

CAREER SERVICES / COLLEGE OF ENGINEERING

QUALITY OF CAL POLY GRADUATES

PROJECT BACKGROUND

During AY 2003-04, Career Services collaborated with the College of Engineering to assess the quality of Cal Poly graduates from an industry perspective. The survey focused on the following areas:

1. Quality of Graduates
2. Student Learning Outcome Areas, supporting ABET Accreditation (engineering techniques, engineering tools, multi-disciplinary teams, problem solving, and ethics).

The College of Engineering expressed interest in developing a 2nd generation instrument to continue the assessment process. Career Services worked with the college to design an instrument that met the specific needs of the engineering programs. There were four changes incorporated in the new design:

1. Program Outcomes - The instrument evolved from student learning outcomes to program outcomes, to reflect a change in ABET accreditation methodologies. Instead of requiring universities to meet all student learning outcomes (A-K criteria), the college will be held accountable for only the program outcomes specifically identified.
2. Major Based - Individual majors were assessed. The original design assessed outcomes for all engineering students combined.
3. Engineering Departments - All engineering departments were included in the new assessment, including Architectural Engineering and Bioresource and Agricultural Engineering programs.
4. Employer Importance - The survey was expanded to include employer feedback on the value or importance of the program outcomes from an industry perspective.
5. Employer Values - The survey was expanded to identify the personal qualities, educational experiences and future training employers find valuable for engineering graduates in preparing them for continued success in industry.

Career Services has partnered with the colleges of Business, Education and Architecture & Environmental Design, utilizing new and upgraded designs to secure valuable employer feedback that may contribute to curriculum review and program change.

ASSESSMENT OBJECTIVES

The following objectives were established for this report:

1. Quality of Graduates
Measure the overall quality, industry readiness, and industry transition of engineering graduates from each of the academic departments.
2. Program Outcomes
 - A. Measure the success of graduates based on program outcomes from each of the engineering departments.
 - B. Measure the importance employers place on the program outcomes for each of the engineering departments.

3. Personal Qualities
Identify the personal qualities employers value most when hiring engineering graduates.
4. Educational Experiences
Identify educational experiences employers value most that best prepare new graduates for success in industry.
5. Training/Education
Identify future training and/or education that employers find most valuable for new engineering graduates.

PROGRAM DESIGN

The study assessed all engineering departments under ABET Accreditation, including Bioresource & Agricultural Engineering (College of Agriculture) and Architectural Engineering (College of Architecture & Environmental Design).

Career Services collaborated with the College of Engineering to develop an employer survey that was tailored to meet the specific needs of the engineering departments. The survey was broken into two sections as indicated below:

Section I: Quality of Graduates

Overall Quality	My company is satisfied with the overall quality of engineering graduates
Industry Readiness	Engineering graduates are able to make a positive contribution to the work place with minimum supervision
Industry Transition	Engineering graduates are able to make a timely transition from college to industry

Section 2: Program Outcomes

Knowledge	Ability to apply knowledge of mathematics, science and engineering
Technical Practice	Ability to design and conduct experiments
Design	Ability to design a system component or process subject to constraints (economic, environmental, social, political, ethical, health and safety, manufacturability, or sustainability)
Performance	Professional ability to analyze and interpret data to meet all requirements as an engineer
Tools	Ability to use techniques, skills and modern engineering tools
Team Work	Ability to function on multi-disciplinary teams
Problem Solving	Ability to solve engineering problems
Communication	Ability to communicate (orally) effectively
Communication	Ability to communicate (written) effectively
Ethical Behavior	Demonstrates ethical responsibility
Global/Societal Context	Accountable for the impact of engineering solutions in global, economic, environmental, and societal context
Life-Long Learning	Engages in continuous education and keeps current within the field

Contemporary Issues Integrates awareness of current issues in implementing engineering solutions

Refer to Appendix A for the survey form.

STUDY PROFILE

The employers who participated in this survey have recruited and hired Cal Poly graduates through the on-campus interview program and job fairs. Surveys were collected Winter and Spring Quarters 2006. The surveys were completed by hiring managers, supervisors and human resources representatives.

<i>Engineering Programs</i>	<i>Employers</i>
Aerospace Engineering	12
Architectural Engineering	32
Bioresource & Ag Engineering	13
Civil Engineering	59
Computer Science	39
Computer Engineering	38
Electrical Engineering	51
Environmental Engineering	21
Industrial Engineering	38
Material Engineering	20
Mechanical Engineering	68
Manufacturing Engineering	30
Software Engineering	27
Total Employers/Surveys	129

Six hundred fifty-five surveys were completed from one hundred twenty-nine different employers. Refer to Appendix B for a detailed breakdown of employer participation by department.

PROJECT FINDINGS

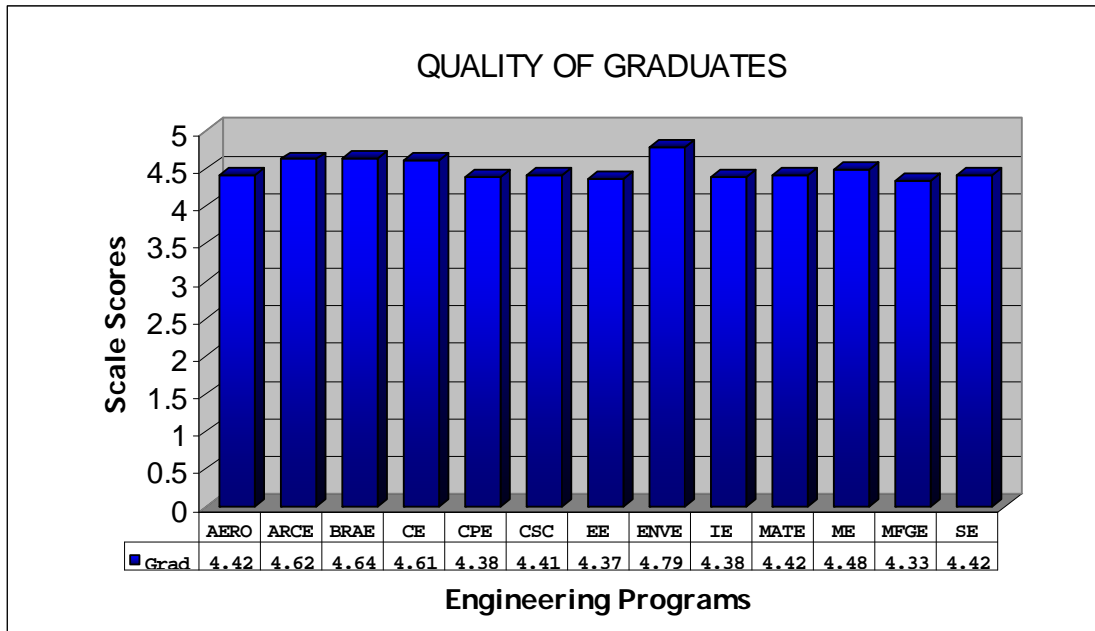
1. QUALITY OF GRADUATES

OBJECTIVE: Measure the overall quality, industry readiness and industry transition of engineering graduates from each of the academic departments.

