

**CAREER SERVICES**  
**EMPLOYER SURVEY: INDUSTRY PERSPECTIVES**  
**COLLEGE OF ENGINEERING 2008-09**  
**QUALITY OF GRADUATES & PROGRAM OUTCOMES**

**PROJECT BACKGROUND**

**ASSESSMENT PLAN**

Career Services collaborated with the College of Engineering in assessing the engineering programs through employer surveys during 2008-09. Assessment areas included:

- Quality of CENG Graduates
- Industry Readiness
- Program Outcomes
- Employer Values Related  
Program Outcomes  
Personal Qualities  
Future Training/Education
- Diversity in the Workplace

The program outcomes are aligned with ABET accreditation standards.

**OTHER UNIVERSITY ASSESSMENT EFFORTS**

This is the third assessment effort with the College of Engineering, with the first in 2004-05 and second in 2006-07. The program outcomes and instrument design have changed to meet the unique and specific needs of the College of Engineering and reflect changes in ABET accreditation assessment methodologies.

Career Services has also collaborated with the Colleges of Business, Education, and Architecture & Environmental Design in assessing the quality of graduates and student learning outcomes. Career Services also assisted the College of Engineering with their recently completed ABET accreditation review, sharing our assessment results.

Recently, Career Services has expanded its assessment efforts to include the Colleges of Liberal Arts and Agriculture, Food & environmental Sciences. Pilot programs were established to integrate employer feedback into the assessment process. We have completed Phase I with the Natural Resource Management/Environmental Management and Graphic Communication Departments. Career Services is working with their Industrial Advisory Boards to implement Phase II of the assessment process, with the goal of expanding employer participation. Phase I and II will be integrated within their internal program review process beginning Fall Quarter 2009.

**OBJECTIVES**

The following objectives were established for this report:

1. Graduate Qualities  
Measure the quality of Cal Poly engineering graduates.  
Measure the industry readiness of Cal Poly engineering graduates.
2. Program Outcomes

Measure skill attainment related to program outcomes in alignment with ABET accreditation standards.

3. Employer Values

Measure the importance employers place on the program outcomes.

Measure the personal qualities employer's value in engineering graduates.

Measure the future training and/or education employers value in engineering graduates.

4. Diversity

Measure the degree and importance to which Cal Poly engineering graduates understand diverse perspectives, meet diverse workforce needs, and interact and communicate effectively with co-workers and clients from culturally diverse backgrounds compared to graduates from other universities.

## PROGRAM DESIGN

Career Services and the College of Engineering collaborated in developing an employer survey tailored to meet the unique and specific needs of each academic program. The survey was broken into three sections as indicated below:

### Section 1: Graduate Quality

**Overall Quality**

Satisfied with the overall quality of Cal Poly engineering graduates

**Industry Readiness**

Able to make a positive contribution to the work place with minimum supervision

### Section 2: Program Outcomes

**Knowledge**

Standard A: Ability to apply knowledge of mathematics, science and engineering

**Technical Practice**

Standard B1: Ability to design and conduct experiments

**Technical Practice**

Standard B2: Ability to analyze and interpret data

**Design**

Standard C: Ability to design a system component or process subject to constraints (e.g. economic, environmental, social, political, ethical, health and safety, manufacturability, or sustainability)

**Multi-Disciplinary Teams**

Standard D: Ability to function on multi-disciplinary Teams

**Problem Solving**

Standard E: Ability to identify, formulate, and solve engineering problems

**Ethical Behavior**

Standard F: Demonstrates professional and ethical responsibility

**Communication**

Standard G1: Ability to communicate effectively (orally)

**Communication**

Standard G2: Ability to communicate effectively (written)

**Global/Societal Context**

Standard H: Accountable for the impact of engineering solutions in global, economic, environmental, and societal context

<b>Life-Long Learning</b>	<u>Standard I</u> : Engages in continuous education and keeps current within the field
<b>Contemporary Issues</b>	<u>Standard J</u> : Integrates awareness of current issues in implementing engineering solutions
<b>Tools</b>	<u>Standard K</u> : Ability to use techniques, skills and modern engineering tools
<b><u>Section 3: Diversity Outcomes</u></b>	
<b>Diversity Perspectives</b>	Understand diverse perspectives and generate solutions that incorporate them
<b>Diverse Workforce</b>	Meet the cultural diversity needs of your company compared to graduates from other universities
<b>Diverse Backgrounds</b>	Interact and communicate effectively with <u>co-workers</u> from culturally diverse backgrounds compared to graduates from other universities
<b>Diverse Backgrounds</b>	Interact and communicate effectively with <u>clients</u> from culturally diverse backgrounds compared to graduates from other universities

Refer to Employer Survey form in Appendix A.

## STUDY PROFILE

Surveys were collected in 2008-09 through industry leaders, managers, supervisors and HR administrators. One hundred and eight (108) different employers participated, comprising five hundred thirty four (534) individual survey responses. Employer participation is broken down by department.

<b>EMPLOYER SURVEYS</b>	
Aerospace Engineering	20
Architectural Engineering	13
Biomedical Engineering	15
BioResource & Agricultural Engr	11
Civil Engineering	40
Computer Science	44
Computer Engineering	46
Electrical Engineering	82
Environmental Engineering	19
Industrial Engineering	46
Materials Engineering	31
Mechanical Engineering	86
Manufacturing Engineering	37
Software Engineering	44
<b>Total Surveys</b>	<b>534</b>

For a more detailed breakdown of employer participation by department, see Appendix B.

## PROJECT FINDINGS

### 1A. OVERALL GRADUATE QUALITIES

#### Quality of Engineering Graduates

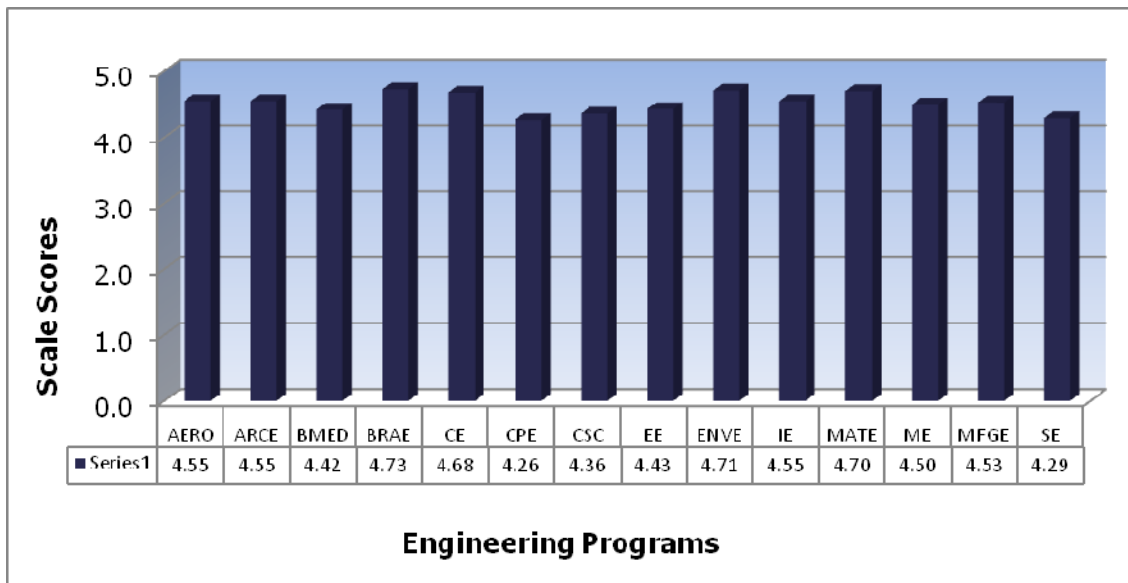
**OBJECTIVE:** Measure the quality of Cal Poly engineering graduates.

**METHODOLOGY:** Surveys were completed by employers to evaluate engineering graduates using a 5-point scale (*1 = lowest; 2 = low; 3 = medium; 4 = high; 5 = highest*).

