Department of Mechanical Engineering
Alumni and Employer Surveys

Submitted to

Engineering Accreditation Commission of ABET, Inc.

Prepared

by the

February, 2011
The University of Massachusetts Dartmouth Center for Policy Analysis is a multidisciplinary research unit that promotes economic, social, and political development by providing research and technical assistance to client organizations. The Center for Policy Analysis offers custom designed research and technical analysis in the areas of economic development, public management, program evaluation and polling research for government agencies, non-profit organizations, private businesses, and educational institutions. The Center for Policy Analysis strives to erode the walls between research and teaching by training students in the techniques of applied social science and by conducting university and community based educational programs. The Center for Policy Analysis does not pursue a predetermined research agenda, but is a flexible research organization responding on a timely basis to the problems and issues identified by client agencies.

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EXECUTIVE SUMMARY

The Department of Mechanical Engineering at UMass Dartmouth is in the process of reaccreditation. The organization conducting the reaccreditation is the Engineering Accreditation Commission of ABET, Inc. As part of the accreditation process, the department is required to measure its effectiveness in attaining its stated educational objectives and outcomes.

In 2008, the department retained the UMass Dartmouth Center for Policy Analysis to conduct a survey of mechanical engineering alumni and their employers to measure the degree to which each group believed that the mechanical engineering program met its educational objectives and outcomes. The results of the surveys were included in the department’s accreditation report.

After its initial review, ABET cited a weakness in the department’s educational objectives and recommended a change that provided stronger focus on the experiences of mechanical engineering graduates. Thus, the Center for Policy Analysis was asked to undertake the current analysis of alumni and employers using a survey questionnaire that measures these new educational objectives.

Alumni Survey

The alumni survey includes measures that are directly related to the department’s revised educational objectives. A total of 196 surveys were mailed to mechanical engineering alumni from the Class of 2002 through the Class of 2009. Fifty-six surveys were completed and returned by mail (N=27) and on-line (N=29), for a response rate of 28.6 percent. Results of the alumni survey include:

Respondent Background

- There is a relatively broad distribution of respondents in terms of year of graduation, with the highest percentage of alumni graduating in 2005 (23.2%) and 2009 (19.6%).
- In terms of employment status, more than four-in-five respondents (80.4%) report that they are employed in a mechanical engineering related field, while 7.1 percent are unemployed, 7.1 percent are enrolled in a graduate program, and 5.3 percent are both employed and enrolled in a graduate program. Respondents who are employed in a mechanical engineering field have been employed in their field for an average of 4.9 years.
- Nearly forty-three percent of respondents describe their current position as Mechanical Design Engineer (42.6%), followed by “other” (23.4%), Manufacturing Engineer (19.1%), Project Manager (12.8%), and Energy Systems Engineer (2.1%).
- Respondents exhibit high levels of mobility within their company. For example, more than half of respondents (52.2%) have been promoted since they began working for their current employer, which is significant since on average, respondents have worked less than four years (3.9 years) for their current employer.
Measures Related to Educational Objective I: Career Advancement

- As one measure of the effectiveness of the Mechanical Engineering program in providing graduates with the technical skills necessary for success, respondents were asked to rate the effectiveness of the program on a scale of very effective, somewhat effective, somewhat not effective, and not effective.

Nearly two-thirds of respondents (64.6%) indicate that the UMass Dartmouth Mechanical Engineering program was “very effective” in providing the technical skills necessary for them to succeed in their job, while 33.3 percent of respondents indicate that the program was “somewhat effective” and 2.1 percent indicate that the program was “somewhat ineffective.” No respondents indicate that the program’s effectiveness in this area was “not effective.”

- All seven respondents who are enrolled in a graduate program report that the UMass Dartmouth Mechanical Engineering program was “very effective” in providing the technical skills necessary for them to succeed in their graduate studies.

Measures Related to Educational Objective II: Life-Long Learning

- As a measure of the level of participation in life-long learning activities among mechanical engineering alumni, respondents were asked if they have continued their professional and individual development through participation in activities such as graduate education, self-study, membership in professional organizations, and professional registration and certifications.

