

**Program Improvement Report
Bachelor of Science in Civil Engineering
2008-2009**

*Department of Civil Engineering
College of Engineering, Computer Science, and Construction Management
California State University, Chico*



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Approved by the Faculty
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Editor's Note: This document provides a summary of findings and actions resulting from implementation of the Civil Engineering *Program Improvement Plan (PIP)* in effect at the time of this report. The applicable *PIP* is described in the companion document:

Program Improvement Plan, B. S. in Civil Engineering, First Edition, August 2005.

Minor deviations from this *PIP* are summarized below. Since in any semester there may be slight changes to the metrics used for direct and embedded assessment in individual courses, these are not called out in the list.

Minor Modifications to the *PIP* Reflected in this *Program Improvement Report (PIR)*:

<u>Period</u>	<u>Modifications</u>
2005-2006	Use of new major-specific (CE) graduating senior exit survey instrument.
2005-2006	Addition of five supplemental questions to the college graduating senior exit survey instrument.
2006-2007	Additional modifications to the CE major-specific graduating senior exit survey instrument and the supplemental questions on the college graduating senior exit survey instrument.
2006-2007	Minimum acceptable pass rate for CIVL 311 Outcome (a) lowered from 90% to 80% for direct assessment.
2008-2009	New survey instruments developed and administered for alumni and for employers.

The current edition of the *PIP* and all editions of the *PIR* are archived at:

http://www.ecst.csuchico.edu/depts/ce/Civil_Engineering/Program_Assessment.html

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* Reference: *Program Improvement Plan*, Bachelor of Science in Civil Engineering, First Edition, August 2005.

Introduction

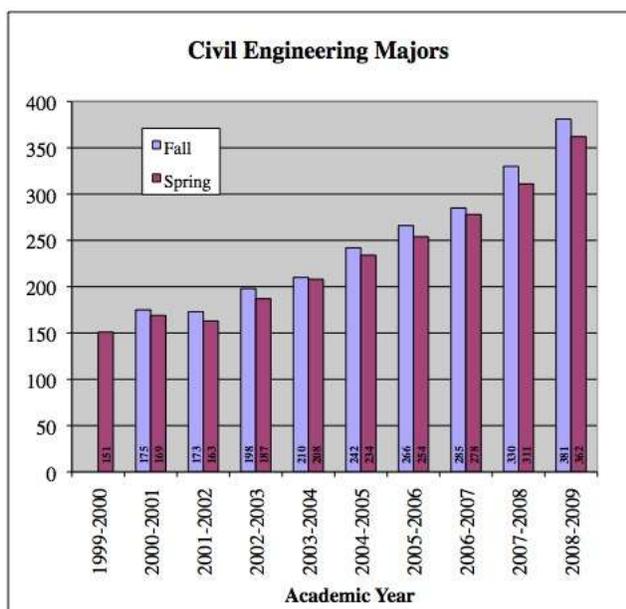
The various means and processes regularly used to assess the effectiveness of the Civil Engineering program and its students are fully described in the companion document, *Program Improvement Plan*, Bachelor of Science in Civil Engineering, First Edition, August 2005. Based on implementation of the *PIP*, this *Program Improvement Report* provides a summary of findings and actions during the 2007-2008 academic year.

Since certain assessment measures may not have been employed during the period addressed by this *PIR*, some sections may not contain any findings. Refer to the *PIP* to ascertain the status of any inactive assessment measure and the intended date when it will next be utilized.

The *PIR* presents only summaries and selected data deemed valuable to program assessment. Sections that are shaded in the accompanying tables are from periods prior to the academic year addressed by this *PIR*. Although these data provide historical perspective, they are not the emphasis of this report.

Section I of this report, *Assessment Summaries and Observations*, presents findings and observations based on application of the *PIP*, but provides no suggestions for possible reactions to the findings. Possible reactions will instead be found in Section II *Actions Planned as a Result of Assessment*, where various actions are discussed, including a general reference to the assessment finding(s) that suggested the action. This reflects the complex synergy between assessment and improvement – for instance, a planned action may be in response to multiple assessment measures.

An important consideration when reviewing the most recent assessment findings is that the Civil Engineering program continues to grow at an unprecedented rate. This growth impacts many aspects of the program, including recruitment of an adequate number of instructional faculty and sufficient access to appropriate educational facilities.



I. Assessment Summaries and Observations

1. Direct and Embedded Assessment (PIP Sections I.1 through I.4)

The CE program’s direct and embedded assessment plan, which uses specific assignments in selected courses to measure students’ achievement of program learning outcomes, has been utilized in each semester since Spring 2004. The plan was revised during the 2008-2009 academic year, to be implemented beginning Fall 2009. Consequently, these data represent the last application of the older assessment plan.