METHODOLOGY: Surveys were completed by employers to evaluate engineering graduates using a 5-point scale (*1 = strongly disagree; 2 = disagree; 3 = neutral; 4 = agree; 5 = strongly agree*).

FINDINGS: Employers reported the following findings:

OVERALL QUALITY – The survey assessed overall quality (*my company is satisfied with the quality of Cal Poly engineering graduates*). The chart below is a graphical presentation of scale score averages for each of the engineering programs.



Employers agreed and strongly agreed that they are satisfied with the quality of engineering graduates, with an overall scale score average of 4.46.

The following chart reports the same data, but it has been formatted differently, providing the percentages reported on each of the scale score categories. This provides a breakdown of responses and is helpful in identifying areas where there is not full agreement. The following charts report on overall quality, industry readiness and industry transition:

OVERALL QUALITY – The survey assessed overall quality (*My company is satisfied with the quality of Cal Poly engineering graduates*).

QUALITY OF GRADUATES	Survey Responses	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Scale Scores
<i>Scale Scores</i>		<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>Average</i>
Aerospace Engineering	17	0%	0%	0%	58%	42%	4.42
Architectural Engineering	34	0%	0%	0%	38%	62%	4.62
Bioresource & Ag Engineering	14	0%	0%	0%	36%	64%	4.64
Civil Engineering	74	0%	0%	3%	34%	63%	4.61
Computer Engineering	58	0%	0%	7%	48%	45%	4.38
Computer Science	59	0%	0%	5%	49%	46%	4.41
Electrical Engineering	81	0%	0%	7%	48%	45%	4.37
Environmental Engineering	24	0%	0%	4%	13%	83%	4.79
Industrial Engineering	48	0%	0%	6%	50%	44%	4.38
Materials Engineering	31	0%	0%	3%	52%	45%	4.42
Mechanical Engineering	105	0%	0%	5%	43%	52%	4.48
Manufacturing Engineering	39	0%	0%	5%	56%	39%	4.33
Software Engineering	38	0%	0%	6%	47%	47%	4.42
Quality Of Graduates							

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INDUSTRY READINESS - The survey assessed the industry readiness of engineering graduates (*Engineering graduates are able to make a positive contribution to the work place with minimal supervision*).

INDUSTRY READINESS	Survey Responses	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Scale Scores
<i>Scale Scores</i>		<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>Average</i>
Aerospace Engineering	20	0%	0%	10%	65%	25%	4.15
Architectural Engineering	34	0%	3%	12%	38%	47%	4.29
Bioresource & Ag Engineering	14	0%	0%	21%	50%	29%	4.07
Civil Engineering	73	0%	3%	13%	44%	40%	4.21
Computer Engineering	57	0%	2%	10%	53%	35%	4.21
Computer Science	59	0%	2%	10%	56%	32%	4.19
Electrical Engineering	80	0%	1%	14%	50%	35%	4.19
Environmental Engineering	24	0%	0%	8%	34%	58%	4.50
Industrial Engineering	49	0%	2%	12%	55%	30%	4.14
Materials Engineering	31	0%	0%	7%	61%	32%	4.26
Mechanical Engineering	105	0%	1%	15%	50%	34%	4.17
Manufacturing Engineering	39	0%	3%	10%	61%	26%	4.10
Software Engineering	38	0%	0%	16%	42%	42%	4.26
INDUSTRY READINESS							4.20

INDUSTRY TRANSITION - The survey assessed industry transition (*Engineering graduates are able to make a timely transition from college to industry*).

INDUSTRY TRANSITION	Survey Responses	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Scale Scores
<i>Scale Scores</i>		<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>Average</i>
Aerospace Engineering	20	0%	0%	5%	60%	34%	4.30
Architectural Engineering	34	0%	0%	9%	38%	53%	4.44
Bioresource & Ag Engineering	14	0%	0%	0%	57%	43%	4.43
Civil Engineering	73	0%	1%	19%	33%	47%	4.41
Computer Engineering	58	0%	0%	7%	48%	45%	4.38
Computer Science	60	2%	0%	8%	52%	38%	4.17
Electrical Engineering	79	0%	0%	14%	52%	34%	4.22
Environmental Engineering	24	0%	0%	0%	46%	54%	4.54
Industrial Engineering	49	2%	0%	14%	49%	35%	4.14
Materials Engineering	31	0%	0%	6%	58%	36%	4.29
Mechanical Engineering	105	1%	0%	11%	52%	36%	4.23
Manufacturing Engineering	38	0%	0%	16%	58%	26%	4.13

Software Engineering	38	0%	0%	8%	53%	39%	4.32
INDUSTRY TRANSITION							4.27

2. PROGRAM OUTCOMES

OBJECTIVE: Measure the success of graduates based on program outcomes from each of the engineering departments. Measure the importance employers place on the program outcomes.

STANDARDS: The College of Engineering identified the program outcomes that may be applied across a broad range of majors. Each program outcome is fully defined within the survey instrument to assist employers in the scoring process.

METHODOLOGY: Surveys were conducted by employers to measure the success of engineering graduates based on the program outcomes, using a 5-point scale (1 = strongly disagree; 2 = disagree; 3 = neutral; 4 = agree; 5 = strongly agree).

FINDINGS: The following charts indicate the scale score averages and category percentages reported for each of the program outcomes. The scores with the most frequent responses are highlighted in blue. Areas where there is less agreement are highlighted in red. The program outcomes are listed in descending order by scale score average.

Employers also evaluated the importance they place on each of the program outcomes. For employer value, the significant factor is the ranking of the scale score averages, not necessarily the scale score average itself. The top six program outcomes identified by the department are highlighted in green.