**FINDINGS:** Employers reported the following findings:

Overall Graduate Quality was defined as: *My company is satisfied with the quality of Cal Poly's engineering graduates.*

The chart below is a graphical presentation of scale score averages for each department.



Overall, employers reported that they were satisfied with the quality of engineering graduates, scoring high to highest levels or scale score averages ranging from 4.26 to 4.70. The overall scale score average of all engineering majors was 4.49.

The following chart reports the same data, but it has been formatted differently, reporting numerically on each of the scale score categories. This provides a breakdown of responses (example: how many employers scored a 1, 2, 3, 4 or 5 rating) and is particularly helpful in analyzing the data.

### OVERALL GRADUATE QUALITY

<i>Departments</i>	<i>Dept</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>Survey s</i>	<i>Score</i>
Aerospace Engineering	AERO	0	0	2	5	13	20	<b>4.55</b>
Architectural Engineering	ARCE	0	0	1	3	7	11	<b>4.55</b>
Biomedical Engineering	BMED	0	0	2	3	7	12	<b>4.42</b>
BioResource & Ag Engr	BRAE	0	0	0	3	8	11	<b>4.73</b>
Civil Engineering	CE	0	0	1	11	29	41	<b>4.68</b>
Computer Engineering	CPE	0	0	4	24	15	43	<b>4.26</b>
Computer Science	CSC	0	0	3	19	17	39	<b>4.36</b>
Electrical Engineering	EE	0	0	6	33	40	79	<b>4.43</b>
Environmental Engineering	ENVE	0	0	0	5	12	17	<b>4.71</b>
Industrial Engineering	IE	0	0	3	14	27	44	<b>4.55</b>
Material Engineering	MATE	0	0	1	7	22	30	<b>4.70</b>
Mechanical Engineering	ME	0	0	6	29	47	82	<b>4.50</b>
Manufacturing Engineering	MFGE	0	0	3	11	22	36	<b>4.53</b>
Software Engineering	SE	0	0	4	21	16	41	<b>4.29</b>

## Industry Readiness of Engineering Graduates

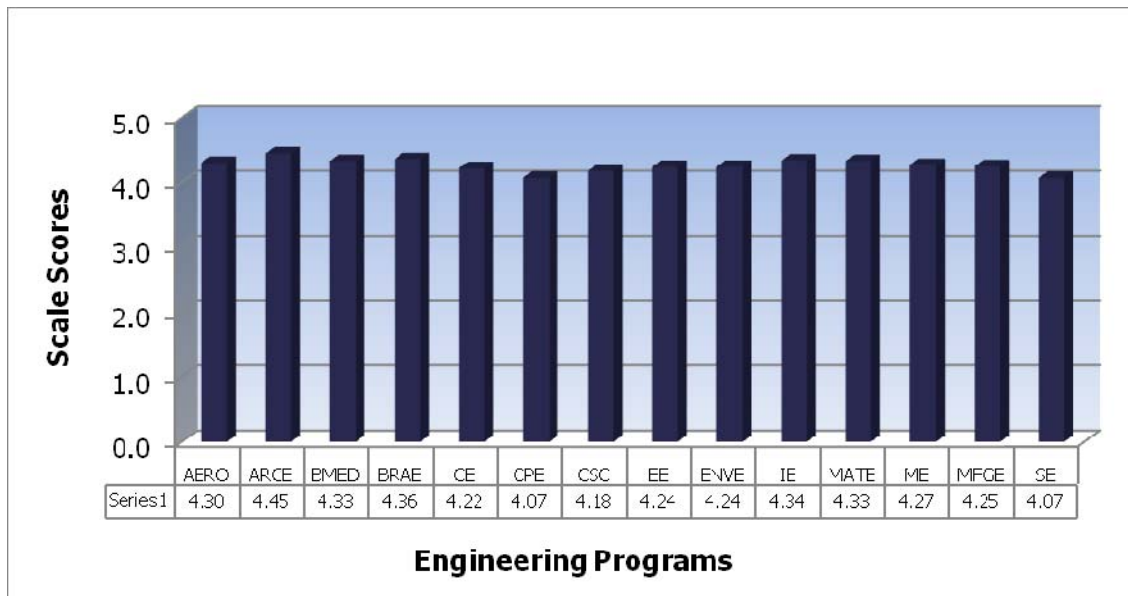
**OBJECTIVE:** Measure the industry readiness of Cal Poly engineering graduates.

**METHODOLOGY:** Surveys were completed by employers to evaluate the industry readiness of engineering graduates using a 5-point scale (*1 = lowest; 2 = low; 3 = medium; 4 = high; 5 = highest*).

**FINDINGS:** Employers reported the following findings:

Industry Readiness was defined as: *Able to make a positive contribution to the work place.*

The chart below is a graphical presentation of scale score averages for each department.



Overall, employers reported that they were satisfied with the industry readiness of engineering graduates, scoring high to highest levels or scale score averages ranging from 4.07 to 4.55. The overall scale score average of all engineering majors was 4.24.

The following chart reports the same data, but it has been formatted differently, reporting numerically on each of the scale score categories. This provides a breakdown of responses (example: how many employers scored a 1, 2, 3, 4 or 5 rating) and is particularly helpful in analyzing the data.

INDUSTRY READINESS								
<i>Departments</i>	<i>Dept</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>Survey s</i>	<i>Score</i>
Aerospace Engineering	AERO	0	1	2	7	10	20	<b>4.30</b>
Architectural Engineering	ARCE	0	0	0	6	5	11	<b>4.45</b>
Biomedical Engineering	BMED	0	0	2	4	6	12	<b>4.33</b>
Bioresource & Ag Engr	BRAE	0	0	0	7	4	11	<b>4.36</b>
Civil Engineering	CE	0	0	7	18	16	41	<b>4.22</b>
Computer Engineering	CPE	0	1	7	23	12	43	<b>4.07</b>
Computer Science	CSC	0	0	7	18	14	39	<b>4.18</b>
Electrical Engineering	EE	0	1	10	36	31	78	<b>4.24</b>
Environmental Engineering	ENVE	0	0	2	9	6	17	<b>4.24</b>
Industrial Engineering	IE	0	1	5	16	22	44	<b>4.34</b>
Materials Engineering	MATE	0	1	4	9	16	30	<b>4.33</b>
Mechanical Engineering	ME	0	1	12	32	36	81	<b>4.27</b>
Manufacturing Engineering	MFGE	0	1	5	14	16	36	<b>4.25</b>
Software Engineering	SE	0	1	8	19	13	41	<b>4.07</b>

## 2. PROGRAM OUTCOMES

**OBJECTIVE:** Measure skill attainment related to program outcomes aligned with ABET accreditation standards.

**STANDARDS:** The College of Engineering identified the program outcomes that are aligned with the ABET accreditation standards. Each program outcome is fully defined within the survey instrument to assist employers in the scoring process.

**METHODOLOGY:** Surveys were completed by employers to measure the success of engineering graduates based on student learning outcomes, using a 5-point scale (*1 = lowest; 2 = low; 3 = medium; 4 = high; 5 = highest*).

**FINDINGS:** The following charts indicate the scale score averages and the numeric values for each program outcome. The charts are detailed for each academic department.

Employers reported the following:

The first chart reflects the overall scale score averages for all majors combined.