**TABLE I.1.1 DIRECT PROGRAM ASSESSMENT
STUDENTS DEMONSTRATING OUTCOME ACHIEVEMENT**

CE Program Learning Outcome	Course Used for Outcome Assessment	Prior Semesters								Current Semesters	
		F04	S05	F05	S06	F06	S07	F07	S08	F08	S09
<i>The following assessment measure has a minimum acceptable achievement rate of 80%.</i>											
a: ability to apply knowledge of mathematics, science, and engineering	CIVL 311 Strength of Materials	90%	76%	91%	85%	80%	83%	80%	71%	89%	89%
<i>The following assessment measures have a minimum acceptable achievement rate of 90%.</i>											
b: ability to design and conduct experiments, as well as to analyze and interpret data	CIVL 411 Soil Mechanics & Foundations	-	97%	-	96%	-	100%	-	100%	-	100%
	CIVL 415 Reinforced Concrete Design	30%	-	91%	-	95%	-	98%	-	100%	-
	CIVL 441 Transportation Engineering	100%	-	97%	-	98%	-	100%	-	100%	-
c: ability to design a system, component or process to meet desired needs	CIVL 415 Reinforced Concrete Design	100%	-	91%	-	90%	-	98%	-	93%	-
	CIVL 431 Environmental Engineering	-	98%	-	98%	-	100%	-	100%	-	100%
d: ability to function on multi-disciplinary teams	CIVL 431 Environmental Engineering	-	100%	-	100%	-	100%	-	100%	-	100%
	CIVL 495 Lifelong Development for Engineers	100%	98%	100%	100%	100%	100%	100%	100%	100%	100%
e: ability to identify, formulate, and solve engineering problems	CIVL 415 Reinforced Concrete Design	100%	-	94%	-	95%	-	98%	-	91%	-
	CIVL 441 Transportation Engineering	100%	-	97%	-	98%	-	100%	-	100%	-
f: understanding of professional and ethical responsibility	CIVL 402 Contracts, Specifications and Technical Reports	100%	100%	95%	93%	87%	100%	100%	100%	100%	100%
	CIVL 495 Lifelong Development for Engineers	100%	100%	94%	100%	100%	100%	97%	100%	100%	95%
g: ability to communicate effectively	CIVL 402 Contracts, Specifications and Technical Reports	100%	100%	100%	96%	93%	100%	100%	100%	100%	100%
	CIVL 415 Reinforced Concrete Design	100%	-	100%	-	100%	-	98%	-	100%	-
h: broad education necessary to understand impact of engineering solutions in a global and societal context	CIVL 441 Transportation Engineering	100%	-	97%	-	98%	-	100%	-	100%	-
	CIVL 495 Lifelong Development for Engineers	93%	100%	96%	100%	100%	100%	100%	100%	100%	98%
i: recognition of the need for, and an ability to, engage in lifelong learning	CIVL 495 Lifelong Development for Engineers	100%	100%	96%	100%	100%	100%	100%	100%	100%	95%
j: knowledge of contemporary issues	CIVL 495 Lifelong Development for Engineers	100%	100%	96%	100%	100%	100%	100%	100%	100%	98%
k: ability to use techniques, skills, and modern engineering tools for engineering practice	CIVL 131 Introduction to Civil Engineering Design	-	98%	-	99%	-	93%	-	98%	-	97%
	CIVL 415 Reinforced Concrete Design	90%	-	82%	-	95%	-	98%	-	97%	-

Summary data from Fall 2008 and Spring 2009 are presented in Table I.1.1 as the percentage of students who successfully demonstrated achievement of the specified outcome in the designated course. Only certain courses are used for this assessment. Since some courses are taught only once each academic year, these courses will not display results in off-semesters.

Student achievement rates fall above minimally acceptable levels (80% for outcome “a” and 90%

for all other outcomes), indicating that the program is successfully providing students with the knowledge, skills, and attitudes targeted by the program.

As described in the *Program Improvement Plan*, every student who fails any outcome assessment is required to eventually demonstrate successful achievement of this outcome before he/she is allowed to continue progressing in the program, even if it means repeating the course in which that particular outcome is assessed. Consequently, all students in the CE program must successfully demonstrate achievement of all learning outcomes as well as successfully complete all required courses before achieving their degree.

2. Fundamentals of Engineering Examination (PIP Section I.5)

Question 13 on the Graduating Senior Exit Survey solicits from students their success on the Fundamentals of Engineering Examination.

The results in Table I.2.1 demonstrate that 98% or more of those surveyed who had also received test results passed the examination. This is not to claim that all students passed the exam in their first attempt or, since not all students had received their scores by the time the survey was distributed, even that they had all passed. Nevertheless, the results strongly suggest adequate student preparation in the fundamentals of civil engineering, a central mission of the program.

TABLE I.2.1 STUDENT PERFORMANCE ON THE F. E. EXAMINATION

Q13. Took a comprehensive exam					
Year	No	Yes, and passed	Yes, and didn't pass	Yes, waiting for results	Total
02-03	0%	83%	0%	17%	100%
03-04	0%	55%	0%	45%	100%
04-05	0%	83%	0%	17%	100%
05-06	0%	65%	5%	30%	100%
06-07	13%	79%	0%	8%	100%
07-08	3%	76%	7%	14%	100%
08-09	3%	70%	2%	25%	100%
	2	42	1	15	60

These results should be viewed only as a self-reported sample, since not all students returned the survey. Instead, the return rate varies greatly from year to year (see Table I.3.1). Until better and more reliable data are available for student success on the FE exam, this assessment measure should not be considered a primary indicator of program and student achievement.