The scale score averages for overall quality, industry readiness and industry transition were added to facilitate program review. Employers reported the following findings:

AEROSPACE ENGINEERING	<i>Strongly</i>				<i>Strongly</i>	<i>Scale</i>	<i>Employer</i>
	<i>Disagree</i>	<i>Disagree</i>	<i>Neutral</i>	<i>Agree</i>	<i>Agree</i>	<i>Score</i>	<i>Importance</i>
<i>Standards</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>Average</i>	
Knowledge	0.0%	0.0%	0.0%	65.0%	35.0%	4.35	4.60
Team Work	0.0%	0.0%	15.0%	35.0%	50.0%	4.35	4.70
Problem Solving	0.0%	0.0%	10.0%	55.0%	35.0%	4.25	4.80
Ethical Behavior	0.0%	0.0%	17.6%	52.9%	29.4%	4.12	4.79
Performance	0.0%	10.0%	5.0%	55.0%	30.0%	4.05	4.55
Technical Practice	0.0%	0.0%	15.8%	68.4%	15.8%	4.00	4.05
Tools	0.0%	0.0%	25.0%	50.0%	25.0%	4.00	3.95
Design	0.0%	0.0%	36.8%	42.1%	21.1%	3.84	4.00
Life-Long Learning	0.0%	0.0%	41.2%	41.2%	17.6%	3.76	3.95
Communication (written)	0.0%	0.0%	52.9%	35.3%	11.8%	3.59	4.25
Communication (oral)	0.0%	5.0%	55.0%	25.0%	15.0%	3.50	4.40
Contemporary Issues	0.0%	6.7%	66.7%	20.0%	6.7%	3.27	3.26
Global/Societal Context	11.8%	23.5%	52.9%	5.9%	5.9%	2.71	3.32
Overall Quality	0.0%	0.0%	0.0%	57.9%	42.1%	4.42	NA
Industry Readiness	0.0%	0.0%	10.0%	65.0%	25.0%	4.15	NA
Industry Transition	0.0%	0.0%	5.0%	60.0%	35.0%	4.30	NA

■ Areas of noted less agreement
 ■ Areas reflecting program strength
 ■ Top Dept identified program outcomes

ARCHITECTURAL ENGINEERING	<i>Strongly</i>				<i>Strongly</i>	<i>Scale</i>	<i>Employer</i>
	<i>Disagree</i>	<i>Disagree</i>	<i>Neutral</i>	<i>Agree</i>	<i>Agree</i>	<i>Score</i>	<i>Importance</i>
<i>Standards</i>	1	2	3	4	5	<i>Average</i>	<i>Average</i>
Communication (oral)	0.0%	0.0%	7.7%	42.3%	50.0%	4.77	4.40
Knowledge	0.0%	0.0%	9.1%	57.6%	33.3%	4.24	4.60
Ethical Behavior	0.0%	0.0%	22.6%	35.5%	41.9%	4.19	4.79
Problem Solving	0.0%	0.0%	15.2%	54.5%	30.3%	4.15	4.80
Tools	3.0%	0.0%	12.1%	51.5%	33.3%	4.12	3.95
Performance	0.0%	3.0%	18.2%	48.5%	30.3%	4.06	4.55
Team Work	0.0%	0.0%	30.3%	39.4%	30.3%	4.00	4.70
Technical Practice	0.0%	3.8%	19.2%	57.7%	19.2%	3.92	4.05
Life-Long Learning	0.0%	6.3%	25.0%	50.0%	18.8%	3.81	3.95
Design	0.0%	12.5%	37.5%	21.9%	28.1%	3.66	4.00
Communication (written)	0.0%	6.1%	39.4%	45.5%	9.1%	3.58	4.25
Contemporary Issues	0.0%	6.3%	37.5%	46.9%	9.4%	3.47	3.26
Global/Societal Context	0.0%	18.5%	44.4%	25.9%	11.1%	3.30	3.32
Overall Quality	0.0%	0.0%	0.0%	38.2%	61.8%	4.62	NA
Industry Readiness	0.0%	2.9%	11.8%	38.2%	47.1%	4.29	NA
Industry Transition	0.0%	0.0%	8.8%	38.2%	52.9%	4.44	NA

BIORESOURCE ENGINEERING	<i>Strongly</i>				<i>Strongly</i>	<i>Scale</i>	<i>Employer</i>
	<i>Disagree</i>	<i>Disagree</i>	<i>Neutral</i>	<i>Agree</i>	<i>Agree</i>	<i>Score</i>	<i>Importance</i>
<i>Standards</i>	1	2	3	4	5	<i>Average</i>	<i>Average</i>
Performance	0.0%	0.0%	15.4%	7.7%	76.9%	4.62	4.44
Ethical Behavior	0.0%	0.0%	7.7%	23.1%	69.2%	4.62	4.85
Knowledge	0.0%	0.0%	7.7%	30.8%	61.5%	4.54	4.53
Team Work	0.0%	0.0%	15.4%	15.4%	69.2%	4.54	4.59
Tools	0.0%	0.0%	15.4%	30.8%	53.8%	4.38	4.26
Problem Solving	0.0%	0.0%	23.1%	15.4%	61.5%	4.38	4.65
Communication (oral)	0.0%	0.0%	23.1%	23.1%	53.8%	4.31	4.65
ommunication(written)	0.0%	0.0%	15.4%	38.5%	46.2%	4.31	4.48
Design	0.0%	0.0%	23.1%	30.8%	46.2%	4.23	4.26
Life-Long Learning	0.0%	0.0%	30.8%	23.1%	46.2%	4.15	4.35
Technical Practice	0.0%	7.7%	15.4%	38.5%	38.5%	4.08	3.72
Contemporary Issues	0.0%	0.0%	53.8%	23.1%	23.1%	3.69	3.84
Global/Societal Context	0.0%	16.7%	25.0%	33.3%	25.0%	3.67	3.31
Overall Quality	0.0%	0.0%	0.0%	35.7%	64.3%	4.64	NA
Industry Readiness	0.0%	0.0%	21.4%	50.0%	28.6%	4.07	NA
Industry Transition	0.0%	0.0%	0.0%	57.1%	42.9%	4.43	NA

■ Areas of noted less agreement
 ■ Areas reflecting program strength
 ■ Top Dept identified program outcomes