College of Engineering 2008-09 <b>OVERALL AVERAGES</b>		Strongly Agree	Disagree	Neutral	Agree	Strongly Agree	Scale Score Average
Standards	Scale Scores	1	2	3	4	5	
A	Knowledge	0%	.2%	6.1%	61.8%	31.9%	<b>4.25</b>
	Surveys	0	1	32	325	168	526
B1	Technical Practice - Design & Conduct Experiments	0%	2.6%	18.8%	49.6%	29.1%	<b>4.05</b>
	Surveys	0	13	95	251	147	506
B2	Technical Practice – Analyze & Interpret Data	0%	0%	15.9%	53.2%	31.0%	<b>4.15</b>
	Surveys	0	0	83	278	162	523
C	Design	1.0%	3.8%	21.0%	47.8%	26.4%	<b>3.95</b>
	Surveys	5	19	104	237	131	496
D	Multi-disciplinary Teams	0%	0%	11.0%	42.5%	46.6%	<b>4.36</b>
	Surveys	0	0	56	217	238	511
E	Problem Solving	0%	0%	8.4%	46.6%	44.9%	<b>4.37</b>
	Surveys	0	0	44	243	234	521
F	Ethical Behavior	.2%	1.0%	8.7%	38.7%	51.5%	<b>4.40</b>
	Surveys	1	5	44	196	261	507
G1	Communication - Oral	0%	.4%	22.9%	56.3%	20.4%	<b>3.97</b>
	Surveys	0	2	120	295	107	524
G2	Communication - Written	.4%	1.6%	22.8%	59.6%	15.6%	<b>3.86</b>
	Surveys	2	8	115	301	79	505
H	Global/Societal Context	2.4%	5.5%	36.7%	42.9%	12.6%	<b>3.58</b>
	Surveys	10	23	155	181	53	422
I	Life-Long Learning	0%	5.1%	24.6%	49.5%	20.7%	<b>3.86</b>
	Surveys	0	25	120	241	101	487
J	Contemporary Issues	0%	3.9%	27.7%	55.4%	13.1%	<b>3.77</b>
	Surveys	0	18	129	258	61	466
K	Tools	.2%	1.9%	9.6%	51.5%	36.9%	<b>4.23</b>
	Surveys	1	9	46	247	177	480

Employers reported the top student learning outcomes for all majors combined were ethical behavior, problem solving, multi-disciplinary teams, tools and technical practice. Employers reported lower valued program outcomes for global societal context, contemporary issues, life-long learning and communications (written).

<b>AEROSPACE ENGINEERING</b> College of Engineering 2008-09		Strongly Agree	Disagree	Neutral	Agree	Strongly Agree	Scale Score
Standards	Scale Scores	1	2	3	4	5	Average
A	Knowledge	0%	0%	5%	65%	30%	<b>4.20</b>
	Surveys	0	0	1	13	6	20
B1	Technical Practice - Design & Conduct Experiments	0%	0%	10%	55%	35%	<b>4.15</b>
	Surveys	0	0	2	11	7	20
B2	Technical Practice – Analyze & Interpret Data	0%	0%	10%	50%	40%	<b>4.25</b>
	Surveys	0	0	2	10	8	20
C	Design	0%	0%	10%	50%	40%	<b>4.53</b>
	Surveys	0	0	2	10	8	20
D	Multi-disciplinary Teams	0%	0%	5%	33%	58%	<b>4.30</b>
	Surveys	0	0	1	7	11	19
E	Problem Solving	0%	0%	0%	45%	55%	<b>4.55</b>
	Surveys	0	0	0	9	11	20
F	Ethical Behavior	0%	0%	10%	40%	50%	<b>4.40</b>
	Surveys	0	0	2	8	10	20
G1	Communication - Oral	0%	0%	25%	60%	15%	<b>3.90</b>
	Surveys	0	0	5	12	3	20
G2	Communication - Written	0%	5%	16%	63%	16%	<b>3.89</b>
	Surveys	0	1	3	12	3	19
H	Global/Societal Context	6%	6%	25%	44%	19%	<b>3.63</b>
	Surveys	1	1	4	7	3	16
I	Life-Long Learning	0%	10%	15%	55%	20%	<b>3.85</b>
	Surveys	0	2	3	11	4	20
J	Contemporary Issues	0%	0%	13%	69%	19%	<b>4.06</b>
	Surveys	0	0	2	11	3	16
K	Tools	0%	0%	5%	50%	45%	<b>4.30</b>
	Surveys	0	0	1	10	9	20

<b>ARCHITECTURAL ENGINEERING</b> College of Engineering 2008-09		Strongly Agree	Disagree	Neutral	Agree	Strongly Agree	Scale Score
Standards	Scale Scores	1	2	3	4	5	Average
A	Knowledge	0%	8%	15%	38%	38%	<b>4.08</b>
	Surveys	0	1	2	5	5	13
B1	Technical Practice - Design & Conduct Experiments	0%	18%	0%	55%	27%	<b>3.91</b>
	Surveys	0	2	0	6	3	11
B2	Technical Practice – Analyze & Interpret Data	0%	0%	15%	62%	23%	<b>4.08</b>
	Surveys	0	0	2	8	3	13
C	Design	0%	8%	31%	31%	31%	<b>4.00</b>
	Surveys	0	1	4	4	4	13
D	Multi-disciplinary Teams	0%	0%	0%	42%	58%	<b>4.58</b>
	Surveys	0	0	0	5	7	12
E	Problem Solving	0%	0%	0%	54%	46%	<b>4.46</b>
	Surveys	0	0	0	7	6	13
F	Ethical Behavior	0%	9%	9%	55%	27%	<b>4.00</b>
	Surveys	0	1	1	6	3	11
G1	Communication - Oral	0%	0%	8%	69%	23%	<b>4.15</b>
	Surveys	0	0	1	9	3	13
G2	Communication - Written	0%	0%	25%	50%	25%	<b>4.00</b>
	Surveys	0	0	3	6	3	12
H	Global/Societal Context	0%	11%	22%	56%	11%	<b>3.67</b>
	Surveys	0	1	2	5	1	9
I	Life-Long Learning	0%	00%	9%	73%	18%	<b>4.09</b>
	Surveys	0	0	1	8	2	11
J	Contemporary Issues	0%	0%	27%	45%	27%	<b>4.00</b>
	Surveys	0	0	3	5	3	11
K	Tools	9%	0%	9%	45%	36%	<b>4.00</b>
	Surveys	1	0	1	5	4	11

<b>BIOMEDICAL ENGINEERING</b> College of Engineering 2008-09		Strongly Agree	Disagree	Neutral	Agree	Strongly Agree	Scale Score
Standards	Scale Scores	1	2	3	4	5	Average
A	Knowledge	0%	0%	0%	53%	47%	<b>4.47</b>
	Surveys	0	0	0	8	7	15
B1	Technical Practice - Design & Conduct Experiments	0%	0%	33%	27%	40%	<b>4.07</b>
	Surveys	0	0	5	4	6	15
B2	Technical Practice – Analyze & Interpret Data	0%	0%	33%	27%	40%	<b>4.07</b>
	Surveys	0	0	5	4	6	13
C	Design	0%	14%	21%	43%	21%	<b>3.71</b>
	Surveys	0	2	3	6	3	14
D	Multi-disciplinary Teams	0%	0%	13%	33%	53%	<b>4.40</b>
	Surveys	0	0	2	5	8	15
E	Problem Solving	0%	0%	7%	47%	47%	<b>4.40</b>
	Surveys	0	0	1	7	7	15
F	Ethical Behavior	0%	0%	13%	33%	53%	<b>4.40</b>
	Surveys	0	0	2	5	83	15
G1	Communication - Oral	0%	0%	27%	40%	33%	<b>4.07</b>
	Surveys	0	0	4	6	5	15
G2	Communication - Written	0%	0%	21%	50%	29%	<b>4.07</b>
	Surveys	0	0	3	7	4	14
H	Global/Societal Context	0%	17%	33%	33%	17%	<b>3.50</b>
	Surveys	0	2	4	4	2	12
I	Life-Long Learning	0%	8%	31%	54%	8%	<b>3.62</b>
	Surveys	0	1	4	7	1	13
J	Contemporary Issues	0%	8%	33%	50%	8%	<b>3.58</b>
	Surveys	0	1	4	6	1	12
K	Tools	0%	0%	33%	56%	11%	<b>3.78</b>
	Surveys	0	0	3	5	7	9