3. Graduating Senior Exit Survey (PIP Section I.6)

Summary data resulting from administration of the exit survey are presented in Appendix A. Table A.1 provides general response data regarding student demographics and student satisfaction with non-academic aspects of their experiences at CSU, Chico. Table A.2 addresses student satisfaction with their education and self-evaluation of their preparation in program learning outcomes. These data sets are generated for all programs in the College of Engineering, Computer Science, and

Construction Management, and are tabulated annually in the college document, *Assessment Report – Senior Exit Survey Result, Summary Report and Evaluation*.

The number of students who successfully completed all requirements for the Bachelor of Science in Civil Engineering is tabulated by academic year in Table I.3.1. During these same years, the return rate on the Graduating Senior Exit Survey has varied from 41 to 98 percent of those who graduated. Increased efforts the last two years to improve the response rate have resulted in an improved rate of return.

TABLE I.3.1 BSCE GRADUATES BY YEAR AND SURVEYS RETURNED

Academic Year	BSCE Graduates	Surveys Returned	
2001-2002	27	12	44%
2002-2003	26	17	65%
2003-2004	38	20	53%
2004-2005	29	12	41%
2005-2006	35	20	57%
2006-2007	40	24	60%
2007-2008	38	29	76%
2008-2009	61	60	98%

Data resulting from use of the College’s supplemental survey form, which varies annually, are provided in Table A.3.

~~Summary data resulting from the CE-specific survey (i.e., questions asked only of CE majors) are summarized in Table A.4. Collection of these responses commenced during the 2004-2005 academic year when the department implemented a comprehensive revision of the survey instrument. This survey instrument is now varied periodically and is intended to provide snapshot data of topical interest to the faculty. Editor’s Note: This survey was inadvertently not administered during the period of this report.~~

The department faculty made a number of noteworthy observations and conclusions based on these data. These are summarized in Table I.3.2. Of particular significance is the students’ perception that they are prepared in the specified program outcomes. This corroborates similar findings from direct assessment measures, as summarized in Section 1.

TABLE I.3.2 OBSERVATIONS BASED ON RESPONSES TO THE SENIOR EXIT SURVEYS

- Students generally report adequate preparation in the full range of program learning outcomes.
- Students were generally satisfied with the quality of teaching and access to faculty in the CE department, although satisfaction with these measures has declined over the past two years.
- Students did not report high satisfaction with the quality of GE courses, although some improvement is note.
- Most (93%) CE students reported meeting with their major academic advisor at least once each year.
- Most students experienced an internship or other relevant work experience prior to graduation and most who did so found the experience valuable.
- Most students had experienced involvement in student societies and most who participated found value in the experience.
- Most students who participated found the FE/EIT review sessions helpful.
- Most students did not use the career office, but for most who did it was helpful.
- Students are particularly dissatisfied with the access and the quality of the

4. Alumni Survey (PIP Section II.2)

All known CSU, Chico BSCE alumni were surveyed during the Spring 2009 semester. This survey was conducted using a new paper survey instrument. A total of 152 alumni survey forms were returned and processed. The survey instrument, tabulated survey data, and analysis of these data are presented in Appendix B.

5. Employer Survey (PIP Section II.3)

The responses provided in the alumni survey were used to update the database of employers of our graduates (77 employers). These employers were surveyed during summer 2009. This survey was conducted using a new on-line survey instrument, modeled after the alumni survey instrument. A total of eleven employer surveys were completed. The survey instrument, tabulated survey data, and analysis of these data are presented in Appendix C.

6. Professional Advisory Board Feedback (PIP Section II.4)

The CE Professional Advisory Board (PAB) is an invaluable means of external assessment for the CE program. Besides providing ad-hoc input to the CE program as offered or solicited, the Board also provides regular, annual feedback to the program regarding the findings in each *Program Improvement Report (PIR)*, which is subsequently summarized in the *PIR* during the next review cycle. Consequently, PAB comments are generally provided one year after the reported findings. This approach is used to accommodate the meeting schedule preferred by the PAB.

While the PAB was heavily involved in program assessment during the 2006-2007 academic year, as numerous programmatic changes were under consideration for implementation in the 2009-2011

University Catalog, there was reduced need for their participation in the current assessment cycle. Nevertheless, the PAB commented on several programmatic and/or assessment issues at the Spring 2009 meeting.

- In response to an anticipated requirement to reduce the unit-count in the CE major, PAB recommended that MECH 332 Thermodynamics could be eliminated as a requirement.
- In response to a proposal that all majors have and use a laptop computer in their courses, PAB expressed concern that this would create a problem for uniformity in the teaching of these courses.
- In response to presentation of the new *Program Improvement Plan* (to be implemented beginning Fall 2009), several concerns were expressed by individual PAB members: 1) The minimally acceptable pass rate of 80% for programmatic assessment of outcomes a1 through a5 (ability to apply knowledge of mathematics, science, and engineering) seems too low. A higher acceptable pass rate should be considered. 2) Instruction and assessment of mathematics should focus more on applications, rather than on proofs and theory.
- PAB would like another opportunity to comment on the new *PIP*, once some representative data have been collected.