CIVIL ENGINEERING	<i>Strongly</i>				<i>Strongly</i>	<i>Scale</i>	<i>Employer</i>
	<i>Disagree</i>	<i>Disagree</i>	<i>Neutral</i>	<i>Agree</i>	<i>Agree</i>	<i>Score</i>	<i>Importance</i>
<i>Standards</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>Average</i>	<i>Average</i>
Knowledge	0.0%	0.0%	10.8%	44.6%	44.6%	4.34	4.43
Team Work	0.0%	0.0%	16.2%	35.1%	48.6%	4.32	4.58
Performance	0.0%	2.8%	7.0%	47.9%	42.3%	4.30	4.55
Ethical Behavior	0.0%	0.0%	17.1%	37.1%	45.7%	4.29	4.80
Problem Solving	0.0%	0.0%	14.9%	45.9%	39.2%	4.24	4.68
Tools	1.4%	1.4%	17.6%	40.5%	39.2%	4.15	4.32
Technical Practice	0.0%	4.8%	21.0%	50.0%	24.2%	3.94	3.69
Design	1.5%	3.0%	25.4%	41.8%	28.4%	3.93	4.10
Communication (oral)	1.4%	4.1%	29.7%	35.1%	29.7%	3.88	4.64
Life-Long Learning	1.5%	3.0%	29.9%	40.3%	25.4%	3.85	4.15
Communication (written)	0.0%	4.1%	39.7%	37.0%	19.2%	3.71	4.53
Contemporary Issues	0.0%	1.6%	50.0%	38.7%	9.7%	3.63	3.73
Global/Societal Context	1.6%	8.1%	45.2%	35.5%	9.7%	3.44	3.49
Overall Quality	0.0%	0.0%	2.7%	33.8%	63.5%	4.61	NA
Industry Readiness	0.0%	2.7%	13.7%	43.8%	39.7%	4.21	NA
Industry Transition	0.0%	1.4%	19.2%	32.9%	46.6%	4.41	NA

COMPUTER SCIENCE	<i>Strongly</i>				<i>Strongly</i>	<i>Scale</i>	<i>Employer</i>
	<i>Disagree</i>	<i>Disagree</i>	<i>Neutral</i>	<i>Agree</i>	<i>Agree</i>	<i>Score</i>	<i>Importance</i>
<i>Standards</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>Average</i>	<i>Average</i>
Team Work	0.0%	0.0%	12.1%	44.8%	43.1%	4.31	4.78
Problem Solving	0.0%	0.0%	13.8%	51.7%	34.5%	4.21	4.64
Knowledge	0.0%	0.0%	8.5%	64.4%	27.1%	4.19	4.57
Ethical Behavior	0.0%	0.0%	28.8%	36.5%	34.6%	4.06	4.69
Tools	0.0%	3.4%	19.0%	50.0%	27.6%	4.02	4.02
Technical Practice	1.7%	1.7%	22.4%	48.3%	25.9%	3.95	4.07
Design	0.0%	5.2%	20.7%	51.7%	22.4%	3.91	4.21
Performance	0.0%	5.3%	26.3%	40.4%	28.1%	3.91	4.46
Communication (oral)	0.0%	5.2%	29.3%	41.4%	24.1%	3.84	4.54
Life-Long Learning	0.0%	0.0%	33.3%	52.1%	14.6%	3.81	4.14
Communication (written)	0.0%	1.9%	38.5%	46.2%	13.5%	3.71	4.40
Contemporary Issues	0.0%	3.9%	51.0%	37.3%	7.8%	3.49	3.73
Global/Societal Context	2.2%	10.9%	54.3%	23.9%	8.7%	3.26	3.44
Overall Quality	0.0%	0.0%	5.1%	49.2%	45.8%	4.41	NA
Industry Readiness	0.0%	1.7%	10.2%	55.9%	32.2%	4.19	NA
Industry Transition	1.7%	0.0%	8.3%	51.7%	38.3%	4.17	NA

■ Areas of noted less agreement
 ■ Areas reflecting program strength
 ■ Top Dept identified program outcomes

COMPUTER ENGINEERING	<i>Strongly</i>				<i>Strongly</i>	<i>Scale</i>	<i>Employer</i>
	<i>Disagree</i>	<i>Disagree</i>	<i>Neutral</i>	<i>Agree</i>	<i>Agree</i>	<i>Score</i>	<i>Importance</i>
<i>Standards</i>	1	2	3	4	5	<i>Average</i>	<i>Average</i>
Team Work	0.0%	0.0%	15.8%	50.9%	33.3%	4.18	4.74
Knowledge	0.0%	0.0%	10.3%	62.1%	27.6%	4.17	4.56
Problem Solving	0.0%	0.0%	17.5%	49.1%	33.3%	4.16	4.69
Tools	0.0%	3.5%	19.3%	52.6%	24.6%	3.98	4.02
Ethical Behavior	0.0%	0.0%	30.6%	40.8%	28.6%	3.98	4.61
Technical Practice	1.8%	3.5%	21.1%	50.9%	22.8%	3.89	4.05
Design	0.0%	3.6%	25.0%	50.0%	21.4%	3.89	4.22
Performance	0.0%	5.5%	27.3%	40.0%	27.3%	3.89	4.47
Life-Long Learning	0.0%	0.0%	36.2%	51.1%	12.8%	3.77	4.14
Communication (oral)	0.0%	5.3%	33.3%	42.1%	19.3%	3.75	4.53
Communication (written)	0.0%	1.9%	41.5%	43.4%	13.2%	3.68	4.40
Contemporary Issues	0.0%	4.1%	49.0%	40.8%	6.1%	3.49	3.56
Global/Societal Context	2.3%	9.1%	52.3%	27.3%	9.1%	3.32	3.40
Overall Quality	0.0%	0.0%	6.9%	48.3%	44.8%	4.38	NA
Industry Readiness	0.0%	1.8%	10.5%	52.6%	35.1%	4.21	NA
Industry Transition	1.8%	0.0%	7.0%	52.6%	38.6%	4.26	NA

ELECTRICAL ENGINEERING	<i>Strongly</i>				<i>Strongly</i>	<i>Scale</i>	<i>Employer</i>
	<i>Disagree</i>	<i>Disagree</i>	<i>Neutral</i>	<i>Agree</i>	<i>Agree</i>	<i>Score</i>	<i>Importance</i>
<i>Standards</i>	1	2	3	4	5	<i>Average</i>	<i>Average</i>
Team Work	0.0%	0.0%	20.3%	52.7%	27.0%	4.47	4.70
Knowledge	0.0%	0.0%	11.0%	61.0%	28.0%	4.17	4.52
Problem Solving	0.0%	0.0%	23.8%	46.3%	30.0%	4.06	4.57
Tools	0.0%	1.3%	18.8%	56.3%	23.8%	4.03	4.05
Technical Practice	0.0%	1.3%	16.5%	62.0%	20.3%	4.01	3.98
Ethical Behavior	0.0%	1.5%	20.6%	41.2%	36.8%	4.01	4.61
Performance	0.0%	5.2%	23.4%	40.3%	31.2%	3.97	4.53
Design	0.0%	3.8%	27.5%	46.3%	22.5%	3.88	4.18
Communication (oral)	0.0%	4.9%	30.9%	46.9%	17.3%	3.77	4.59
Life-Long Learning	0.0%	0.0%	35.8%	52.2%	11.9%	3.76	4.06
Communication (written)	0.0%	1.4%	40.8%	46.5%	11.3%	3.68	4.40
Contemporary Issues	0.0%	2.8%	55.6%	34.7%	6.9%	3.46	3.64
Global/Societal Context	1.5%	12.1%	47.0%	31.8%	7.6%	3.32	3.47
Overall Quality	0.0%	0.0%	7.4%	48.1%	44.4%	4.37	NA
Industry Readiness	0.0%	1.3%	13.8%	50.0%	35.0%	4.19	NA
Industry Transition	0.0%	0.0%	13.9%	51.9%	34.2%	4.22	NA