All respondents report that they have engaged in at least one area of life-long learning since their graduation. Respondents are most likely to have engaged in self-study (58.9%), followed by graduate education (35.7%), membership in professional organizations (33.9%), professional registration and certifications (20.0%), and other activities (5.3%).

Employer Survey

The employer survey includes measures that are directly related to the department’s revised educational objectives. A total of 32 employers were contacted by email and asked to complete the survey online. Employer contact information was obtained from mechanical engineering faculty and from the alumni surveys. A total of 20 surveys were completed for a response rate of 62.5 percent. Results of the employer survey follow.

- Respondents employ an average of 1.6 graduates, with more than half of respondents (55.0%) employing one graduate, 35.0 percent employing 2 graduates, and 10.0 percent employing 3 graduates.

- Nearly seven percent of these graduates (6.7%) have been employed for 1 year, 23.3 percent have been employed for two years, 23.3 percent for 3 years, 20.0 percent for 4 years, and 26.7 percent for 5 years or more.
Measures Related to Educational Objective I: Career Advancement

- A plurality of employers (46.9%) rate the overall performance of the UMass Dartmouth graduates they employ as “excellent,” while 37.5 percent rate their performance as “above average,” 3.1 percent rate their performance as “average,” 6.3 percent rate their performance as “below average,” and 6.3 percent indicate that the employee has not been working long enough to be judged.

Measures Related to Educational Objective II: Life-Long Learning

- Nine-in-ten (90.0%) respondents report that they offer training or other life-long learning opportunities to their employees. Over seventy-two percent of these employers (72.2%) report that UMass Dartmouth Mechanical Engineering graduates have taken advantage of these opportunities, while 27.8 percent are not sure. No respondents indicated that graduates have not taken advantage of these opportunities.

- Employers were asked to rate UMass Dartmouth Mechanical Engineering graduates in terms of recognizing the need to engage in life-long learning. Thirty percent of employers (30.0%) rate UMass Dartmouth graduates as “excellent,” while 40.0 percent rate the graduates as “above average,” and 30.0 percent rate the graduates as “average.” No respondents rate the effectiveness of UMass Dartmouth graduates as “below average” or “poor.”
1.00 INTRODUCTION

The Department of Mechanical Engineering at UMass Dartmouth is in the process of reaccreditation. Accreditation is a peer-review process that assures that the education provided by institutions of higher education meets acceptable levels of quality. As part of the accreditation process, the department is required to measure its effectiveness in attaining its stated educational objectives and outcomes. Success in meeting these educational objectives and outcomes is measured by a periodic assessment and evaluation process. Specifically, ABET requires the department to satisfy the following three criteria:

Criteria I: Program Educational Objectives

ABET requires each program that seeks accreditation or reaccreditation to have in place:

(a) published educational objectives that are consistent with the mission of the institution and these criteria,

(b) a process that periodically documents and demonstrates that the objectives are based on the needs of the program's various constituencies, and

(c) an assessment and evaluation process that periodically documents and demonstrates the degree to which these objectives are attained.

Criteria II: Program Outcomes

Engineering programs must demonstrate that their students attain stated outcomes that foster the attainment of the program educational objectives.

Criteria III: Continuous Improvement

Each program must show evidence of actions to improve the program. These actions should be based on available information, such as results from Criteria I and Criteria II.

1.10 ALUMNI AND EMPLOYER SURVEY, 2008

In 2008, the department retained the UMass Dartmouth Center for Policy Analysis to conduct a survey of mechanical engineering alumni who graduated from the program between 2003 and 2008. A survey of employers who employ these graduates was also undertaken. The goal of the surveys was to measure the degree to which alumni and employers believed that the mechanical engineering program met its educational objectives and outcomes (see above). The results of the surveys were included in the department’s self-study report.