<b>BIORESOURCE &amp; AG ENGR</b> College of Engineering 2008-09		Strongly Agree	Disagree	Neutral	Agree	Strongly Agree	Scale Score Average
Standards	Scale Scores	1	2	3	4	5	
A	Knowledge	0%	0%	0%	55%	45%	<b>4.45</b>
	Surveys	0	0	0	5	5	11
B1	Technical Practice - Design & Conduct Experiments	0%	0%	0%	56%	44%	<b>4.44</b>
	Surveys	0	0	0	5	4	9
B2	Technical Practice – Analyze & Interpret Data	0%	0%	9%	45%	45%	<b>4.36</b>
	Surveys	0	0	1	5	5	11
C	Design	0%	0%	20%	30%	50%	<b>4.30</b>
	Surveys	0	0	2	3	5	10
D	Multi-disciplinary Teams	0%	0%	0%	36%	64%	<b>4.64</b>
	Surveys	0	0	0	4	7	11
E	Problem Solving	0%	0%	0%	45%	55%	<b>4.55</b>
	Surveys	0	0	0	5	6	11
F	Ethical Behavior	0%	0%	0%	0%	100%	<b>5.00</b>
	Surveys	0	0	0	0	10	10
G1	Communication - Oral	0%	0%	9%	55%	36%	<b>4.27</b>
	Surveys	0	0	1	6	4	11
G2	Communication - Written	0%	9%	9%	55%	27%	<b>4.00</b>
	Surveys	0	1	1	6	3	11
H	Global/Societal Context	0%	0%	27%	64%	9%	<b>3.82</b>
	Surveys	0	0	3	7	1	11
I	Life-Long Learning	0%	0%	9%	55%	36%	<b>4.27</b>
	Surveys	0	0	1	6	4	11
J	Contemporary Issues	0%	0%	20%	50%	30%	<b>4.10</b>
	Surveys	0	0	2	5	3	10
K	Tools	0%	0%	18%	36%	45%	<b>4.27</b>
	Surveys	0	0	2	4	5	11

<b>CIVIL ENGINEERING</b> College of Engineering 2008-09		Strongly Agree	Disagree	Neutral	Agree	Strongly Agree	Scale Score
Standards	Scale Scores	1	2	3	4	5	Average
A	Knowledge	0%	0%	12%	55%	33%	<b>4.29</b>
	Surveys	0	0	5	23	14	42
B1	Technical Practice - Design & Conduct Experiments	0%	8%	16%	55%	21%	<b>3.89</b>
	Surveys	0	3	6	21	8	38
B2	Technical Practice – Analyze & Interpret Data	0%	0%	14%	21%	24%	<b>4.10</b>
	Surveys	0	0	6	26	10	42
C	Design	0%	2%	24%	44%	29%	<b>4.00</b>
	Surveys	0	1	10	18	12	41
D	Multi-disciplinary Teams	0%	0%	10%	41%	49%	<b>4.39</b>
	Surveys	0	0	4	17	20	41
E	Problem Solving	0%	0%	7%	45%	48%	<b>4.45</b>
	Surveys	0	0	3	19	20	42
F	Ethical Behavior	0%	3%	8%	40%	50%	<b>4.35</b>
	Surveys	0	1	3	16	20	40
G1	Communication - Oral	0%	2%	17%	52%	29%	<b>4.05</b>
	Surveys	0	1	7	22	12	42
G2	Communication - Written	3%	3%	13%	55%	28%	<b>3.73</b>
	Surveys	1	1	5	22	11	40
H	Global/Societal Context	0%	3%	26%	51%	20%	<b>3.89</b>
	Surveys	0	1	9	18	7	35
I	Life-Long Learning	0%	0%	23%	59%	18%	<b>3.95</b>
	Surveys	0	0	9	23	7	39
J	Contemporary Issues	0%	0%	21%	61%	18%	<b>3.97</b>
	Surveys	0	0	8	23	7	38
K	Tools	0%	0%	7%	63%	29%	<b>4.22</b>
	Surveys	0	0	3	26	12	41

<b>COMPUTER SCIENCE</b> College of Engineering 2008-09		Strongly Agree	Disagree	Neutral	Agree	Strongly Agree	Scale Score
Standards	Scale Scores	1	2	3	4	5	Average
A	Knowledge	0%	0%	0%	70%	30%	<b>4.30</b>
	Surveys	0	0	0	28	12	40
B1	Technical Practice - Design & Conduct Experiments	0%	3%	21%	55%	21%	<b>3.95</b>
	Surveys	0	1	8	21	8	38
B2	Technical Practice – Analyze & Interpret Data	0%	0%	10%	63%	28%	<b>4.18</b>
	Surveys	0	0	4	25	11	40
C	Design	0%	6%	20%	57%	17%	<b>3.86</b>
	Surveys	0	2	7	20	6	35
D	Multi-disciplinary Teams	0%	0%	16%	50%	34%	<b>4.18</b>
	Surveys	0	0	6	19	13	38
E	Problem Solving	0%	0%	5%	58%	37%	<b>4.32</b>
	Surveys	0	0	2	22	14	38
F	Ethical Behavior	0%	0%	8%	31%	62%	<b>4.54</b>
	Surveys	0	0	3	12	24	30
G1	Communication - Oral	0%	0%	33%	51%	15%	<b>3.82</b>
	Surveys	0	0	13	20	6	39
G2	Communication - Written	0%	0%	31%	59%	10%	<b>3.79</b>
	Surveys	0	0	12	23	4	39
H	Global/Societal Context	7%	7%	41%	41%	3%	<b>3.28</b>
	Surveys	2	2	12	12	1	29
I	Life-Long Learning	0%	6%	34%	43%	17%	<b>3.71</b>
	Surveys	0	2	12	15	6	35
J	Contemporary Issues	0%	6%	36%	53%	6%	<b>3.58</b>
	Surveys	0	2	13	19	2	36
K	Tools	0%	3%	9%	49%	40%	<b>4.26</b>
	Surveys	0	1	3	17	14	35

<b>COMPUTER ENGINEERING</b> College of Engineering 2008-09		Strongly Agree	Disagree	Neutral	Agree	Strongly Agree	Scale Score Average
Standards	Scale Scores	1	2	3	4	5	
A	Knowledge	0%	0%	5%	73%	23%	<b>4.18</b>
	Surveys	0	0	2	32	10	44
B1	Technical Practice - Design & Conduct Experiments	0%	2%	21%	52%	24%	<b>3.98</b>
	Surveys	0	1	9	22	10	42
B2	Technical Practice – Analyze & Interpret Data	0%	0%	16%	58%	26%	<b>4.09</b>
	Surveys	0	0	7	25	11	43
C	Design	0%	5%	23%	56%	15%	<b>3.82</b>
	Surveys	0	2	9	22	6	39
D	Multi-disciplinary Teams	0%	0%	9%	51%	40%	<b>4.30</b>
	Surveys	0	0	4	22	17	43
E	Problem Solving	0%	0%	9%	53%	37%	<b>4.28</b>
	Surveys	0	0	4	23	16	43
F	Ethical Behavior	0%	0%	7%	37%	56%	<b>4.49</b>
	Surveys	0	0	3	16	24	43
G1	Communication - Oral	0%	0%	27%	57%	16%	<b>3.89</b>
	Surveys	0	0	12	25	7	44
G2	Communication - Written	0%	0%	28%	63%	9%	<b>3.81</b>
	Surveys	0	0	12	27	4	43
H	Global/Societal Context	0%	6%	44%	47%	3%	<b>3.47</b>
	Surveys	0	2	14	15	1	32
I	Life-Long Learning	0%	5%	28%	48%	20%	<b>3.83</b>
	Surveys	0	2	11	19	8	40
J	Contemporary Issues	0%	5%	31%	59%	5%	<b>3.64</b>
	Surveys	0	2	12	23	2	39
K	Tools	0%	3%	8%	5%	40%	<b>4.28</b>
	Surveys	0	1	3	20	16	40