ENVIRONMENTAL ENGINEERING	<i>Strongly</i>				<i>Strongly</i>	<i>Scale</i>	<i>Employer</i>
	<i>Disagree</i>	<i>Disagree</i>	<i>Neutral</i>	<i>Agree</i>	<i>Agree</i>	<i>Score</i>	<i>Importance</i>
<i>Standards</i>	1	2	3	4	5	<i>Average</i>	<i>Average</i>
Knowledge	0.0%	0.0%	8.0%	36.0%	56.0%	4.48	4.64
Performance	0.0%	4.3%	8.7%	26.1%	60.9%	4.43	4.71
Tools	0.0%	0.0%	16.0%	40.0%	44.0%	4.28	4.48
Design	0.0%	0.0%	20.0%	40.0%	40.0%	4.20	4.52
Team Work	0.0%	0.0%	28.0%	28.0%	44.0%	4.16	4.68
Ethical Behavior	0.0%	4.2%	16.7%	33.3%	45.8%	4.13	4.84
Technical Practice	0.0%	4.0%	16.0%	48.0%	32.0%	4.08	3.96
Communication (oral)	0.0%	4.2%	33.3%	20.8%	41.7%	4.08	4.84
Communication (written)	0.0%	0.0%	29.2%	45.8%	25.0%	4.04	4.76
Problem Solving	0.0%	7.7%	19.2%	26.9%	46.2%	3.96	4.68
Contemporary Issues	0.0%	0.0%	42.9%	38.1%	19.0%	3.86	4.17
Life-Long Learning	0.0%	4.0%	32.0%	32.0%	32.0%	3.84	4.28
Global/Societal Context	0.0%	0.0%	54.5%	31.8%	13.6%	3.68	3.52
Overall Quality	0.0%	0.0%	4.2%	12.5%	83.3%	4.79	NA
Industry Readiness	0.0%	0.0%	8.3%	33.3%	58.3%	4.50	NA
Industry Transition	0.0%	0.0%	0.0%	45.8%	54.2%	4.54	NA

INDUSTRIAL ENGINEERING	<i>Strongly</i>				<i>Strongly</i>	<i>Scale</i>	<i>Employer</i>
	<i>Disagree</i>	<i>Disagree</i>	<i>Neutral</i>	<i>Agree</i>	<i>Agree</i>	<i>Score</i>	<i>Importance</i>
<i>Standards</i>	1	2	3	4	5	<i>Average</i>	<i>Average</i>
Team Work	0.0%	0.0%	25.5%	36.2%	38.3%	4.13	4.65
Knowledge	0.0%	0.0%	15.2%	60.9%	23.9%	4.09	4.40
Performance	0.0%	4.4%	20.0%	42.2%	33.3%	4.04	4.54
Problem Solving	0.0%	0.0%	21.3%	53.2%	25.5%	4.04	4.57
Tools	0.0%	0.0%	23.4%	55.3%	21.3%	3.98	4.09
Ethical Behavior	0.0%	0.0%	30.2%	44.2%	25.6%	3.95	4.68
Technical Practice	0.0%	4.3%	19.1%	55.3%	21.3%	3.94	4.02
Design	0.0%	2.2%	28.3%	54.3%	15.2%	3.83	4.08
Communication (oral)	0.0%	2.1%	38.3%	38.3%	21.3%	3.79	4.62
Life-Long Learning	0.0%	0.0%	37.2%	51.2%	11.6%	3.74	4.13
Communication (written)	0.0%	0.0%	45.5%	38.6%	15.9%	3.70	4.44
Contemporary Issues	0.0%	2.3%	54.5%	38.6%	4.5%	3.45	3.58
Global/Societal Context	0.0%	11.9%	50.0%	33.3%	4.8%	3.31	3.53
Overall Quality	0.0%	0.0%	6.3%	50.0%	43.8%	4.38	NA
Industry Readiness	0.0%	2.0%	12.2%	55.1%	30.6%	4.14	NA
Industry Transition	2.0%	0.0%	14.3%	49.0%	34.7%	4.14	NA

MATERIALS ENGINEERING	<i>Strongly</i>				<i>Strongly</i>	<i>Scale</i>	<i>Employer</i>
	<i>Disagree</i>	<i>Disagree</i>	<i>Neutral</i>	<i>Agree</i>	<i>Agree</i>	<i>Score</i>	<i>Importance</i>
<i>Standards</i>	1	2	3	4	5	<i>Average</i>	<i>Average</i>
Problem Solving	0.0%	0.0%	23.1%	42.3%	34.6%	4.73	4.48
Team Work	0.0%	0.0%	13.3%	50.0%	36.7%	4.23	4.55
Technical Practice	0.0%	0.0%	17.2%	58.6%	24.1%	4.21	4.06
Performance	0.0%	3.6%	10.7%	53.6%	32.1%	4.14	4.42
Design	0.0%	0.0%	20.7%	65.5%	13.8%	4.07	3.97
Knowledge	0.0%	0.0%	9.7%	64.5%	25.8%	4.06	4.44
Tools	0.0%	0.0%	20.0%	60.0%	20.0%	4.00	4.03
Ethical Behavior	0.0%	0.0%	22.2%	55.6%	22.2%	4.00	4.55
Communication (oral)	0.0%	3.3%	26.7%	46.7%	23.3%	3.90	4.39
Communication (written)	0.0%	3.7%	40.7%	37.0%	18.5%	3.70	4.36
Life-Long Learning	0.0%	0.0%	45.8%	45.8%	8.3%	3.63	3.88
Contemporary Issues	0.0%	0.0%	60.0%	32.0%	8.0%	3.48	3.52
Global/Societal Context	0.0%	11.1%	48.1%	29.6%	11.1%	3.41	3.45
Overall Quality	0.0%	0.0%	3.2%	51.6%	45.2%	4.42	NA
Industry Readiness	0.0%	0.0%	6.5%	61.3%	32.3%	4.26	NA
Industry Transition	0.0%	0.0%	6.5%	58.1%	35.5%	4.29	NA