After a subsequent site visit in 2010, ABET cited a weakness in the department’s educational objectives and recommended a change that provided stronger focus on the experiences of graduates. Thus, the Center for Policy Analysis was asked to undertake the current analysis of alumni and employers using a survey questionnaire that measures these new educational objectives.
2.00 METHODOLOGY

2.10 ALUMNI SURVEY

The alumni survey questionnaire was developed by faculty of the Department of Mechanical Engineering and was mailed to 202 mechanical engineering alumni who graduated in the years 2003 through 2009.¹ Several strategies were employed to increase the survey's response rate:

- A postcard was mailed to alumni to announce that the survey would be arriving in the mail within a few days.
- The survey questionnaire, cover letter, and business reply envelope were mailed four days later after the postcard. Alumni were able to complete the survey and return it in the postage paid business reply envelope and were also provided the option to complete the survey on-line.
- Follow-up calls were made to alumni who did not complete a survey and a second survey was mailed to these individuals.
- Lastly, a postcard was mailed two weeks later to invite those who did not respond to the survey to complete the survey on-line.

2.20 EMPLOYER SURVEY

An on-line employer survey was conducted to measure the department’s success in satisfying its educational objectives. The survey questionnaire was designed by faculty of the Department of Mechanical Engineering.² Employer contact information was obtained from mechanical engineering faculty and from the alumni surveys. A total of 32 employers were contacted by email and asked to complete the survey online. Follow-up calls and emails were made to employers who did not initially complete the survey to increase the response rate.

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¹ A copy of the alumni survey can be found in Appendix A.
² A copy of the employer survey can be found in Appendix B.
3.00 **Alumni Survey Results**

The alumni survey includes measures that are directly related to the department’s revised educational objectives. A total of 202 surveys were mailed to mechanical engineering alumni from the Class of 2002 through the Class of 2009. Six surveys were returned because they did not have a deliverable address, thus 196 surveys were successfully mailed to alumni. A total of fifty-six surveys were completed and returned by mail (N=27) and on-line (N=29), for a response rate of 28.6 percent. Results of the alumni survey follow.

3.10 **Respondent Background**

3.11 **Year of Graduation**

There is a relatively broad distribution of respondents in terms of year of graduation, with the highest percentage of alumni graduating in 2005 (23.2%) and 2009 (19.6%) (see Table 1).

<table>
<thead>
<tr>
<th>Year of Graduation</th>
<th>Number</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002</td>
<td>6</td>
<td>10.7%</td>
</tr>
<tr>
<td>2003</td>
<td>4</td>
<td>7.1%</td>
</tr>
<tr>
<td>2004</td>
<td>6</td>
<td>10.7%</td>
</tr>
<tr>
<td>2005</td>
<td>13</td>
<td>23.2%</td>
</tr>
<tr>
<td>2006</td>
<td>5</td>
<td>8.9%</td>
</tr>
<tr>
<td>2007</td>
<td>9</td>
<td>16.1%</td>
</tr>
<tr>
<td>2008</td>
<td>2</td>
<td>3.6%</td>
</tr>
<tr>
<td>2009</td>
<td>11</td>
<td>19.6%</td>
</tr>
</tbody>
</table>
3.12 Employment Status

More than four-in-five respondents (80.4%) report that they are employed in a mechanical engineering related field, while 7.1 percent are unemployed, 7.1 percent are enrolled in a graduate program, and 5.3 percent are both employed and enrolled in a graduate program (see Figure 1). Respondents who are employed in a mechanical engineering field have been employed in their field for an average of 4.9 years.

![Figure 1](image)

3.13 Current Position

To obtain a more specific understanding of the areas in which graduates work, respondents were asked to describe their current position. Nearly forty-three percent of respondents describe their current position as Mechanical Design Engineer (42.6%), followed by “other” (23.4%), Manufacturing Engineer (19.1%), Project Manager (12.8%), and Energy Systems Engineer (2.1%) (see Table 2). “Other” position descriptions provided by respondents include System Engineer Lead (N=4), Electronics Packaging Engineer, Fluids Engineer, Industrial Engineer, Patent Examiner, Quality Assurance Engineer, and Systems Engineer.3