<b>ELECTRICAL ENGINEERING</b> College of Engineering 2008-09		Strongly Agree	Disagree	Neutral	Agree	Strongly Agree	Scale Score Average
Standards	Scale Scores	1	2	3	4	5	
A	Knowledge	0%	0%	9%	59%	32%	<b>4.23</b>
	Surveys	0	0	7	48	26	81
B1	Technical Practice - Design & Conduct Experiments	0%	5%	18%	49%	29%	<b>4.01</b>
	Surveys	0	4	14	39	23	80
B2	Technical Practice – Analyze & Interpret Data	0%	0%	16%	55%	29%	<b>4.13</b>
	Surveys	0	0	13	44	23	80
C	Design	1%	4%	23%	47%	25%	<b>3.90</b>
	Surveys	1	3	18	36	19	77
D	Multi-disciplinary Teams	0%	0%	14%	37%	49%	<b>4.36</b>
	Surveys	0	0	11	29	38	78
E	Problem Solving	0%	0%	13%	44%	44%	<b>4.34</b>
	Surveys	0	0	10	35	35	80
F	Ethical Behavior	0%	1%	10%	38%	51%	<b>4.38</b>
	Surveys	0	1	8	29	39	77
G1	Communication - Oral	0%	0%	24%	55%	21%	<b>3.98</b>
	Surveys	0	0	19	44	17	80
G2	Communication - Written	0%	0%	24%	59%	17%	<b>3.92</b>
	Surveys	0	0	19	46	13	78
H	Global/Societal Context	3%	6%	38%	40%	13%	<b>3.52</b>
	Surveys	2	4	24	25	8	63
I	Life-Long Learning	0%	5%	25%	49%	20%	<b>3.84</b>
	Surveys	0	4	19	37	15	75
J	Contemporary Issues	0%	3%	34%	51%	13%	<b>3.73</b>
	Surveys	0	2	24	36	9	71
K	Tools	0%	3%	9%	49%	39%	<b>4.24</b>
	Surveys	0	2	7	37	29	75

<b>ENVIRONMENTAL ENGINEERING</b> College of Engineering 2008-09		Strongly Agree	Disagree	Neutral	Agree	Strongly Agree	Scale Score Average
Standards	Scale Scores	1	2	3	4	5	
A	Knowledge	0%	0%	6%	67%	28%	<b>4.22</b>
	Surveys	0	0	1	12	5	18
B1	Technical Practice - Design & Conduct Experiments	0%	0%	31%	25%	44%	<b>4.13</b>
	Surveys	0	0	5	4	7	16
B2	Technical Practice – Analyze & Interpret Data	0%	0%	11%	50%	39%	<b>4.28</b>
	Surveys	0	0	2	9	7	18
C	Design	0%	0%	12%	53%	35%	<b>4.24</b>
	Surveys	0	0	2	9	6	17
D	Multi-disciplinary Teams	0%	0%	6%	41%	53%	<b>4.47</b>
	Surveys	0	0	1	7	9	17
E	Problem Solving	0%	0%	6%	56%	39%	<b>4.33</b>
	Surveys	0	0	1	10	7	18
F	Ethical Behavior	0%	0%	19%	38%	44%	<b>4.25</b>
	Surveys	0	0	3	6	7	16
G1	Communication - Oral	0%	6%	22%	44%	28%	<b>3.94</b>
	Surveys	0	1	4	8	5	18
G2	Communication - Written	6%	12%	6%	53%	24%	<b>3.76</b>
	Surveys	1	2	1	9	4	17
H	Global/Societal Context	0%	0%	14%	64%	21%	<b>4.07</b>
	Surveys	0	0	2	9	3	14
I	Life-Long Learning	0%	0%	25%	50%	25%	<b>4.00</b>
	Surveys	0	0	4	8	4	16
J	Contemporary Issues	0%	0%	13%	75%	13%	<b>4.00</b>
	Surveys	0	0	2	12	2	16
K	Tools	0%	0%	6%	53%	41%	<b>4.35</b>
	Surveys	0	0	1	9	7	17

<b>INDUSTRIAL ENGINEERING</b> College of Engineering 2008-09		Strongly Agree	Disagree	Neutral	Agree	Strongly Agree	Scale Score
Standards	Scale Scores	1	2	3	4	5	Average
A	Knowledge	0%	0%	4%	63%	33%	<b>4.28</b>
	Surveys	0	0	2	29	15	46
B1	Technical Practice - Design & Conduct Experiments	0%	0%	13%	54%	33%	<b>4.20</b>
	Surveys	0	0	6	25	15	46
B2	Technical Practice – Analyze & Interpret Data	0%	0%	15%	50%	35%	<b>4.20</b>
	Surveys	0	0	7	23	16	46
C	Design	0%	2%	22%	49%	27%	<b>4.00</b>
	Surveys	0	1	10	22	12	45
D	Multi-disciplinary Teams	0%	0%	9%	42%	49%	<b>4.40</b>
	Surveys	0	0	4	19	22	45
E	Problem Solving	0%	0%	9%	46%	46%	<b>4.37</b>
	Surveys	0	0	4	21	21	46
F	Ethical Behavior	0%	2%	7%	47%	44%	<b>4.33</b>
	Surveys	0	1	3	21	20	45
G1	Communication - Oral	0%	0%	17%	63%	20%	<b>4.02</b>
	Surveys	0	0	8	29	9	46
G2	Communication - Written	0%	0%	20%	69%	11%	<b>3.91</b>
	Surveys	0	0	9	31	5	45
H	Global/Societal Context	0%	2%	41%	44%	12%	<b>3.66</b>
	Surveys	0	1	17	18	5	41
I	Life-Long Learning	0%	7%	20%	55%	18%	<b>3.84</b>
	Surveys	0	3	9	24	8	44
J	Contemporary Issues	0%	5%	28%	53%	14%	<b>3.77</b>
	Surveys	0	2	12	23	6	43
K	Tools	0%	2%	12%	57%	29%	<b>4.12</b>
	Surveys	0	1	5	24	12	42

<b>MATERIALS ENGINEERING</b> College of Engineering 2008-09		Strongly Agree	Disagree	Neutral	Agree	Strongly Agree	Scale Score
Standards	Scale Scores	1	2	3	4	5	Average
A	Knowledge	0%	0%	6%	61%	32%	<b>4.26</b>
	Surveys	0	0	2	19	10	31
B1	Technical Practice - Design & Conduct Experiments	0%	0%	19%	48%	32%	<b>4.13</b>
	Surveys	0	0	6	15	10	31
B2	Technical Practice – Analyze & Interpret Data	0%	0%	19%	48%	32%	<b>4.13</b>
	Surveys	0	0	6	15	10	31
C	Design	3%	3%	14%	48%	31%	<b>4.00</b>
	Surveys	1	1	4	14	9	29
D	Multi-disciplinary Teams	0%	0%	13%	43%	43%	<b>4.30</b>
	Surveys	0	0	4	13	13	30
E	Problem Solving	0%	0%	10%	48%	42%	<b>4.32</b>
	Surveys	0	0	3	15	13	31
F	Ethical Behavior	0%	0%	10%	47%	43%	<b>4.33</b>
	Surveys	0	0	3	14	13	30
G1	Communication - Oral	0%	0%	23%	58%	19%	<b>3.97</b>
	Surveys	0	0	7	18	6	31
G2	Communication - Written	0%	0%	29%	61%	11%	<b>3.82</b>
	Surveys	0	0	8	17	3	28
H	Global/Societal Context	4%	8%	36%	28%	24%	<b>3.60</b>
	Surveys	1	2	9	7	6	25
I	Life-Long Learning	0%	10%	17%	45%	28%	<b>3.90</b>
	Surveys	0	3	5	13	8	29
J	Contemporary Issues	0%	7%	18%	61%	18%	<b>3.82</b>
	Surveys	0	2	5	17	4	28
K	Tools	0%	4%	4%	54%	39%	<b>4.29</b>
	Surveys	0	1	1	15	11	28

