of at
least three faculty. Master of Science students are required to defend their thesis successfully before their committees. The oral defenses are usually open to public as well; therefore, the defending students may get questions from non-committee members as well. A standardized form will be completed by all members of the committee dealing with various issues including technical quality of student’s research and demonstration of his/her expertise in their research area. The student’s performance in each of these areas will be ranked on the standardized assessment form as poor (1 pt), fair (2 pts), good (3 pts), very good (4 pts) and excellent (5 pts). As the success criteria, average response from the committee members to any question should be greater than or equal to 3.

Findings
Students, with the help of their advisors and committee members, are successfully planning, executing, and analyzing research. Students either publish a thesis (with thesis option) or complete a project and present the results to their committees. All participating students successfully defended their theses. Although not required, some students published refereed journal articles and made presentations in technical conferences related to their research work. These students’ committee members responded to the following questions regarding the students’ performance.

- Evaluate the student’s oral defense and thesis in terms of the student’s ability to apply the fundamentals of polymer and fiber engineering to their research work

- Evaluate the student’s oral defense and thesis in terms of the technical quality of the student’s research in this area

The range of scores for the first question was 4 to 5 with an average of 4.75; the range for the second question was 4 to 5 with an average score of 4.50, which exceeded the target levels.

How did you use findings for improvement?
The results were communicated to the faculty as well as other stakeholders. We will continue to look for opportunities to improve the program and the learning experience of the students.

Additional Comments
**Assessment Method 2:** Research Capability – MS Student Survey

**Assessment Method Description**

Upon completion of the degree requirements for the Masters in Polymer and Fiber Engineering, each student will be asked to fill out a graduation survey covering several items including the following question:

- To what degree did your M.S. engineering education (through your thesis work) develop your expertise in a specific area of polymer and fiber engineering?

The student’s performance will be ranked on the standardized assessment form as poor (1 pt), fair (2 pts), good (3 pts), very good (4 pts) and excellent (5 pts). As the success criteria, average response from the students should be greater than or equal to 3.

**Findings**

The range of scores for this question was 4 to 5 with an average score of 4.33 which exceeded the target level.

**How did you use findings for improvement?**

The results were communicated to the faculty as well as other stakeholders. We will continue to look for opportunities to improve the program and the learning experience of the students.

**Additional Comments**