<table>
<thead>
<tr>
<th>Describe Current Position</th>
<th>Number</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mechanical Design Engineer</td>
<td>20</td>
<td>42.6%</td>
</tr>
<tr>
<td>Other</td>
<td>11</td>
<td>23.4%</td>
</tr>
<tr>
<td>Manufacturing Engineer</td>
<td>9</td>
<td>19.1%</td>
</tr>
<tr>
<td>Project Manager</td>
<td>6</td>
<td>12.8%</td>
</tr>
<tr>
<td>Energy Systems Engineer</td>
<td>1</td>
<td>2.1%</td>
</tr>
</tbody>
</table>

3 Not all respondents provided a specific job category.
3.14 CURRENT PLACE OF WORK AND PROMOTION

Respondents exhibit high levels of mobility within their company. For example, more than half of respondents (52.2%) have been promoted since they began working for their current employer, which is significant since on average, respondents have worked less than four years (3.9 years) for their current employer (see Figure 2). As one might expect, the longer a respondent has worked for their employer, the more likely they are to have been promoted.

![Figure 2](image)

**Figure 2**

Have You Been Promoted Since You Began Working at Your Current Job?

- Yes: 52.2%
- No: 47.8%
3.20 **QUESTIONS RELATED TO EDUCATIONAL OBJECTIVE I: CAREER ADVANCEMENT**

Educational Objective 1. Our graduates will be successfully employed and advance in professional careers or graduate education programs.

3.21 **EFFECTIVENESS OF THE UMass DARTMOUTH MECHANICAL ENGINEERING PROGRAM IN PROVIDING THE TECHNICAL SKILLS NECESSARY FOR GRADUATES TO SUCCEED IN THEIR JOB**

As one measure of the effectiveness of the Mechanical Engineering program in providing graduates with the technical skills necessary for success, respondents were asked to rate the effectiveness of the program on a scale of very effective, somewhat effective, somewhat not effective, and not effective.

Nearly two-thirds of respondents (64.6%) indicate that the UMass Dartmouth Mechanical Engineering program was “very effective” in providing the technical skills necessary for them to succeed in their job, while 33.3 percent of respondents indicate that the program was “somewhat effective” and 2.1 percent indicate that the program was “somewhat ineffective.” No respondents indicate that the program’s effectiveness in this area was “not effective” (see Figure 3).

**Figure 3**

![Bar Chart](image-url)
3.22 **EFFECTIVENESS OF THE UMASS DARTMOUTH MECHANICAL ENGINEERING PROGRAM IN PROVIDING THE TECHNICAL SKILLS NECESSARY FOR GRADUATES TO SUCCEED IN THEIR GRADUATE STUDIES**

Respondents who have graduated or who are currently enrolled in graduate school were asked to rate the effectiveness of the Mechanical Engineering program on a scale of very effective, somewhat effective, somewhat not effective, and not effective in terms of how effectively it prepared them to succeed in their graduate studies.

All seven respondents who are enrolled in a graduate program report that the UMass Dartmouth Mechanical Engineering program was “very effective” in providing the technical skills necessary for them to succeed in their graduate studies (see Table 3).

<table>
<thead>
<tr>
<th>Table 3</th>
<th>Effectiveness of Program for Graduate Students</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
</tr>
<tr>
<td>Very effective</td>
<td>7</td>
</tr>
<tr>
<td>Somewhat effective</td>
<td>0</td>
</tr>
<tr>
<td>Somewhat ineffective</td>
<td>0</td>
</tr>
<tr>
<td>Not effective</td>
<td>0</td>
</tr>
</tbody>
</table>
3.30  QUESTIONS RELATED TO EDUCATIONAL OBJECTIVE 2: LIFE-LONG LEARNING

Educational Objective 2. Our graduates will continue their professional and individual development through participation in activities such as: graduate education, self-study, membership in professional organizations, professional registration and certifications.

3.31  PARTICIPATION IN VARIOUS FORMS OF LIFE-LONG LEARNING

As one measure of the level of participation in life-long learning activities among mechanical engineering alumni, respondents were asked if they have continued their professional and individual development through participation in activities such as graduate education, self-study, membership in professional organizations, and professional registration and certifications.

Respondents are most likely to have engaged in self-study (58.9%), followed by graduate education (35.7%), membership in professional organizations (33.9%), professional registration and certifications (20.0%), and other activities (5.3%) (see Figure 4).