7. Accreditation Feedback (*PIP Section II.5*)

This assessment measure was not used during the period addressed by this report.

II. Actions Planned as a Result of Assessment

The CE department faculty has reviewed the results from the various assessment measures provided in this report. In response, the department provides in Table II.1 a summary of ongoing and planned actions based on these findings.

TABLE II.1: PLANNED ACTIONS

Associated Assessment Measures:

1. Direct and Embedded Assessment
2. Fundamentals of Engineering Examination
3. Graduating Senior Exit Survey
4. Alumni Survey
5. Employer Survey
6. Professional Advisory Board
7. Accreditation

Topic	Description	Intended Outcome(s)	Assessment Measure(s)							
			1	2	3	4	5	6	7	
CE Projects Lab	The CE Projects Lab has become a vital, heavily used facility in the CE program. The department will continue to work to improve this facility, both in terms of maintaining modern equipment and to improve student access. The department will investigate alternatives to a dedicated computer laboratory, such as requiring that all students purchase and use a suitable laptop computer. The department also will attempt to provide greater after-hour access to this facility, possible by distributing keys to students via the secured OCNL lock-box.	Provide for a suitable computation, instruction, and work environment for CE students.			<input type="checkbox"/>				<input type="checkbox"/>	<input type="checkbox"/>
CE Physical Labs	The CE department operates three primary laboratory facilities for the college - a combined structures/concrete/soils lab, a hydraulics lab, and an environmental lab. The structures lab is also used by students in the construction management program and the concrete industry management program. The hydraulics lab is also used by students from the mechanical engineering and mechatronic engineering programs. New equipment and renovations were realized in these three laboratories over the past year. However, the structures lab in particular is overcrowded to the point that this space can no longer be properly managed and maintained. It is essential that the department and college find additional suitable space for some of these activities, especially as the California Pavement Preservation Center also needs access to suitable laboratory space.	Provide for a modern and effective experience for students in laboratory courses and, as a secondary benefit, provide facilities suitable for project work by faculty and students.			<input type="checkbox"/>				<input type="checkbox"/>	<input type="checkbox"/>
Student Chapters	The department will continue to support the various professional societies related to the program.	Enhance the professional aspects of the program, provide opportunities for student extracurricular activities and community service, and to improve student perseverance.		<input type="checkbox"/>	<input type="checkbox"/>				<input type="checkbox"/>	<input type="checkbox"/>

Major Course Availability	The department will strive to offer electives more frequently in topical areas viewed by students as under-emphasized in the curriculum (e.g., Water Resources).	Improve student progress through the program and provide for additional sub-discipline specialization.	<input type="checkbox"/>		<input type="checkbox"/>				<input type="checkbox"/>
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Relation to Previous Planned Actions

The primary utility of this *Program Improvement Report* is to serve as a guiding document to the CE faculty for continuous program improvement. As such, planned actions may change yearly or, in some cases, continue over multiple years, depending on annual assessment findings, faculty response to those findings, and available resources for enacting change. Consequently, there is little to be gained from compiling a comprehensive history of assessment-driven actions. Nevertheless, history is important when it comes to assessment and program improvement – all past editions of the *PIR* will continue to be archived at the CE department website (see the editor’s note preceding this report).

APPENDIX A: Graduating Senior Exit Survey

TABLE A.1 GENERAL RESPONSE DATA (CE MAJORS ONLY)

Q3. Came to Chico State as a

Year	First-time freshman	Transfer	Total
02-03	8%	92%	100%
03-04	45%	55%	100%
04-05	25%	75%	100%
05-06	35%	65%	100%
06-07	42%	58%	100%
07-08	31%	69%	100%
08-09	57%	43%	100%
	34	26	60

Q4. Semesters attended Chico State

Year	1-3	4-6	7-9	10-12	13+	Total
02-03	0%	33%	17%	50%	0%	100%
03-04	0%	30%	30%	40%	0%	100%
04-05	0%	67%	8%	17%	8%	100%
05-06	0%	58%	5%	21%	16%	100%
06-07	0%	42%	25%	21%	13%	100%
07-08	7%	34%	34%	17%	7%	100%
08-09	20%	43%	28%	5%	3%	100%
	12	26	17	3	2	60

Q5. Overall GPA

Year	<2.25	2.25-2.49	2.50-2.74	2.75-2.99	3.00-3.24	3.25-3.50	3.51-3.74	3.75-4.00	Total
02-03	0%	0%	25%	42%	25%	8%	0%	0%	100%
03-04	0%	0%	15%	50%	20%	10%	5%	0%	100%
04-05	0%	0%	9%	45%	18%	18%	0%	9%	100%
05-06	5%	20%	15%	0%	15%	30%	10%	5%	100%
06-07	0%	4%	21%	17%	21%	13%	17%	8%	100%
07-08	7%	7%	14%	21%	24%	10%	7%	10%	100%
08-09	2%	12%	14%	24%	31%	17%	2%	0%	100%
	1	7	8	14	18	10	1	0	59