MECHANICAL ENGINEERING	<i>Strongly</i>				<i>Strongly</i>	<i>Scale</i>	<i>Employer</i>
	<i>Disagree</i>	<i>Disagree</i>	<i>Neutral</i>	<i>Agree</i>	<i>Agree</i>	<i>Score</i>	<i>Importance</i>
<i>Standards</i>	1	2	3	4	5	<i>Average</i>	<i>Average</i>
Knowledge	0.0%	0.0%	11.5%	51.0%	37.5%	4.26	4.41
Team Work	0.0%	0.0%	20.0%	45.0%	35.0%	4.25	4.66
Problem Solving	0.0%	0.0%	15.7%	45.1%	39.2%	4.23	4.62
Performance	0.0%	5.1%	17.2%	39.4%	38.4%	4.16	4.51
Ethical Behavior	0.0%	2.1%	22.3%	46.8%	28.7%	4.10	4.64
Tools	0.0%	1.0%	15.7%	53.9%	29.4%	4.02	4.06
Technical Practice	0.0%	4.0%	18.0%	54.0%	24.0%	4.01	3.92
Design	0.0%	3.1%	23.5%	49.0%	24.5%	3.99	4.09
Life-Long Learning	0.0%	0.0%	35.6%	44.4%	20.0%	3.84	3.98
Communication (oral)	0.0%	2.9%	37.3%	34.3%	25.5%	3.79	4.62
Communication (written)	0.0%	3.2%	38.7%	39.8%	18.3%	3.71	4.44
Contemporary Issues	0.0%	4.4%	56.7%	33.3%	5.6%	3.40	3.54
Global/Societal Context	2.4%	8.2%	47.1%	32.9%	9.4%	3.34	3.31
Overall Quality	0.0%	0.0%	4.8%	42.9%	52.4%	4.48	NA
Industry Readiness	0.0%	1.0%	15.2%	49.5%	34.3%	4.17	NA
Industry Transition	1.0%	0.0%	10.5%	52.4%	36.2%	4.23	NA

MANUFACTURING ENGINEERING	<i>Strongly</i>				<i>Strongly</i>	<i>Scale</i>	<i>Employer</i>
	<i>Disagree</i>	<i>Disagree</i>	<i>Neutral</i>	<i>Agree</i>	<i>Agree</i>	<i>Score</i>	<i>Importance</i>
<i>Standards</i>	1	2	3	4	5	<i>Average</i>	<i>Average</i>
Knowledge	0.0%	0.0%	14.3%	62.9%	22.9%	4.09	4.37
Team Work	0.0%	0.0%	26.5%	41.2%	32.4%	4.06	4.68
Technical Practice	0.0%	2.9%	14.3%	60.0%	22.9%	4.03	4.17
Ethical Behavior	0.0%	3.3%	20.0%	46.7%	30.0%	4.03	4.48
Performance	0.0%	9.4%	12.5%	50.0%	28.1%	3.97	4.50
Problem Solving	0.0%	0.0%	26.5%	50.0%	23.5%	3.97	4.51
Design	0.0%	2.9%	23.5%	50.0%	23.5%	3.94	4.05
Tools	0.0%	0.0%	23.5%	61.8%	14.7%	3.91	4.02
Life-Long Learning	0.0%	0.0%	30.0%	53.3%	16.7%	3.87	4.05
Communication (oral)	0.0%	5.7%	31.4%	37.1%	25.7%	3.83	4.52
Communication (written)	0.0%	0.0%	38.7%	45.2%	16.1%	3.77	4.24
Contemporary Issues	0.0%	6.3%	50.0%	40.6%	3.1%	3.41	3.44
Global/Societal Context	0.0%	23.3%	43.3%	26.7%	6.7%	3.17	3.28
Overall Quality	0.0%	0.0%	5.1%	56.4%	38.5%	4.33	NA
Industry Readiness	0.0%	2.6%	10.3%	61.5%	25.6%	4.10	NA
Industry Transition	0.0%	0.0%	15.8%	57.9%	26.3%	4.13	NA

SOFTWARE ENGINEERING	<i>Strongly</i>				<i>Strongly</i>	<i>Scale</i>	<i>Employer</i>
	<i>Disagree</i>	<i>Disagree</i>	<i>Neutral</i>	<i>Agree</i>	<i>Agree</i>	<i>Score</i>	<i>Importance</i>
<i>Standards</i>	1	2	3	4	5	<i>Average</i>	<i>Average</i>
Team Work	0.0%	0.0%	13.5%	40.5%	45.9%	4.32	4.82
Problem Solving	0.0%	0.0%	18.9%	40.5%	40.5%	4.22	4.81
Knowledge	0.0%	0.0%	21.1%	47.4%	31.6%	4.11	4.63
Ethical Behavior	0.0%	0.0%	22.9%	42.9%	34.3%	4.11	4.63
Tools	0.0%	2.7%	18.9%	51.4%	27.0%	4.03	3.95
Design	0.0%	2.7%	21.6%	48.6%	27.0%	4.00	4.19
Technical Practice	2.7%	0.0%	21.6%	54.1%	21.6%	3.92	4.19
Performance	0.0%	2.7%	35.1%	32.4%	29.7%	3.89	4.47
Communication (oral)	0.0%	2.7%	29.7%	45.9%	21.6%	3.86	4.55
Life-Long Learning	0.0%	0.0%	36.7%	46.7%	16.7%	3.80	4.13
Communication (written)	0.0%	2.9%	31.4%	51.4%	14.3%	3.77	4.30
Contemporary Issues	0.0%	3.0%	51.5%	33.3%	12.1%	3.55	3.54
Global/Societal Context	0.0%	12.5%	31.3%	46.9%	9.4%	3.28	3.41
Overall Quality	0.0%	0.0%	5.3%	47.4%	47.4%	4.42	NA
Industry Readiness	0.0%	0.0%	15.8%	42.1%	42.1%	4.26	NA
Industry Transition	0.0%	0.0%	7.9%	52.6%	39.5%	4.32	NA

Although the numeric scale score averages reflect overall strength, it is important to note the breakdown of responses, specifically in the neutral areas where there is less agreement. Further assessment may be necessary to identify specific reasons why there is less agreement in some areas.

In some cases, the results will be an affirmation of what the department is doing to prepare its graduates for industry. In other cases, it will involve curriculum review or program change. The purpose of assessment is to provide useful information from an industry perspective to the academic community to evaluate academic programs, strengthen the curriculum, support accreditation, and assist in assessing institutional effectiveness and performance.

All departments received lower scale score averages in two areas: Contemporary Issues and Global/Societal Context. Program review is necessary to determine ways to more successfully address these program outcomes in the curriculum.