---

4 Self-study includes reading technical books and journals and enrolling in short courses, seminars, and workshops.
3.32 **Specific Life-Long Learning Activities**

Respondents who report that they engaged in life-long learning activities were asked to provide specific examples.

3.32a. **Self-Study**

As noted in Figure 4, 59.6 percent of respondents have engaged in some form of self-study, including reading technical books and journals, and enrolling in short courses, technical seminars and workshops. Specific examples of self-study include:

- Association of International Metallizers, Coaters and Laminators (AIMCAL) conference
- American Society for Quality (ASQ) Certified Quality Engineering Exam prep training
- Advanced GD&T (Geometric Dimensioning and Tolerancing) workshop
- American Society for Quality (ASQ) Conferences
- American Society Of Mechanical Engineers
- ANSYS Finite Elements Analysis training
- Classes in pharmaceutical field
- Computational Fluid Dynamics workshops
- Dale Carnegie Communication
- Design Excellence
- Design publications
- Engineer in Training exam
- EURO PCR (conference on percutaneous coronary interventions)
- General Electric seminar on plastics design
- Geometric Dimensioning and Tolerancing training
- InfinityQS SPC (Statistical Process Control) software training
- Institute of Industrial Engineer seminar
- International Microelectronics And Packaging Society
- Intro to GD&T(Geometric Dimensioning and Tolerancing) (N=2)
- ISO 9001/13485/14001 Internal Auditor training
- Labview Programming
- Lean manufacturing
- Learn PDC (Professional Development Course) Webinar Series
- Minitab Statistical Software training
- New England Mechanical Contractors Association
- Package on Package (PoP) - Applications, Requirements, Infrastructure and Technologies
- Project Management Professional
- Project management courses/training (N=2)
- Six Sigma Tools (N=3)
- Society of Vacuum Coaters (SVC) conference
- TCT (Transcatheter Cardiovascular Therapeutics) medical device conferences
- Think 3 Webinars
- Workshops on using CAD software and MATLAB
3.32b. **Graduate Programs**

As noted in Figure 4, 35.7 percent of respondents have attended or are attending graduate school. Specific schools and programs include:

- Tufts University (MS, Mechanical Engineering (thesis))
- Tufts University (MS Engineering Management)
- UMass Dartmouth (Electrical Engineering)
- UMass Dartmouth (Mechanical Engineering) (N=8)
- UMass Dartmouth (no specific program or degree provided) (N=2)
- UMass Dartmouth (Master of Business Administration)
- Union College (MS, Mechanical Engineering)
- University of California Berkeley, Masters (completed) and PhD (current) in Mechanical Engineering
- University of Rhode Island (no specific program or degree provided)
- University of Texas Arlington, Industrial & Manufacturing Systems Engineering Management, M.S.
- Vanderbilt University (Civil Engineering)

3.32c. **Professional Organizations**

As noted in Figure 4, 35.1 percent of respondents report that they are members of professional organizations. Specific examples of professional organizations of which respondents are members include:

- American Society for Quality (ASQ) (N=3)
- American Society for Engineering Education (ASEE)
- Society of Women Engineers (SWE)
- American Society of Mechanical Engineers (ASME) (N=5)
- Institute of Industrial Engineers (IIE)
- Society of Manufacturing Engineers (SME) (N=3)
- Society of Automotive Engineers SAE (N=3)
- Institute of Electrical and Electronics Engineers (IEEE)
- Mechanical Engineers Anonymous
- National Engineers Association
- New England Mechanical Contractors Association
- TMS
3.32d. Professional Registration and Certifications

As noted in Figure 4, 21.4 percent of respondents report that they have attained professional registration and certifications. Specific examples of professional registration and certifications include:

- American Society for Quality (ASQ) - Certified Quality Engineer
- Engineer in Training (EIT) (N=3)
- Fundamentals of Engineering (N=2)
- Project Management Professional (PMP)
- Certified Lean/Six Sigma Black Belt (N=2)
- Unigraphics Designer Certified Professional