Q6. Value of internship, co-op, or job if related to major

Year	Not exper'd	Not valuable	Somew't valuable	Valuable	Very valuable	Total
02-03	8%	0%	0%	25%	67%	100%
03-04	10%	0%	0%	40%	50%	100%
04-05	33%	0%	0%	0%	67%	100%
05-06	10%	0%	5%	30%	55%	100%
06-07	17%	0%	4%	25%	54%	100%
07-08	7%	0%	0%	29%	64%	100%
08-09	12%	3%	5%	22%	58%	100%
	7	2	3	13	35	60

Q7. Value of involvement in societies, activities, clubs

Year	Not exper'd	Not valuable	Somew't valuable	Valuable	Very valuable	Total
02-03	33%	8%	25%	17%	17%	100%
03-04	5%	0%	47%	21%	26%	100%
04-05	25%	0%	17%	25%	33%	100%
05-06	25%	0%	15%	25%	35%	100%
06-07	13%	0%	25%	33%	29%	100%
07-08	32%	11%	25%	21%	11%	100%
08-09	20%	7%	20%	25%	27%	100%
	12	4	12	15	16	59

Q8a. Plans after graduation: Attend grad school

Year	Yes	No	Total
02-03	38%	63%	100%
03-04	40%	60%	100%
04-05	27%	73%	100%
05-06	7%	93%	100%
06-07	14%	86%	100%
07-08	5%	95%	100%
08-09	6%	94%	100%
	3	45	48

Q8b. Plans after graduation: Begin working

Semester	Yes	No	Total
02-03	92%	8%	100%
03-04	100%	0%	100%
04-05	100%	0%	100%
05-06	95%	5%	100%
06-07	91%	9%	100%
07-08	97%	3%	100%
08-09	92%	8%	100%
	54	5	59

Q9. Number of job offers received

Year	None	1	2	3	4+	Total
02-03	60%	20%	10%	10%	0%	100%
03-04	11%	44%	39%	6%	0%	100%
04-05	0%	13%	38%	0%	50%	100%
05-06	11%	32%	26%	11%	21%	100%
06-07	5%	26%	32%	21%	16%	100%
07-08	0%	54%	29%	11%	7%	100%
08-09	47%	34%	15%	3%	0%	100%
	28	20	9	2	0	59

Q10a. Likely to accept current job offer

Year	Yes	No	Total
02-03	33%	67%	100%
03-04	67%	33%	100%
04-05	75%	25%	100%
05-06	72%	28%	100%
06-07	84%	16%	100%
07-08	86%	14%	100%
08-09	49%	51%	100%
	29	30	59

Q10b. Current job offer: Starting salary

Year	<\$30K	\$30-40K	\$41-50K	\$51-60K	\$61-70K	\$71K+	Total
02-03	0%	33%	67%	0%	0%	0%	100%
03-04	7%	36%	36%	21%	0%	0%	100%
04-05	0%	0%	83%	17%	0%	0%	100%
05-06	0%	15%	62%	23%	0%	0%	100%
06-07	6%	6%	59%	29%	0%	0%	100%
07-08	0%	13%	33%	50%	4%	0%	100%
08-09	3%	14%	31%	34%	10%	7%	100%
	1	4	9	10	3	2	29

Q11. Interview at career planning office helpful

Year	Didn't use	Not helpful	Somew't helpful	Helpful	Very helpful	Total
02-03	90%	0%	10%	0%	0%	100%
03-04	69%	31%	0%	0%	0%	100%
04-05	63%	13%	13%	13%	0%	100%
05-06	72%	0%	6%	11%	11%	100%
06-07	84%	0%	11%	0%	5%	100%
07-08	72%	0%	0%	14%	14%	100%
08-09	71%	10%	8%	8%	2%	100%
	35	5	4	4	1	49

Q12. How did you find your job?

Year	Career Planning	Faculty referral	On-line posting	Mailed resume	Personal connect	Other	Total
02-03	29%	14%	0%	29%	29%	0%	100%
03-04	0%	0%	29%	6%	24%	41%	100%
04-05	0%	13%	25%	38%	0%	25%	100%
05-06	13%	19%	0%	6%	31%	31%	100%
06-07	0%	6%	0%	12%	53%	29%	100%
07-08	8%	4%	20%	4%	40%	24%	100%
08-09	5%	5%	14%	7%	38%	31%	100%
	2	2	6	3	16	13	42

Q13. Took a comprehensive exam

Year	No	Yes, and passed	Yes, and didn't pass	Yes, waiting for results	Total
02-03	0%	83%	0%	17%	100%
03-04	0%	55%	0%	45%	100%
04-05	0%	83%	0%	17%	100%
05-06	0%	65%	5%	30%	100%
06-07	13%	79%	0%	8%	100%
07-08	3%	76%	7%	14%	100%
08-09	3%	70%	2%	25%	100%
	2	42	1	15	60

Q14a. Took a review course prior to exam

Year	Yes	No	Total
02-03	75%	25%	100%
03-04	63%	37%	100%
04-05	75%	25%	100%
05-06	58%	42%	100%
06-07	55%	45%	100%
07-08	48%	52%	100%
08-09	61%	39%	100%
	35	22	57

