

Assessment from 2007 Alumni Survey

A total of seventy-eight alumni completed the alumni survey in 2007 (Table 1). Out of those seventy-eight alumni, nineteen alumni had graduated since 2003 (Table B2.2). Thus, we were able to assess achievement of program objectives from a representation of those alumni who have graduated since 2003 (Table 2) as well as from a representation of all alumni (Table 1). Our goal was to receive feedback on the program objectives from close to 100% of our alumni. However, in many cases we did not have up to date contact information, which is maintained by the UWM's alumni office and provided to us through our dean's office. We had up to date contact information on 91 alumni and received completed alumni surveys from 78, giving us a response rate of 85.7%.

Table 1: Summary of alumni survey conducted in 2007 (n= 78, all alumni)

Program Objective	How applicable the objective is to your current job (1=No relationship, 5=Very applicable)	How well the industrial engineering program prepared. (1=Very poor, 5= Very well)
1. Graduates will have successful, professional careers in industrial engineering.	Mean = 3.6 Median = 4 S.D. = 1.3 Range* = 1-5	Mean = 3.8 Median = 4 SD = 0.88 Range* = 1-5
2. Graduates will contribute to improving efficiency, productivity and/or quality of products manufactured or services provided by their organization.	Mean = 3.5 Median = 4 SD= 1.5 Range = 1-5	Mean = 3.8 Median = 4 SD= 0.88 Range = 1-5
3. Graduates will demonstrate professionalism including teamwork and communication and continue professional development.	Mean = 3.8 Median = 4 SD = 1.2 Range = 1-5	Mean = 4.1 Median = 4 SD = 1.3 Range = 1-5

* Range = Lowest and highest scores reported on the survey.

Table 2: Summary of alumni survey conducted in 2007 from those alumni who graduated since 2003 (n= 19)

Program Objective	How applicable the objective is to your current job (1=No relationship, 5=Very applicable)	How well the industrial engineering program prepared. (1=Very poor, 5= Very well)
1. Graduates will have successful, professional careers in industrial engineering.	Mean = 3.9 Median = 4 SD = 1.1 Range = 1-5	Mean = 3.7 Median = 4 SD = 0.9 Range = 1-5
2. Graduates will contribute to improving efficiency, productivity and/or quality of products manufactured or services provided by their organization.	Mean = 4.3 Median = 5 SD = 1.0 Range = 2-5	Mean = 3.9 Median = 4 SD = 0.8 Range = 2-5
3. Graduates will demonstrate professionalism including teamwork and communication and continue professional development.	Mean = 4.3 Median = 4 SD = 0.8 Range = 2-5	Mean = 4.1 Median = 4 SD = 1.0 Range = 2-5

Assessment from 2007 Employer Survey

In 2007 employer surveys were mailed to fifteen employers of our graduates who have graduated since 2003. A total of twelve employers completed the employer survey. In all cases, our graduates had signed a consent form to allow us to seek information from their employers. Some of the results from employer survey are summarized in Table 3. An assessment of program objectives from Table 3 shows that the employers are satisfied with the performance of our graduates. The mean employee performance rating for objective 1 is 4.6 exceeding the mean rating for how applicable this objective is to the current position of our graduate (Table 3). The mean employee performance rating for objective 2 is also 4.6, and is 0.2 units lower than the mean rating for how applicable this objective is to the current position of our graduate (Table 3). This is within program acceptability criteria of less than equal to 1.0 unit. The mean employee performance rating for objective 3 is 4.8 and is equal to the mean rating for how applicable this objective is to the current position of our graduate (Table 3).

Table 3: Summary of employer survey conducted in 2007 from those alumni who graduated since 2003 (n= 12)

Program Objective	How applicable the objective is to the current position of the employee (1=No relationship, 5=Very applicable)	Employee's Performance Rating (1=Very poor, 5= Very well)
1. Employee will have successful, professional careers in industrial engineering.	Mean = 4 Median = 5 SD = 1.4 Range = 1-5	Mean = 4.6 Median = 5 SD = 0.7 Range = 3-5
2. Employee will contribute to improving efficiency, productivity and/or quality of products manufactured or services provided by their organization.	Mean = 4.8 Median = 5 STDEV = 0.4 Range = 4-5	Mean = 4.6 Median = 5 SD = 0.5 Range = 4-5
3. Employee will demonstrate professionalism including teamwork and communication and continue professional development.	Mean = 4.8 Median = 5 SD = 0.4 Range = 4-5	Mean = 4.8 Median = 5 SD = 0.6 Range = 3-5

Consistency of curriculum with alumni and employer needs

A review of Table 4 shows that the current industrial engineering curriculum is consistent with our alumni and employers' needs. Traditional industrial engineering topics such as methods engineering, ergonomics and safety, engineering economics, quality control, materials handling and process control are used by most of our alumni in their current jobs. Similarly, employer survey shows that these are topics most often required by the employees' jobs. Further, our graduates are well prepared on these topics to perform their jobs. The mean ratings on these topics are 4.0 or higher (Table 4). More advanced topics such as simulation and operations research are also utilized both by our alumni and their employers to perform their jobs. However, on a relative basis fewer alumni use these concepts and fewer employers require them from our graduates to perform their jobs.