3.32e. Other Life-Long Learning Activities

Other life-long learning activities reported by respondents include:

- Self-education on an informal level. I frequently watch video lectures and read articles on a broad variety of scientific topics. Mechanical engineering was a great starting point.
- Volunteer peer mentoring at local high school in engineering classes

3.40 Comments Regarding Objectives

Respondents were asked if they would like to comment on the wording of the Educational Objectives 1 and 2 or believe they can be improved. Three comments were provided:

- Objective 1: It would have benefited me greatly to have had at least one CAD course.
- Objective 2: Add community involvement and peer mentoring
- Perhaps re-word questions to accommodate students who also work full time jobs and attend school on a part-time basis
4.00 EMPLOYER SURVEY

An on-line employer survey was conducted to measure the department’s success in satisfying its educational objectives. Employer contact information was obtained from mechanical engineering faculty and from graduates who completed the alumni survey and provided contact information for their employer.

A total of 32 employers were contacted by email and asked to complete the survey online. Follow-up calls and emails were made to employers who did not initially complete the survey to increase the response rate. A total of 20 surveys were completed for a response rate of 62.5 percent. Results of the alumni survey follow.

4.10 BUSINESS BACKGROUND

Personnel from the following companies responded to the survey:

- Aavio Thermalloy
- Detek Inc.
- C. A. Crowley Engineering, Inc.
- Depuy Spine/Johnson and Johnson
- EY Technologies
- Genzyme Corporation
- Hart Engineering Corporation
- Harvey Building Products
- Lockheed Martin Corporation
- Morgan Technical Ceramics
- Naval Undersea Warfare Center
- Object Management Group
- Precix, Inc.
- St. Jude Medical
- System Engineering Associates Corporation (SEA CORP)
- Taco, Inc.

Respondents hold a broad array of positions at these companies:

- Business Area Manager / Senior Engineer
- Director
- Division Manager
- Manager (N=3)
- Mechanical Engineering Manager (N=2)
- President (N=3)
- Principal Research Associate (N=2)
- Product Development Manager
- Project Manager / Vice President
- QA/Export Compliance Manager
- Technical Director (N=2)
- World Wide Director, R&D
4.20  **NUMBER OF GRADUATES EMPLOYED AND LENGTH OF EMPLOYMENT**

Survey respondents employ an average of 1.6 graduates, with more than half of respondents (55.0%) employing one graduate, 35.0 percent employing 2 graduates, and 10.0 percent employing 3 graduates (see Table 4).

Nearly seven percent of these graduates (6.7%) have been employed for 1 year, 23.3 percent have been employed for two years (23.3%), 23.3 percent for 3 years, 20.0 percent for 4 years, and 26.7 percent for 5 or more years (see Table 5).

![Table 4](image)

<table>
<thead>
<tr>
<th># Employed</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>55.0%</td>
</tr>
<tr>
<td>2</td>
<td>35.0%</td>
</tr>
<tr>
<td>3</td>
<td>10.0%</td>
</tr>
</tbody>
</table>

![Table 5](image)

<table>
<thead>
<tr>
<th>Length of Employment</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Year</td>
<td>6.7%</td>
</tr>
<tr>
<td>2 Years</td>
<td>23.3%</td>
</tr>
<tr>
<td>3 Years</td>
<td>23.3%</td>
</tr>
<tr>
<td>4 Years</td>
<td>20.0%</td>
</tr>
<tr>
<td>5+ Years</td>
<td>26.7%</td>
</tr>
</tbody>
</table>

4.30  **OVERALL PERFORMANCE OF THE UMASS DARTMOUTH GRADUATES**

A plurality of employers (46.9%) rate the overall performance of the UMass Dartmouth graduates they employ as “excellent,” while 37.5 percent rate their performance as “above average,” 3.1 percent rate their performance as “average,” 6.3 percent rate their performance as “below average,” and 6.3 percent indicate that the employee has not been working long enough to be judged (see Figure 5).