Q14b. Value of the review course

Year	Not valuable	Somew't valuable	Valuable	Very valuable	Total
02-03	22%	22%	11%	44%	100%
03-04	8%	38%	31%	23%	100%
04-05	0%	44%	11%	44%	100%
05-06	8%	17%	58%	17%	100%
06-07	0%	25%	25%	50%	100%
07-08	14%	43%	43%	0%	100%
08-09	14%	43%	32%	11%	100%
	5	16	12	4	37

TABLE A.2 SATISFACTION AND PROGRAM OUTCOMES (CE MAJORS ONLY)

Educational Satisfaction for CE								
Scale: 1=Very Dissatisfied; 5=Very Satisfied	AY 02-03	AY 03-04	AY 04-05	AY 05-06	AY 06-07	AY 07-08	AY 08-09	N
	Mean							
Q15. Quality of teaching by faculty in department	4.12	3.95	4.00	4.16	3.67	3.89	4.00	60
Q16. Quality of teaching by other faculty	3.53	3.60	3.17	3.53	3.50	3.61	3.55	60
Q17. Access to faculty in your department	4.18	4.50	4.58	4.42	4.46	4.11	4.30	60
Q18. Availability of courses in your department	3.76	3.35	3.67	3.05	3.13	3.25	3.45	60
Q19. Quality of courses in your department	4.00	4.00	4.00	3.84	3.79	3.89	3.95	60
Q20. Access to lab facilities and equipment	3.94	3.20	3.83	3.79	3.96	3.43	3.49	59
Q21. Quality of laboratories and equipment	3.25	3.30	3.17	3.11	3.00	2.93	2.90	60
Q22. Access to computer facilities	3.12	4.20	3.50	3.79	3.17	2.96	3.17	60
Q23. Quality of computer facilities	2.71	3.60	2.75	2.27	2.46	2.61	2.78	60
Q24. Academic advising from your major advisor	3.71	3.30	3.50	3.79	4.00	3.29	3.70	60
Q25. Academic advising from Univ. Advising Office	3.18	2.89	2.64	2.78	3.38	2.62	3.00	58
Q26. Career information from your department	4.00	3.40	3.45	3.95	3.88	3.52	3.26	58
Q27. Availability of GE courses	3.71	3.95	3.55	3.56	3.71	3.89	3.78	60
Q28. Quality of GE courses	3.47	3.60	2.75	3.17	3.38	3.18	3.37	60
Q29. Overall quality of your education	4.35	4.20	4.50	3.95	4.04	3.93	4.15	60
Q30. Overall experience at Chico State	4.59	4.30	4.58	4.21	4.13	4.04	4.43	60

Program Outcome Trends for CE								
Scale: 1=Very Unprepared; 5=Very Prepared	AY 02-03	AY 03-04	AY 04-05	AY 05-06	AY 06-07	AY 07-08	AY 08-09	N
	Mean							
Q31. Apply knowledge to solve problems	4.18	4.35	4.67	4.32	4.21	4.07	4.18	60
Q32. Design and conduct experiments	3.94	4.10	4.17	4.21	3.92	3.82	3.95	60
Q33. Analyze and interpret experimental data	4.12	4.40	4.33	4.32	4.17	4.14	4.13	60
Q34. Design component or system to meet needs	4.06	4.10	4.08	4.11	3.92	3.93	3.82	60
Q35. Function on multidisciplinary teams	4.12	4.45	4.75	4.47	4.54	4.18	4.37	60
Q36. Identify, formulate, solve technical problems	4.24	4.40	4.67	4.37	4.29	4.11	4.23	60
Q37. Communicate technical matters in writing	4.18	4.50	4.50	4.37	4.25	4.00	4.07	60
Q38. Communicate technical matters orally	4.00	4.30	4.08	4.21	4.08	4.00	4.00	60
Q39. Understand professional, ethical responsibilities	4.00	4.35	4.25	4.53	4.17	4.04	4.30	60
Q40. Understand contemporary issues facing society	3.76	3.90	3.58	4.37	4.04	3.61	4.18	60
Q41. Use modern tools and technology	4.12	3.95	4.25	4.05	3.58	4.07	4.05	60
Q42. Enter the workplace	4.12	4.25	4.50	4.53	4.08	4.07	4.20	60
Q43. Continue learning	4.35	4.50	4.67	4.42	4.04	4.14	4.35	60

Other								
Scale: 1=Strongly disagree; 5=Strongly agree	AY 02-03	AY 03-04	AY 04-05	AY 05-06	AY 06-07	AY 07-08	AY 08-09	N
	Mean							
Q44. Recommend major program to others	4.19	4.35	4.92	3.89	4.00	4.04	4.51	60

Note: Current scores below 3.50 are highlighted.