<b>MANUFACTURING ENGINEERING</b> College of Engineering 2008-09		Strongly Agree	Disagree	Neutral	Agree	Strongly Agree	Scale Score
Standards	Scale Scores	1	2	3	4	5	Average
A	Knowledge	0%	0%	5%	61%	34%	<b>4.29</b>
	Surveys	0	0	2	23	13	38
B1	Technical Practice - Design & Conduct Experiments	0%	0%	24%	42%	34%	<b>4.11</b>
	Surveys	0	0	9	16	13	38
B2	Technical Practice – Analyze & Interpret Data	0%	0%	21%	39%	39%	<b>4.18</b>
	Surveys	0	0	8	15	15	38
C	Design	0%	5%	24%	43%	27%	<b>3.92</b>
	Surveys	0	2	9	16	10	37
D	Multi-disciplinary Teams	0%	0%	8%	49%	43%	<b>4.35</b>
	Surveys	0	0	3	18	16	37
E	Problem Solving	0%	0%	8%	45%	47%	<b>4.39</b>
	Surveys	0	0	3	17	18	38
F	Ethical Behavior	0%	0%	5%	45%	50%	<b>4.45</b>
	Surveys	0	0	2	17	19	38
G1	Communication - Oral	0%	0%	21%	63%	16%	<b>3.95</b>
	Surveys	0	0	8	24	6	38
G2	Communication - Written	0%	0%	19%	68%	14%	<b>3.95</b>
	Surveys	0	0	7	25	5	37
H	Global/Societal Context	6%	6%	41%	38%	9%	<b>3.38</b>
	Surveys	2	2	13	12	3	32
I	Life-Long Learning	0%	5%	27%	46%	22%	<b>3.84</b>
	Surveys	0	2	10	17	8	37
J	Contemporary Issues	0%	3%	27%	29%	11%	<b>3.78</b>
	Surveys	0	1	10	22	4	37
K	Tools	0%	0%	12%	48%	39%	<b>4.27</b>
	Surveys	0	0	4	16	13	33

<b>MECHANICAL ENGINEERING</b> College of Engineering 2008-09		Strongly Agree	Disagree	Neutral	Agree	Strongly Agree	Scale Score
Standards	Scale Scores	1	2	3	4	5	Average
A	Knowledge	0%	0%	7%	59%	34%	<b>4.27</b>
	Surveys	0	0	6	51	29	86
B1	Technical Practice - Design & Conduct Experiments	0%	1%	20%	47%	31%	<b>4.08</b>
	Surveys	0	1	17	39	36	83
B2	Technical Practice – Analyze & Interpret Data	0%	0%	16%	52%	31%	<b>4.15</b>
	Surveys	0	0	14	45	27	86
C	Design	4%	3%	18%	47%	29%	<b>3.98</b>
	Surveys	3	2	15	39	24	83
D	Multi-disciplinary Teams	0%	0%	12%	39%	49%	<b>4.38</b>
	Surveys	0	0	10	33	42	85
E	Problem Solving	0%	0%	10%	7%	52%	<b>4.42</b>
	Surveys	0	0	9	32	45	86
F	Ethical Behavior	1%	1%	11%	39%	48%	<b>4.31</b>
	Surveys	1	1	9	32	40	83
G1	Communication - Oral	0%	0%	24%	56%	20%	<b>3.95</b>
	Surveys	0	0	21	48	17	86
G2	Communication - Written	0%	4%	26%	56%	15%	<b>3.82</b>
	Surveys	0	3	21	46	12	82
H	Global/Societal Context	1%	5%	40%	40%	14%	<b>3.59</b>
	Surveys	1	4	29	29	10	73
I	Life-Long Learning	0%	6%	24%	46%	24%	<b>3.88</b>
	Surveys	0	5	9	37	19	80
J	Contemporary Issues	0%	7%	28%	49%	16%	<b>3.72</b>
	Surveys	0	5	21	36	12	74
K	Tools	0%	3%	11%	53%	34%	<b>4.20</b>
	Surveys	0	2	9	42	27	80

<b>SOFTWARE ENGINEERING</b> College of Engineering 2008-09		Strongly Agree	Disagree	Neutral	Agree	Strongly Agree	Scale Score
Standards	Scale Scores	1	2	3	4	5	Average
A	Knowledge	0%	0%	5%	68%	27%	<b>4.22</b>
	Surveys	0	0	2	28	11	41
B1	Technical Practice - Design & Conduct Experiments	0%	3%	21%	59%	18%	<b>3.92</b>
	Surveys	0	1	8	23	7	39
B2	Technical Practice – Analyze & Interpret Data	0%	0%	15%	60%	25%	<b>4.10</b>
	Surveys	0	0	6	24	10	40
C	Design	0%	6%	25%	50%	19%	<b>3.83</b>
	Surveys	0	2	9	18	7	36
D	Multi-disciplinary Teams	0%	0%	15%	48%	38%	<b>4.23</b>
	Surveys	0	0	6	19	15	40
E	Problem Solving	0%	0%	10%	53%	38%	<b>4.28</b>
	Surveys	0	0	4	21	15	40
F	Ethical Behavior	0%	0%	5%	35%	60%	<b>4.55</b>
	Surveys	0	0	2	14	24	40
G1	Communication - Oral	0%	0%	24%	59%	17%	<b>3.93</b>
	Surveys	0	0	10	24	7	41
G2	Communication - Written	0%	0%	28%	60%	13%	<b>3.85</b>
	Surveys	0	0	11	24	5	40
H	Global/Societal Context	3%	3%	43%	43%	7%	<b>3.47</b>
	Surveys	1	1	13	13	2	30
I	Life-Long Learning	0%	3%	35%	43%	19%	<b>3.78</b>
	Surveys	0	1	13	16	7	37
J	Contemporary Issues	0%	3%	31%	57%	9%	<b>3.71</b>
	Surveys	0	1	11	20	3	35
K	Tools	0%	34%	8%	45%	45%	<b>4.32</b>
	Surveys	0	1	3	17	17	38

Although the scale score averages are between medium and high in all learning outcome areas, it is important to note the breakdown of responses, specifically in the low and medium areas where there is less agreement. Consideration should also be given to the number of responses.

The usefulness of the assessment process is to provide information from an industry perspective that will assist the departments evaluating the academic programs, strengthen the curriculum, support accreditation and assist the university in assessing institutional effectiveness and performance.

<b>3. EMPLOYER VALUES</b>
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**Importance of Program Outcomes**

Employers assessed the importance they place on each of the program outcome areas. Note the relationship between the importance employers place on the learning outcome and the skill attainment level for engineering graduates. The program outcomes are ranked in order of importance from an employer perspective.

<b>CENG EMPLOYER SURVEY RESULTS</b>	Scale Score Skill Attainment	Importance
PROGRAM OUTCOMES		
Problem Solving	<b>4.37</b>	<b>4.76</b>
Ethical Behavior	<b>4.40</b>	<b>4.75</b>
Communication - Orally	3.97	<b>4.55</b>
Multi-Disciplinary Teams	<b>4.36</b>	<b>4.51</b>
Technical Practice – Analyze/Interpret Data	4.15	4.41
Communication - Written	3.86	4.41
Tools	4.23	4.24
Knowledge	4.25	4.15
Design	3.95	4.11
Life-Long Learning	3.86	4.08
Technical Practice – Design/Conduct Experiments	4.05	3.88
Contemporary Issues	3.77	3.69
Global/Societal Context	3.58	3.51

The scale scores for Skill Attainment are an average for all engineering majors.

Employers place greater importance on program outcomes related to problem solving, ethical behavior, communication (oral) and multi-disciplinary teams. Employers also reported the three highest ranking skill attainment scale scores for engineering graduates are problem solving, ethical behavior and multi-disciplinary teams. There is a correlation between the skills that Cal Poly engineering graduates learn and possess and what employers value the most.