3. PERSONAL QUALITIES

OBJECTIVE: Identify the personal qualities employers’ value most when hiring engineering graduates.

METHODOLOGY: Employers were provided a checklist of 20 personal characteristics they valued most.

FINDINGS: Employers reported the following values they value most, listed in order of frequency:

PERSONAL QUALITIES	Frequency
Problem Solving Skills	145
Communication Skills	143
Technical Skills/Knowledge	123
Team Work/Team Player	109
Motivation/Drive	98
Attitude	91
Honesty/Integrity	86
Enthusiasm/Energy	77
Work Ethic	66
Leadership Skills/Potential	64
Critical Thinking	55
Analytical	42
Creative/Innovative	42
Adapts/Adjusts	41
Commitment	40
Interpersonal/Social Skills	39
Works Collaboratively	34
Confidence	27
Independent Worker	27

Public Speaking	9
Total	1358

4. EDUCATIONAL EXPERIENCES

OBJECTIVE: Identify educational experiences employers' value most that best prepare students for success in industry.

METHODOLOGY: Employers were provided a checklist of 11 educational experiences they value most.

FINDINGS: Employers reported the following educational experiences they value most, listed in order of frequency:

EDUCATIONAL EXPERIENCES	Frequency
Co-op/Internship	174
Team Projects	119
Leadership Experience	107
Inter-Disciplinary Project	80
Senior Project	80
Class Projects	67
Club/Organization Involvement	60
Community Services Projects	20
Volunteer Work	17
Travel Experience	12
Study Abroad	12
Other	2
Total	750

5. FUTURE TRAINING & EDUCATION

OBJECTIVE: Identify future training or education that employers find most valuable for new engineering graduates.

METHODOLOGY: Employers were provided a checklist of 8 training or educational areas they value most.

FINDINGS: Employers reported the following future training and education they value most, listed in order of frequency:

TRAINING/EDUCATION	Frequency
In-House Training	113
Mentoring	103
Graduate Course Work	89
Seminars	77
Professional Affiliation	77
Conferences	54
MA Degree Program	34

PHD Degree Program	16
Other	1
Total	564

SUMMARY

OBJECTIVE

The College of Engineering collaborated with Career Services to assess the quality of engineering graduates and program outcomes. This is a follow-up to an assessment conducted in 2003-04. A second generation instrument was developed; utilizing current program outcomes established by the college and ABET accreditation. The survey was administered during Winter and Spring Quarters of 2006. One hundred-twenty-nine employers participated, providing six hundred fifty-five survey responses.

QUALITY OF GRADUATES

Employers agreed and strongly agreed that they are satisfied with the quality of engineering graduates, with an overall scale score average of 4.46 (using a 5-point scale).

PROGRAM OUTCOMES

Employers assessed the program outcomes of engineering graduates by department, providing the departments with scale score averages from each of the program outcomes. This provides valuable and useful information from an industry perspective to assist the departments in evaluating their academic programs, strengthening the curriculum, supporting accreditation, and assisting with assessing institutional effectiveness.

APPENDIX A



ENGINEERING PROGRAMS EMPLOYER SURVEY (2005-06)

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
 BioResource & Agricultural
 Civil
 Computer Science
 Computer Engineering
 Electrical
 Environmental
 Industrial
 Materials
 Mechanical
 Manufacturing
 Software Engineer

Degree: Indicate the degree to which you believe the following program outcomes have been achieved:
 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 = low value, 2 = little value, 3 = mid-level, 4 = some value, 5 = high value

Program Outcomes	Degree					Importance						
	NA	1	2	3	4	5	NA	1	2	3	4	5
1. Knowledge - 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"/>
2. Technical Practice - 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"/>
3. Design - Ability to design a system component or process subject to constraints (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"/>
4. Performance – Professional ability to analyze and interpret data to meet all requirements as an engineer.	<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. Tools - 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"/>
6. Team Work - 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"/>
7. Problem Solving - Ability to 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"/>
8. Communication - 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"/>
9. Communication – 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"/>
10. Ethical Behavior - Demonstrates 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"/>

11.	Global/Societal Context – 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"/>
12.	Life-Long Learning – 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"/>
13.	Contemporary Issues – 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"/>

Skill Level: Indicate the level to which you agree or disagree with the following statements:
 NA = not applicable, 1 = strongly disagree, 2 = disagree, 3 = mid-level, 4 = agree, 5 = strongly agree

Other Standards	Skill Level NA 1 2 3 4 5
1. Overall Quality – 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"/>
2. Industry Readiness – 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"/>
3. Industry Transition – Engineering graduates are able to make a timely transition from college to industry.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

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

<input type="checkbox"/> Adapts / Adjusts	<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"/> Honesty / Integrity	<input type="checkbox"/> Team Work / Team Player
<input type="checkbox"/> Communications Skills	<input type="checkbox"/> Independent Worker	<input type="checkbox"/> Technical Skills / Knowledge
<input type="checkbox"/> Commitment	<input type="checkbox"/> Interpersonal / Social Skills	<input type="checkbox"/> Work Collaboratively
<input type="checkbox"/> Confidence	<input type="checkbox"/> Leadership Skills / Potential	<input type="checkbox"/> Work Ethic
<input type="checkbox"/> Creative / Innovative	<input type="checkbox"/> Motivation / Drive	<input type="checkbox"/> Other _____

What educational experiences do you value most that would best prepare new graduates for success in your organization? Check all that apply.

<input type="checkbox"/> Co-op/Internship	<input type="checkbox"/> Inter-disciplinary Project	<input type="checkbox"/> Travel Experience
<input type="checkbox"/> Community Service Project	<input type="checkbox"/> Senior Project	<input type="checkbox"/> Study Abroad
<input type="checkbox"/> Class Project	<input type="checkbox"/> Club/Organization Involvement	<input type="checkbox"/> Volunteer Work
<input type="checkbox"/> Leadership Experience	<input type="checkbox"/> Team Projects	<input type="checkbox"/> Other _____

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"/> In-House Training	<input type="checkbox"/> Professional Affiliations
<input type="checkbox"/> MA Degree Program	<input type="checkbox"/> Seminars	<input type="checkbox"/> Mentoring
<input type="checkbox"/> PHD Degree Program	<input type="checkbox"/> Conferences	<input type="checkbox"/> Other _____