Our alumni are involved in identifying, formulating and analyzing problems as well as in developing and implementing solutions (Table 5). Results from employer survey (Table 6) are consistent with those from alumni survey. Results from employer survey show that our graduates are required to perform all five functions.

Table 4: Percentage of alumni have used (alumni survey) and the percentage of the employees' jobs require the use the following industrial engineering concepts and methods to solve problems at work (employer Survey)

Concept/Method	Alumni Survey	Employer Survey	
	%	%	How well prepared (1=Very Poorly, 5=Very well)
1. Engineering Economics	78%	75%	4.0
2. Statistics	77%	84%	4.0
3. Methods Engineering	72%	92%	4.4
4. Ergonomics and Safety	82%	92%	4.3
5. Environmental Issues	47%	42%	3.8
6. Process Selection	69%	83%	4.4
7. Material Handling	63%	84%	4.1
8. Quality Control	63%	92%	4.1
9. Operations Research	45%	50%	4.5
10. Simulation	42%	42%	4.0
11. Manufacturing Systems	65%	83%	4.2
12. Other	12%	8%	-

Table 5: Percentage of time spent by alumni (n =78, alumni survey)

Activity	≤ 10%	11-25%	26-50%	> 50%
1. Identify problems	22%	36%	10%	10%
2. Formulate problems	37%	31%	7%	5%
3. Analyze problems	14%	34%	24%	14%
4. Develop solutions	12%	24%	29%	17%
5. Implementation of solutions	13%	21%	31%	18%

Table 6: Percentage of time spent by employees (n =12, employer survey)

Activity	≤ 10%	11-25%	26-50%	> 50%
1. Identify problems	33%	42%	17%	8%
2. Formulate problems	50%	42%	0%	8%
3. Analyze problems	8%	25%	42%	25%
4. Develop solutions	0%	33%	42%	25%
5. Implementation of solutions	8%	8%	50%	34%

Assessment from 2007 Senior Exit Survey

Program outcome ratings from 2007 Senior Exit Survey are summarized in Table 7.

Table 7: Summary of program outcome assessments from Senior exit Surveys Conducted in 2007 (n =8)

<i>Program Outcomes</i>	Industrial Engineering Program Preparation (1=Poor, 5=Excellent) (Mean, SD, Range)
i Design, develop & improve integrated systems	3.8±0.5 (3-4) (4)
ii Solve real World industrial engineering problems	3.9±0.4 (3-4) (4)
iii Apply knowledge of mathematics, science, engineering	3.6±0.5 (3-4) (4)
iv Design & conduct experiments	3.4±1.1 (1-5) (3.5)
v Analyze & interpret data using statistical methods	3.4±0.9 (2-5) (3)
vi Design systems/processes with realistic constraints	3.3±0.9 (2-4) (3.5)
vii Function as a multidisciplinary team	4.3±0.5 (4-5) (4)
viii Identify, formulate & solve industrial engineering problems	4.1±0.6 (3-5) (4)
ix Understanding of ethics, professional responsibilities & contemporary issues	3.4±1.1 (2-5) (3.5)
x Proficiency in oral and written communications	3.4±0.9 (2-4) (4)
xi Impact of engineering solutions in global, economic, environmental & societal context	3.4±0.7 (3-5) (3.5)
xii Life-long learning	3.3±0.9 (1-5) (3.5)
xiii Use modern engineering tools	3.5±0.9 (1-5) (3.5)

Assessment from 2007 Alumni Survey

A total of seventy-eight alumni completed the alumni survey in 2007. Out of those seventy-eight alumni, nineteen alumni had graduated since 2003. Thus, we were able to assess achievement of program outcomes from a representation of those alumni who have graduated since 2003 as well as from a representation of all alumni.

Survey results for program outcomes from seventy-eight and nineteen alumni are summarized in Tables 8 and 9.

Table 8: Summary of program outcome assessments from alumni survey conducted in 2007
(n= 78, all alumni)

Program Outcomes	How applicable the program outcome is to your current job (1=No relationship, 5=Very applicable) (Mean, SD, Range, Median)	How well the industrial engineering program prepared. (1=Very poor, 5=Very well) (Mean, SD, Range, Median)
i Design, develop & improve integrated systems	3.7±1.4 (1-5) (4)	3.6±1.4 (1-5) (4)
ii Solve real World industrial engineering problems	3.8±1.4 (1-5) (4)	3.3±1.4 (1-5) (4)
iii Apply knowledge of mathematics, science, engineering	3.5±1.4 (1-5) (3)	3.6±1.4 (1-5) (4)
iv Design & conduct experiments	3.1±1.4 (1-5) (3)	3.3±1.3 (1-5) (3.5)
v Analyze & interpret data using statistical methods	3.5±1.5 (1-5) (4)	3.6±1.3 (1-5) (4)
vi Design systems/processes with realistic constraints	3.6±1.3 (1-5) (4)	3.3±1.3 (1-5) (4)
vii Function as a multidisciplinary team	4.1±1.4 (1-5) (5)	3.6±1.2 (1-5) (4)
viii Identify, formulate & solve industrial engineering problems	3.6±1.3 (1-5) (4)	3.1±1.7 (1-5) (4)
ix Understanding of ethics, professional responsibilities & contemporary issues	3.8±1.4 (1-5) (4)	3.4±1.3 (1-5) (4)
x Proficiency in oral and written communications	4.0±1.3 (1-5) (4)	3.4±1.3 (1-5) (4)
xi Impact of engineering solutions in global, economic, environmental & societal context	3.3±1.4 (1-5) (4)	3.0±1.4 (1-5) (3)
xii Life-long learning	3.7±1.3 (1-5) (4)	3.6±1.3 (1-5) (4)
xiii Use modern engineering tools	3.4±1.4 (1-5) (4)	3.4±1.3 (1-5) (4)