### Personal Qualities Valued by Employers

Employers were asked to rate the top seven (7) personal qualities they value most when hiring engineering graduates. The following chart reflects those personal qualities in numeric order, based on frequency of response. Highest values are at the top and lowest value on bottom of the list:

<b>PERSONAL QUALITIES</b>
Communication Skills
Problem Solving Skills
Technical Skills/Knowledge
Team Work/Team Player
Attitude
Critical Thinking
Honesty/Integrity
Motivation/Drive
Enthusiasm/Energy
Work Ethic
Adaptability
Interpersonal/Social Skills
Leadership Skills/Potential
Analytical
Creative/Innovative
Work Collaboratively
Commitment
Confidence
Public Speaking
Independent Worker

Employers valued communication, problem solving, technical skill/knowledge, team work and attitude the most as personal qualities of engineering graduates.

### Future Training and/or Education Valued by Employers

Employers were asked to rate the future training and/or education they find most valuable for new engineering graduates. The following chart reflects those future training and/or education areas in numeric order, based on frequency of response. Highest values are at the top and lowest value on bottom of the list:

<b>FUTURE TRAINING AND/OR EDUCATION</b>
Mentoring
In-House Training
Professional Affiliations
Seminars
Conferences
Graduate Course Work
MA Degree Program
PhD Degree Program

Employers valued mentoring, in-house training and professional affiliations as the most valued areas. Note that pursuing higher education after completion of an undergraduate education was least valued by employers.

#### 4. DIVERSITY

Employers were asked to indicate the value they place on diversity:

- Ability to collaborate productively in diverse settings and with diverse others
- Ability to meet the cultural diversity needs of employers
- Ability to interact and communicate effectively with co-workers and clients from culturally diverse backgrounds

The data gathered will be part of a larger university-wide assessment on diversity. Engineering data regarding diversity will be consolidated with other college and/or department based surveys. The data will be compiled during Summer Quarter 2009 and will be reported to the academic senate and university community during Fall 2009.

#### SUMMARY

Career Services collaborated with the College of Engineering to assess the quality of engineering graduates and program outcomes aligned with ABET accreditation criteria. This assessment follows two previous assessment reports from 2004-05 and 2006-07 and is part of a continuing effort and commitment to supporting WASC and ABET accreditation, facilitating program review and measuring institutional effectiveness. An Employer Survey instrument was designed to meet the unique and specific needs of the College of Engineering. Employers are an important external constituent of the University, partnering with us in support of student success.

This assessment focuses on the overall quality and industry readiness of engineering graduates, and program outcomes aligned with ABET accreditation standards. In addition, employers were asked to assess the importance or value they place on the program outcomes, personal qualities and future training/education of engineering graduates. Employers reported the following:

- **QUALITY OF ENGINEERING GRADUATES**  
Employers reported that they are satisfied with the quality of engineering graduates with an overall scale score average of 4.49, using a 5-point scale. Scores ranged from 4.26 to 4.70 for the various majors.
- **INDUSTRY READINESS**  
Employers reported engineering graduates are industry ready with an overall scale score average of 4.24, using a 5-point scale. Scores ranged from 4.07 to 4.55 for the various majors.
- **PROGRAM OUTCOMES**  
Employers reported the top program outcome areas were problem solving, multi-disciplinary teams, knowledge and tools. Employers reported lower program outcomes for life-long learning, contemporary issues and global/societal context.

- EMPLOYER VALUES

Employers place greater importance on program outcomes related to problem solving, ethical behavior, communication (oral) and multi-disciplinary teams. Employers also reported the three highest ranking skill attainment scale scores for engineering graduates are problem solving, ethical behavior and multi-disciplinary teams. There is a correlation between the skills that Cal Poly engineering graduates learn and possess and what employers value the most.

Employers value the following personal qualities in engineering graduates: communication, problem solving, knowledge and team work.

Employers value the following future training/education for engineering graduates: mentoring, in-house training and professional affiliation.

The assessment process reflects a commitment towards program evaluation and review. The data secured through this assessment effort will be used in future program reviews and supports WASC and ABET accreditation. These efforts will generate discussion with administration, Industrial Advisory Boards, Engineering Dean's Council, faculty and university constituents to enhance and strengthen the curriculum, and better prepare engineering graduates for success in industry.

APPENDIX A – CENG Employer Survey (2008-09)



**ENGINEERING PROGRAMS EMPLOYER SURVEY** (2008-09)

*Your thoughts are important to us in evaluating the quality of our programs and effectiveness of our recent graduates. Your responses will be treated confidentially. Thank you for your participation.*  
 College of Engineering & Career Services

Name:	Employer Name:
Telephone:	Email Address:

Please indicate the majors you hire.

Aerospace     Architectural     Biomedical     BioResource & Agricultural     Civil  
 Computer Science     Computer Engineering     Electrical     Environmental  
 Industrial     Materials     Mechanical     Manufacturing     Software Engineering

**Attainment:** Indicate the degree to which Cal Poly graduates have achieved the following program outcomes:  
 NA = not applicable, 1 = lowest, 2 = low, 3 = mid-level, 4 = high, 5 = highest

**Importance:** Rate how important the following program outcomes are to your company:  
 NA = not applicable, 1 = lowest value, 2 = low value, 3 = medium, 4 = high value, 5 = highest value

Program Outcomes – Accreditation Standards A - K		Attainment					Importance						
		NA	1	2	3	4	5	NA	1	2	3	4	5
A.	<b>Knowledge</b> - Ability to apply knowledge of mathematics, science and engineering	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B1.	<b>Technical Practice</b> - Ability to design and conduct experiments	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B2.	<b>Technical Practice</b> – Ability to analyze and interpret data	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C.	<b>Design</b> - Ability to design a system component or process subject to constraints (e.g. economic, environmental, social, political, ethical, health and safety, manufacturability, or sustainability)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D.	<b>Multi-disciplinary Teams</b> - Ability to function on multi-disciplinary teams	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E.	<b>Problem Solving</b> - Ability to identify, formulate, and solve engineering problems	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
F.	<b>Ethical Behavior</b> - Demonstrates professional and ethical responsibility	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
G1.	<b>Communication</b> - Ability to communicate (orally) effectively	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
G2.	<b>Communication</b> – Ability to communicate (written) effectively	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

H.	<b>Global/Societal Context</b> – Accountable for the impact of engineering solutions in global, economic, environmental, and societal context	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
I.	<b>Life-Long Learning</b> – Engages in continuous education and keeps current within the field	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
J.	<b>Contemporary Issues</b> – Integrates awareness of current issues in implementing engineering solutions	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
K.	<b>Tools</b> - Ability to use techniques, skills and modern engineering tools.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

**Attainment:** Indicate the degree to which Cal Poly graduates have achieved the following standards:  
NA = not applicable, 1 = lowest, 2 = low, 3 = medium, 4 = high, 5 = highest

**Importance:** Rate how important the following standards are to your company:  
NA = not applicable, 1 = lowest, 2 = low, 3 = medium, 4 = high, 5 = highest

Other Standards		Attainment					Importance							
		NA	1	2	3	4	5	NA	1	2	3	4	5	
1.	<b>Overall Quality</b> – My company is satisfied with the overall quality of Cal Poly engineering graduates.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.	<b>Industry Readiness</b> – Cal Poly Engineering graduates are able to make a positive contribution to the work place with minimal supervision.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.	<b>Diverse Workforce</b> – Cal Poly engineering graduates meet the cultural diversity needs of your company compared to graduates from other universities.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.	<b>Diverse Backgrounds</b> – Cal Poly engineering graduates interact and communicate effectively with CO-WORKERS from culturally diverse backgrounds compared to graduates from other universities.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5.	<b>Diverse Backgrounds</b> – Cal Poly engineering graduates interact and communicate effectively with CLIENTS from culturally diverse backgrounds compared to graduates from other universities.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.	<b>Diverse Perspectives</b> – Cal Poly engineering graduates understand diverse perspectives and generate solutions that incorporate them.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

The diversity questions are new to our survey. Do you have any suggestions or comments about this section?