![Figure 5](image)
4.40 LIFE-LONG LEARNING OPPORTUNITIES

4.41 AVAILABILITY AND RATES OF PARTICIPATION

Nine-in-ten (90.0%) respondents report that they offer training or other life-long learning opportunities to their employees. Over seventy-two percent of these employers (72.2%) report that UMass Dartmouth Mechanical Engineering graduates have taken advantage of these opportunities, while 27.8 percent are not sure (see Figure 6). No respondents indicated that graduates have not taken advantage of these opportunities.

![Figure 6](image)

4.42 RECOGNIZING THE NEED TO ENGAGE IN LIFE-LONG LEARNING

Employers were asked to rate UMass Dartmouth Mechanical Engineering graduates in terms of recognizing the need to engage in life-long learning. Thirty percent of employers (30.0%) rate UMass Dartmouth graduates as “excellent,” while 40.0 percent rate the graduates as “above average,” and 30.0 percent rate the graduates as “average.” No respondents rate the effectiveness of UMD graduates as “below average” or “poor” (see Figure 7).

![Figure 7](image)

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5 Life-long learning includes activities such as graduate education, self-study, membership in professional organizations, and professional registration and certifications.
4.40 ADDITIONAL COMMENTS

Employers were asked to provide additional comments. These include:

- [The UMass Dartmouth Graduates I employ] exhibit keen engineering knowledge and a teamwork spirit in their assignments. Happy to have them.

- I am in the process of hiring another UMD Mechanical Engineering Graduate. I am very impressed with [the current hire] and looking forward to our next UMD hire!

- Having employed numerous UMD co-op students in the past, I thought that they all were above average and prepared quite well in the work place. In my case they were all fine young men.

- I've had one real good graduate and despite having openings year after year we don't get anyone interested in working [for our company]. I've tried to recruit but to no avail. Very disappointing especially since I am an SMU alum myself.
APPENDIX A: ALUMNI SURVEY INSTRUMENT

1. What year did you graduate with a BSME degree from the University of Massachusetts Dartmouth?
   Year: ______

The questions below relate to the Mechanical Engineering Department’s two educational objectives.

<table>
<thead>
<tr>
<th>Educational Objective 1</th>
<th>Career and Advancement: Our graduates will be successfully employed and advance in professional careers or graduate education programs.</th>
</tr>
</thead>
</table>

2. Are you employed, unemployed or enrolled in a graduate program?
   - EMPLOYED
     [IF EMPLOYED] Are you employed in a mechanical engineering related field?
     - YES [IF YES], HOW MANY YEARS? ____________
     - NO [IF NO, PLEASE SKIP TO QUESTION 7]
   - ENROLLED IN A GRADUATE PROGRAM [PLEASE SKIP TO QUESTION 6]
   - UNEMPLOYED [PLEASE SKIP TO QUESTION 7]

3. Which of the following areas BEST describes your current position? (Please choose only one)
   - MECHANICAL DESIGN ENGINEER
   - MANUFACTURING ENGINEER
   - ENERGY SYSTEMS ENGINEER
   - PROJECT MANAGER
   - OTHER (PLEASE DESCRIBE) __________________________

4. How effective was the UMD Mechanical Engineering program in providing the technical skills necessary for you to succeed in your job?
   - VERY EFFECTIVE
   - SOMEWHAT EFFECTIVE
   - SOMEWHAT INEFFECTIVE
   - NOT EFFECTIVE
   - DON’T KNOW

5. How many years have you been employed at your current place of work? _________________

5a. Have you been promoted since you began working there?
   - YES
   - NO
6. FOR GRADUATE STUDENTS ONLY: How effective was the UMD Mechanical Engineering program in providing the technical skills necessary for you to succeed in your graduate studies?

- VERY EFFECTIVE
- SOMEWHAT EFFECTIVE
- SOMEWHAT INEFFECTIVE
- NOT EFFECTIVE
- DON’T KNOW

| Educational Objective 2. | Life-long learning: Our graduates will continue their professional and individual development through participation in activities such as: graduate education, self-study, membership in professional organizations, professional registration and certifications. |

7. Since your graduation from UMass Dartmouth, have you engaged in any of the following: (Please check the appropriate response).