TABLE A.3 ECC SUPPLEMENTAL QUESTIONS (CE MAJORS ONLY)

Responses to College Supplemental Questions (CE Only)

Satisfaction with department support while enrolled at Chico State

Year	Very Dis-satisfied	<----->			Very Satisfied	Total
08-09	17%	13%	7%	37%	27%	100%
	10	8	4	22	16	60

Frequency of meetings in University Advising office

Year	> Once a semester	Once a semester	Once a year	Occasion-ally	Never	Total
08-09	8%	13%	8%	47%	23%	100%
	5	8	5	28	14	60

Frequency of meetings with major academic advisor

Year	> Once a semester	Once a semester	Once a year	Occasion-ally	Never	Total
08-09	17%	50%	27%	7%	0%	100%
	10	30	16	4	0	60

How likely to enroll in an MSEM program after completing BS degree

Year	Highly	Possibly	Uncert'n	Unlikely	Definit'y Not	Total
08-09	10%	0%	50%	32%	8%	100%
	6	0	30	19	5	60

If enter MSEM program, what format prefer for course work

Year	Weekday	Evening	On-Line	Televised	No Prefer.	Total
08-09	20%	32%	43%	5%	0%	100%
	12	19	26	3	0	60

APPENDIX B: Alumni Survey

California State University, Chico

Department of Civil Engineering

BSCE Alumni Survey

To All CSU, Chico, Civil Engineering Alumni:

The most vital measure of our academic program is the success of our graduates. Please help us to assess the preparation provided by the CE program by completing the following survey. The responses that you provide will be combined with those from other alumni solely to produce summary data. Individual personal responses will be treated as strictly confidential.

Keep us informed of address and employment changes with the Alumni Information Form, available at <http://www.csuchico.edu/ce> - click on the Alumni and Friends tab. Please also encourage other alumni to stay in touch as well. Thank you for your assistance. We look forward to hearing from you. To assist with program accreditation, please return the survey as soon as possible, but no later than September 30, 2008.

Dr. Russell S. Mills, P.E. Chair and Professor of Civil Engineering

Please return the survey in the provided postage-paid envelope



1. Name: _____

2. Address: _____

3. Email address: _____

4. The year you received the BSCE from CSU, Chico

0	1	2	3
4	5	6	7
8	9	0	1
2	3	4	5
6	7	8	9
0	1	2	3
4	5	6	7
8	9	0	1
2	3	4	5
6	7	8	9

5. Academic Status upon entering CSU, Chico
 Freshman
 Community college transfer
 4-Year college transfer
 Post baccalaureate
 Other: _____

6. Professional licensure attained (mark all that apply)
 FE/EIT
 PE/CE
 Other: _____

7. Current position title: _____

8. Employer name and address: _____

9. Number of years with current employer

- Less than 3 10-12
 4-6 More than 12
 7-9

10. Current annual income

- Less than \$41K \$81-100K
 \$41-60K More than \$100K
 \$61-80K

11. Nature of employment

- Government Education
 Industry Other: _____
 Consulting

12. Supervisor name and title: _____

13. Have you completed additional education and/or training? (mark all that apply)

- Conferences Graduate Studies
 Workshops Other: _____
 Short Courses

14. How many professionally-related educational opportunities do you seek annually?

- None 5-6
 1-2 More than 6
 3-4

15. Please indicate how many professional and/or community groups you currently participate in.

- None 5-6
 1-2 More than 6
 3-4

16. How often do you present information to professional audiences?

- Daily Annually
 Weekly Seldom
 Monthly

Please mark the level of preparation that was provided by your education at CSU, Chico for the following disciplinary areas in which you have practiced since graduation. For each area you have not practiced, please mark N/A.

	Very Unprepared				Very Prepared		N/A
17. Land Surveying	<input type="radio"/>						
18. Land Development	<input type="radio"/>						
19. Construction	<input type="radio"/>						
20. Structures	<input type="radio"/>						
21. Geotechnical/Soil Mechanics	<input type="radio"/>						
22. Transportation/Traffic	<input type="radio"/>						
23. Environmental	<input type="radio"/>						
24. Water Resources/Hydrology	<input type="radio"/>						
25. Water Resources/Hydraulics	<input type="radio"/>						
26. Management/Administration	<input type="radio"/>						
27. Education	<input type="radio"/>						
28. Other Engineering Related	<input type="radio"/>						
29. Non-Engineering Related	<input type="radio"/>						

For each of the following CE program goals, mark the level of preparation that was provided by your education at CSU, Chico.

	Very Unprepared				Very Prepared	
30. BSCE graduates will be effective engineers.	<input type="radio"/>					
31. They will be effective problem solvers.	<input type="radio"/>					
32. They will be educated in engineering sciences.	<input type="radio"/>					
33. They will be able to utilize a variety of engineering tools and techniques to enhance their professional abilities.	<input type="radio"/>					
34. They will be familiar with applicable regulatory and professional issues.	<input type="radio"/>					
35. They will be effective technical writers.	<input type="radio"/>					
36. They will be effective oral communicators.	<input type="radio"/>					
37. They will be able to function effectively in multi-disciplinary teams.	<input type="radio"/>					
38. They will appreciate good citizenship, community service, and ethical conduct.	<input type="radio"/>					
39. They will be aware of the impact of their designs on humankind and the environment.	<input type="radio"/>					

40. Please comment on the program goals listed above (questions 30 - 39). What changes to these goals should be considered? Should any of these goals be eliminated or new ones added?

41. Are there any additional comments you would like to make regarding the CE program at CSU, Chico? Consider both possible strengths and weaknesses that may exist in the program.