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

	CENG EMPLOYERS	AERO	ARCE	BRAE	CE	CSC	CPE	EE	ENVE	IE	MATE	ME	MFGE	SE
1	2-Sight									1				
2	Accenture					1								
3	ACCO Engineered Systems											4		
4	Aerojet	1										1		
5	Air Systems											1		
6	Alcon Laboratories					3	3	5		5	1	4	4	
7	Amgen					1	1	1						1
8	Anritsu					1	1	1				1		1
9	Apple Computer					1	1	1						
10	Applied Technologies Assoc					1	1	1		1		2	1	1
11	Asymtek							1				1		1
12	BAE Systems						1	1			1	1		2
13	Barrish Pelhem & Partners		1		1									
14	Beauchamp Engineering		1											
15	Bechtel				1	1		1	1	1	1	1		
16	Bilbro Construction Co.		1		1							1		
17	Boeing	1				1	1	1		3	1	1	2	1
18	Buehler & Buehler Structural		3											
19	California Dept of Water Res			1	4	1	1	3	1	1	1	4		
20	Cannon Associates		1	1	1							1		
21	Canyon Engineering	1		1								1	1	
22	Carlton Engineering		1	1	2				2					
23	CEDG, Inc.											1		
24	Centex Homes				1					1				
25	Chevron				1	1	1		1	1	1			
26	Chevron Energy Solutions							1				1		
27	Chevron IT					1	1							
28	Cisco Systems					1	1	1						1
29	City of LA, Public Works				1									
30	Clark Pacific	1	1		1				1			1		
31	CON/SPAN Bridge Sys				1									
32	Crutchfield Mechanical											2		
33	Danaher Motion					1	1	1				1		1
34	Dasse Design		1		1									
35	Davey-Cairo Engineering			1	1				1					
36	Degenkolb Engineers				1									
37	Devcon Construction		1											
38	Diamond Foods			1						1		1	1	
39	Disneyland									1				
40	Earth Tech		1		2			1	1			2		
41	Emery									1		1	1	

42	Facility Engineering Assoc		1		1				1			1		
43	Fehr & Peer Associates				1	1		1	1	1		1		1
44	Ficcadenti & Waggoner		1		1									
45	Flack & Kurtz, Inc.							1		1		1		
46	Flory Industries			1										
47	General Electric Int'l							1		1		1		
48	Gordon Prill, Inc.		1					1				1		
49	Granite Construction Co				1									
50	Guidant Corporation					1	1	1		1		1	1	
	CENG EMPLOYERS	AERO	ARCE	BRAE	CE	CSC	CPE	EE	ENVE	IE	MATE	ME	MFGE	SE
51	Haas Automation									1		1	1	
52	Halliburton					1	1							1
53	Hensel Phelps Construction				3		1					2		
54	Hewlett Packard					2	2	2		1		1	1	2
55	Hilti, Inc.		1		1							1		
56	Hitachi Global Storage Tech					1	1	1			1	1		1
57	Honeywell											1		
58	Hope Engineering		1											
59	IBM				1	2	2							1
60	Imbsen & Associates				1									1
61	Intevac					1	1	1		1		1	1	
62	Intuit					1	1							
63	Jet Propulsion Labs	1				1	1	1			1	1		1
64	Kiewit Pacific Company				5				2			3	2	
65	Kimley-Horn and Assoc				1									
66	KNA Consulting Engineers		1		1									
67	KPFF Consulting Engineers		1		1									
68	L-3 Communications	1						1		1	1	1	1	
69	LAM Research Corporation					1		2			1	2	1	1
70	Lawrence Livermore Nat'l Labs				1	2	1	1	1		1	2		1
71	Lincoln Electrical							1		1		1	1	
72	Lockheed Martin	9	1	1	4	7	8	9	3	7	7	9	6	7
73	LSI Logic						1	1						
74	Melfred Borzall											1	1	
75	Microsoft					1	1							1
76	Morley Builders		1		1									
77	Nabih Youssef & Assoc		1		1									
78	NAVIS					1				1				
79	NEC Electronics	1						3		1	2	3	2	1
80	New United Motor Mfge					1		1		1	1	1	1	
81	Nichols Farms			1					1	1		1		
82	Nolte Associates				1									
83	Northrop Grumman	2			1			2			1	2		
84	Northrop Grumman Space	1				1	1	1				1		
85	OC Jones & Sons				1									
86	Pacific Gas & Electric Co				1	2	1	1		1		1		
87	Palm, Inc					1	1							
88	Parker Hannifin		1					2						2
89	Parsons Corporation		1		1			1	1	1	1	1		
90	Power Engineering Contractor				1									
91	Preston Pipelines			1	1					1		1		

92	Provost & Pritchard Engr Grp				1									
93	Qualcomm, Inc.					1	1	1						1
94	Raytheon	1				4	4	3		2		2	1	3
95	RBF Consulting				6				1				1	
96	Redback Networks					1	1	1						1
97	Rinne & Peterson Structural		1		1									
98	Rockwell Automation					1	1	1		1		1	1	
99	Salesforce.com					1	1							1
100	San Diego Gas & Electric Co							1				1		
	CENG EMPLOYERS	AERO	ARCE	BRAE	CE	CSC	CPE	EE	ENVE	IE	MATE	ME	MFGE	SE
101	Sania National Labs		1		2	2	2	2	1			2		
102	Schirmer Engineering				1				1			1		
103	Semtech							1						
104	Seymour Duncan									1	1	1	1	
105	Simpson Strong-Tie												1	
106	Skyway Engineering, Inc.				1									
107	Solar Turbines								1	1		2	2	
108	St Jude Medical			1		7	6	7		3	7	8	4	3
109	STB Structural Engineers		1		1									
110	Structural Engineering Consult		1		1									
111	Structural Integrity Assoc				1						1	1		
112	Sundt Construction		1		1									
113	Teradyne					1	3	3		1		1	1	1
114	The Covello Group, Inc.				1									
115	Thorton & Tomasetti		1		1									
116	Trane Company				1		1	1		1		1	1	
117	Trus Joist, a Weyerhaeuser				1									
118	Unocal									1			1	
119	US Air Conditioning	1						1		1		1		
120	USAF		1		1			1	1			1		
121	Valero Energy Corporation				1			1	1			1		
122	Van Beveren & Butelo				1									
123	Varian Medical Systems							2				2	2	

12 4	Wallace Group			1	1				1			1		
12 5	Watry Design		1											
12 6	Web Associates						1							1
12 7	WorleyParsons		1		1			1		1	1	1		
12 8	Yolo County Flood Control			1	1									
12 9	ZFA Structural Engineers		1		1									
		21	34	13	79	61	60	83	25	53	33	107	47	39
	CENG EMPLOYERS	AERO	ARCE	BRAE	CE	CSC	CPE	EE	ENVE	IE	MATE	ME	MFGE	SE