Select the top seven (7) personal qualities you value most when hiring engineering graduates.

<input type="checkbox"/> Adaptability	<input type="checkbox"/> Critical Thinking	<input type="checkbox"/> Problem Solving Skills
<input type="checkbox"/> Analytical	<input type="checkbox"/> Enthusiasm / Energy	<input type="checkbox"/> Public Speaking

<input type="checkbox"/> Attitude <input type="checkbox"/> Communication Skills <input type="checkbox"/> Commitment <input type="checkbox"/> Confidence <input type="checkbox"/> Creative / Innovative	<input type="checkbox"/> Honesty / Integrity <input type="checkbox"/> Independent Worker <input type="checkbox"/> Interpersonal / Social Skills <input type="checkbox"/> Leadership Skills / Potential <input type="checkbox"/> Motivation / Drive	<input type="checkbox"/> Team Work / Team Player <input type="checkbox"/> Technical Skills / Knowledge <input type="checkbox"/> Work Collaboratively <input type="checkbox"/> Work Ethic <input type="checkbox"/> Other _____
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What future training and/or education would you find valuable for new engineering graduates? Check all that apply.

<input type="checkbox"/> Graduate Course Work <input type="checkbox"/> MA Degree Program <input type="checkbox"/> PHD Degree Program	<input type="checkbox"/> In-House Training <input type="checkbox"/> Seminars <input type="checkbox"/> Conferences	<input type="checkbox"/> Professional Affiliations <input type="checkbox"/> Mentoring <input type="checkbox"/> Other _____
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Please make any suggestions that you believe would improve the engineering program at Cal Poly (e.g. types of courses, computer skills, or course content).

## APPENDIX B – Employer Participation By Department

### EMPLOYER PARTICIPATION BY DEPARTMENT

CENG EMPLOYERS 2009-10		AERO	ARCE	BMED	BRAE	CE	CSC	CPE	EE	ENVE	IE	MATE	ME	MFGE	SE	
1	3Par						1	1	1						1	4
2	ACCO Engineering Systems												1			1
3	Advanced Bionics			1			1	2	2			1	1	1	1	10
4	Aerojet	1											1			2
5	Affiliated Engineers								1				1			2
6	Agilent Technologies			1	1		3	1	3		2	2	2	1	3	19
7	Air Force Civilian Careers							1	1							2
8	Alcon Labs			4			3	3	4		4	1	4	4	2	29
9	Anritsu							1	1		1				1	4
10	BAE Systems	1					1	1							1	4
11	Blackburn Consulting					1										1
12	Boston Scientific			2					2		2	2	2	2		12
13	Boulder Association		1													1
14	Brocade Communications							1							1	2
15	CA Dept of Water Resources					1										1
16	Cannon		1			1			1							3
17	CH2M Hill												1			1
18	Chevron								1				1			2
19	Chevron Energy Solutions		1			1			1		1		1			5
20	Cisco Systems						3	3	2		1		1	1	3	14
21	City of Palo Alto Utilities					1			1				1			3
22	Coastland Civil Engineering					1										1
23	Comm & Power Industries	1							2		2	1	2	2		10
24	Critchfield Mechanical, Inc.												1			1
25	CSG Consultants					2										2
26	Diamond Foods				1						1		1	1		4
27	Dreyer's Grand Ice Cream			1					1		1		1	1		5
28	Earthquake Structures, Inc.		1													1
29	East Bay Municipal Utility Distr					1			1	1			1			4
30	Eaton Corporation	1							2		2	1	2	2		10
31	Edward Lifesciences			1				1	1		1	1	1	1		7
32	Edwards Air Force Base	1											1			2
33	Facility Engineering Associates					1							1			2
34	Farmer John										1		1	1		3
35	Flory Industries				1								1			2
36	Fluor Corporation		1			1			1		1	1	1			6
37	Fremming, Parson & Pecchenino				1	1										2
38	GAF-Elk Corporation								1				1			2
39	General Electric - GE Energy								1				1			2
40	Granite Construction				1											1
41	Granite Rock					1				1						2
42	Gregg Maedo & Associates		1													1
43	Hewlett Packard						2	2	1					1	2	8
44	HOK Planning Group		1													1
45	IBM						1	1	1		1				1	5

46	Industrial Tools									1	1	1	1		4
47	Intervac, Inc.					1	1	1	1		1	1	1	1	8
48	Intuit					2	2							1	5
49	ISEC														0
50	Kimley-Horn				1										1
51	Lawrence Livermore Labs					1								1	2
52	Lockheed Martin	2				2	2	2		2	2	2	3	2	19
53	LTI Engineers				1										1
54	Marelich Mechanical Company											1			1
55	Mazzetti & Associates							1				1			2
56	Medtronic			2							1	2			5
57	NAVSEA Port Hueneme					1	2	2				2		1	8
58	Navy					1	1	1				1		1	5
59	NEC Electronics							2			2	2			6
60	NetApp					2	2							2	6
61	New United Motor Mfge, Inc.							1		1		1	1		4
62	Nichols Farms				1										1
63	Nolte Associates, Inc.				1				1						2
64	Northrop Grumman Corp	3				2	3	3				3		3	17
65	Novellus System					1	1	1		1	1	1		1	7
66	Numatic Engineering							1		1		1			3
67	Orbital Sciences Corporation	2				2	2	2		1	2	2	1	2	16
68	Orthodyne Electronic					1	1				1	1	1	1	6
69	Owens Corning				1					1	1	1	1		5
70	Pacific Gas & Electric Company				2	1	1	2	1	1	1	2			11
71	Palm, Inc					1	1	1			1	1	1	1	7
72	Parker Hannifin	1						1				1			3
73	Parsons		1		1	1			1	1	1		1		7
74	Pratt & Whitney Rocketdyne	1								1	1	1			4
75	Preston Pipelines				1	1				1		1	1		5
76	Project Management Advisors		1			1									2
77	Prolacta Bioscience			1	1					1				1	4
78	Quad Knopf					1			1						2
79	Rantec Power Systems, Inc.							1		1		1			3
80	Raytheon	1				2	2	3		2		1	1	1	13
81	RBF Consulting					1				1					2
82	San Diego Gas & Electric					2	1		2	1			2		8
83	SanDisk Corporation					2	1	2		1	1		1	1	9
84	Siemens	2				1			2	1	1	1	2		10
85	Solar Turbines	2				1		1	2		2	2	2	2	15
86	Southern California Edison							1							1
87	Southland Industries											1			1
88	St Jude Medical			2		2	1	1				1		2	9
89	Stantec Consulting		1			1				1		1			4
90	Teledyne Microwave							1							1
91	Teradata Corporation					1	1	1						1	4
92	Teradyne					1		1				1			3
93	Texas Instruments							1							1
94	The Boeing Company									1					1
95	The Dutra Group				1	1				1		1			4
96	URS Corporation					1				1					2

97	US Airconditioning Distributors								1				1			2
98	USAF Palace Aquire Program		1			1			1	1			1			5
99	USG					1			1	1	1		1	1		6
100	USN	1	1			1			1	1	1	1	1	1		9
101	Vector Engineering					1				1						2
102	ViaSat						1	1	1				1	1	1	6
103	Wallace Group					3				2			2		1	8
104	Walt Disney Imagineering		1			1			1		1		1		1	6
105	West Yost Associate					1										1
106	Western Digital Corporation						1	2	2			1	1		2	9
107	WorleyParsons Group								1		1		1			3
108	Yolo County Flood Control				1											1
	COB EMPLOYERS	20	13	15	11	40	44	46	82	19	46	31	86	37	44	534
	CENG EMPLOYERS 2009-10	AERO	ARCE	BMED	BRAE	CE	CSC	CPE	EE	ENVE	IE	MATE	ME	MFGE	SE	