7A. GRADUATE EDUCATION  o YES  o NO
   If yes, which program/university? (please write below)

7B. SELF STUDY, SUCH AS READING TECHNICAL BOOKS AND JOURNALS, SHORT COURSES, TECHNICAL SEMINARS OR WORKSHOPS  o YES  o NO
   If applicable, which courses, seminars or workshops? (please write below)

7C. MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS  o YES  o NO
   If yes, which organizations? (please write below)

7D. PROFESSIONAL REGISTRATION AND CERTIFICATIONS  o YES  o NO
   If yes, which professional registration and certifications? (please write below)

7E. ANY OTHER LIFE LONG LEARNING ACTIVITIES? (please write below)

8. If you would like to comment on the wording of the Educational Objectives 1 and 2 above or think they can be improved, please write below.
EMPLOYER SURVEY

We are required to contact employers of UMass graduates as part of the accreditation process. While it is optional, providing the name of your employer and the name and telephone number or email address of a contact person to whom we may ask a few questions will help us considerably in the accreditation process. Preferably this contact person is someone who knows you well.

Keep in mind that all employer responses will remain strictly confidential and will be reported in aggregate only.

Name of your employer: __________________________

Name of supervisor who we can contact: __________________________

Contact information (telephone # or email): __________________________

Thank you for your help.

Please return the questionnaire in the enclosed envelope or mail the survey to:

Center for Policy Analysis
University of Massachusetts Dartmouth
285 Old Westport Rd.
Dartmouth, MA 02747
APPENDIX B: EMPLOYER ON-LINE SURVEY INSTRUMENT

1. What is your division within the company and your position?

   COMPANY/ORGANIZATION NAME: ____________________________

   POSITION: ____________________________

2. How many UMass Mechanical Engineering graduates do you employ? _________

3. How long have you employed Graduate #1? _________

3a. How would you rate the overall performance of UMass graduate #1 you employ? Would you rate it as:

   ○ EXCELLENT
   ○ ABOVE AVERAGE
   ○ AVERAGE
   ○ BELOW AVERAGE
   ○ POOR
   ○ TOO EARLY TO BE JUDGED
   ○ NO BASIS /DON’T KNOW

4. If you employ more than one graduate, how long have you employed Graduate #2? _________

4a. How would you rate the overall performance of UMass graduate #2 you employ? Would you rate it as:

   ○ EXCELLENT
   ○ ABOVE AVERAGE
   ○ AVERAGE
   ○ BELOW AVERAGE
   ○ POOR
   ○ TOO EARLY TO BE JUDGED
   ○ NO BASIS /DON’T KNOW

5. If you employ more than two graduates, how long have you employed Graduate #3? _________

5a. How would you rate the overall performance of UMass graduate #3 you employ? Would you rate it as:

   ○ EXCELLENT
   ○ ABOVE AVERAGE
   ○ AVERAGE
   ○ BELOW AVERAGE
   ○ POOR
   ○ TOO EARLY TO BE JUDGED
   ○ NO BASIS /DON’T KNOW
6. If you employ more than three graduates, how long have you employed Graduate #4? ________

6a. How would you rate the overall performance of UMass graduate #4 you employ? Would you rate it as:
   - EXCELLENT
   - ABOVE AVERAGE
   - AVERAGE
   - BELOW AVERAGE
   - TOO EARLY TO BE JUDGED
   - POOR
   - NO BASIS /DON'T KNOW

7. Does your company offer training or other life-long learning opportunities to its employees?
   - YES
   - NO [SKIP TO Q9]
   - DON'T KNOW

8. Have any UMD Mechanical Engineering graduates taken advantage of these opportunities?
   - YES
   - NO
   - DON'T KNOW

9. How would you rate UMD Mechanical Engineering graduates you employ in recognizing the need to engage in life-long learning? Life-long learning includes activities such as graduate education, self-study, membership in professional organizations, professional registration and certifications. Would you say it is:
   - EXCELLENT
   - ABOVE AVERAGE
   - AVERAGE
   - BELOW AVERAGE
   - POOR
   - NO BASIS /DON'T KNOW

10. Do you have any additional comments?