Table 9: Summary of program outcome assessments from those alumni who graduated since 2003 from alumni survey conducted in 2007 (n= 19)

Program Outcomes	How applicable the objective is to your current job (1=No relationship, 5=Very applicable) (Mean, SD, Range, Median)	How well the industrial engineering program prepared. (1=Very poor, 5=Very well) (Mean, SD, Range, Median)
i Design, develop & improve integrated systems	4.3±0.9 (2-5) (5)	3.9±0.9 (1-5) (4)
ii Solve real World industrial engineering problems	4.3±0.9 (2-5) (5)	3.8±1.0 (1-5) (4)
iii Apply knowledge of mathematics, science, engineering	3.8±1.2 (1-5) (4)	4.1±0.7 (3-5) (4)
iv Design & conduct experiments	3.4±1.2 (1-5) (3)	3.7±0.8 (1-5) (3)
v Analyze & interpret data using statistical methods	3.7±1.3 (1-5) (4)	3.7±0.7 (2-5) (4)
vi Design systems/processes with realistic constraints	4.2±1.1 (1-5) (5)	3.6±0.8 (2-5) (4)
vii Function as a multidisciplinary team	4.4±0.8 (3-5) (5)	3.8±0.8 (2-5) (4)
viii Identify, formulate & solve industrial engineering problems	4.2±1.1 (2-5) (5)	3.9±0.8 (1-5) (4)
ix Understanding of ethics, professional responsibilities & contemporary issues	4.2±0.8 (2-5) (4)	3.5±1.0 (2-5) (4)
x Proficiency in oral and written communications	4.2±0.8 (2-5) (4)	3.7±0.8 (1-5) (4)
xi Impact of engineering solutions in global, economic, environmental & societal context	3.9±1.1 (1-5) (4)	3.3±1.0 (1-5) (3)
xii Life-long learning	3.9±1.0 (2-5) (4)	3.5±1.0 (2-5) (3)
xiii Use modern engineering tools	3.9±1.0 (1-5) (4)	3.6±0.9 (1-5) (4)

Assessment from 2007 Employer Survey

Results from 2007 employer survey are summarized in Table 10.

Table 10: Summary of program outcome assessments from Employer Surveys Conducted in 2007 (n =12)

Program Outcomes	How applicable the program outcome is to the current position of the employee (1=No relationship, 5=Very applicable) (Mean, SD, Range, Median)	Employee's Performance Rating (1=Very poor, 5= Very well) (Mean, SD, Range, Median)
i Design, develop & improve integrated systems	4.1±1.1 (2-5) (4.5)	4.4±0.7 (3-5) (4.5)
ii Solve real World industrial engineering problems	4.0±1.4 (1-5) (5)	4.3±0.8 (3-5) (4)
iii Apply knowledge of mathematics, science, engineering	3.9±1.2 (2-5) (4)	4.3±0.8 (3-5) (4)
iv Design & conduct experiments	3.2±1.3 (1-5) (3)	3.7±0.8 (3-5) (4)
v Analyze & interpret data using statistical methods	3.6±1.1 (2-5) (3.5)	3.9±0.7 (3-5) (4)
vi Design systems/processes with realistic constraints	4.7±0.7 (3-5) (5)	4.5±0.5 (4-5) (4.5)
vii Function as a multidisciplinary team	4.8±0.4 (4-5) (5)	4.8±0.4 (4-5) (5)
viii Identify, formulate & solve industrial engineering problems	3.8±1.3 (1-5) (4)	4.3±0.8 (3-5) (4.5)
ix Understanding of ethics, professional responsibilities & contemporary issues	4.2±0.8 (2-5) (4)	3.5±0.9 (2-5) (4)
x Proficiency in oral and written communications	4.1±1.2 (2-5) (5)	4.5±0.8 (3-5) (5)
xi Impact of engineering solutions in global, economic, environmental & societal context	2.9±1.2 (1-5) (3)	3.6±0.9 (3-5) (4)
xii Life-long learning	3.7±1.2 (1-5) (4)	4.0±0.7 (3-5) (4)
xiii Use modern engineering tools	3.8±1.3 (1-5) (4)	4.4±0.7 (3-5) (4)