Thank You!

**Civil Engineering Alumni Survey
Fall 2008
Total Respondents = 152**

	Grad Year	
	Count	%
1984 and Earlier	94	61.8%
1985-1990	17	11.2%
1991-1996	14	9.2%
1997-2002	19	12.5%
2003-2008	8	5.3%
Total	152	100.0%

	Academic status upon entering CSUC	
	Count	%
Freshman	66	44.3%
Community College transfer	69	46.3%
4-Year college transfer	11	7.4%
Post Baccalaureate	2	1.3%
Other	1	.7%
Total	149	100.0%

	Professional licensure: FE/EIT		Professional licensure: PE/CE		Professional licensure: Other	
	Count	%	Count	%	Count	%
Marked	52	34.2%	134	88.2%	24	15.8%
Not marked	100	65.8%	18	11.8%	128	84.2%
Total	152	100.0%	152	100.0%	152	100.0%

	Years with current employer	
	Count	%
Less than 3	19	14.2%
4-6	18	13.4%
7-9	23	17.2%
10-12	13	9.7%
More than 12	61	45.5%
Total	134	100.0%

	Current annual income	
	Count	%
Less than \$41K	8	5.8%
\$41-60K	8	5.8%
\$61-80K	16	11.5%
\$81-100K	29	20.9%
More than \$100K	78	56.1%
Total	139	100.0%

	Nature of employment	
	Count	%
Government	56	39.7%
Industry	10	7.1%
Consulting	64	45.4%
Education	3	2.1%
Other	8	5.7%
Total	141	100.0%

	Additional education/training: Conferences		Additional education/training: Workshops		Additional education/training: Short Courses		Additional education/training: Graduate Studies	
	Count	%	Count	%	Count	%	Count	%
Marked	118	77.6%	117	77.0%	89	58.6%	42	27.6%
Not marked	34	22.4%	35	23.0%	63	41.4%	110	72.4%
Total	152	100.0%	152	100.0%	152	100.0%	152	100.0%

	Additional education/training: Other	
	Count	%
Marked	17	11.2%
Not marked	135	88.8%
Total	152	100.0%

	Prof educational opportunities seeking annually	
	Count	%
None	41	28.1%
1-2	61	41.8%
3-4	33	22.6%
5-6	6	4.1%
More than 6	5	3.4%
Total	146	100.0%

	Prof and/or community groups participate	
	Count	%
None	32	21.5%
1-2	72	48.3%
3-4	34	22.8%
5-6	4	2.7%
More than 6	7	4.7%
Total	149	100.0%

	How often you present info to professional audiences	
	Count	%
Daily	3	2.1%
Weekly	11	7.7%
Monthly	23	16.1%
Annually	23	16.1%
Seldom	83	58.0%
Total	143	100.0%

	Preparation in: Land Surveying		Preparation in: Land Development		Preparation in: Construction		Preparation in: Structures	
	Count	%	Count	%	Count	%	Count	%
Very Unprepared	1	.7%	8	5.4%	6	4.1%	1	.7%
Unprepared	1	.7%	24	16.1%	23	15.5%	3	2.0%
Somewhat Prepared	20	13.2%	34	22.8%	42	28.4%	27	18.1%
Adequately Prepared	43	28.5%	20	13.4%	39	26.4%	57	38.3%
Very Prepared	32	21.2%	6	4.0%	19	12.8%	38	25.5%
N/A	54	35.8%	57	38.3%	19	12.8%	23	15.4%
Total	151	100.0%	149	100.0%	148	100.0%	149	100.0%

	Preparation in: Geotechnical/Soil Mechanics		Preparation in: Transportation/Traffic		Preparation in: Environmental		Preparation in: Water Resources/Hydrology	
	Count	%	Count	%	Count	%	Count	%
Very Unprepared					10	6.8%	2	1.3%
Unprepared	8	5.4%	8	5.4%	17	11.5%	8	5.4%
Somewhat Prepared	33	22.3%	34	22.8%	34	23.0%	32	21.5%
Adequately Prepared	52	35.1%	50	33.6%	35	23.6%	44	29.5%
Very Prepared	27	18.2%	25	16.8%	14	9.5%	29	19.5%
N/A	28	18.9%	32	21.5%	38	25.7%	34	22.8%
Total	148	100.0%	149	100.0%	148	100.0%	149	100.0%

	Preparation in: Water Resources/Hydraulics		Preparation in: Management/Administration		Preparation in: Education		Preparation in: Other Engineering Related	
	Count	%	Count	%	Count	%	Count	%
Very Unprepared	2	1.4%	13	8.8%	5	3.4%		
Unprepared	7	4.7%	43	29.1%	14	9.6%	1	.7%
Somewhat Prepared	18	12.2%	53	35.8%	26	17.8%	35	24.0%
Adequately Prepared	54	36.5%	16	10.8%	26	17.8%	51	34.9%
Very Prepared	38	25.7%	10	6.8%	13	8.9%	18	12.3%
N/A	29	19.6%	13	8.8%	62	42.5%	41	28.1%
Total	148	100.0%	148	100.0%	146	100.0%	146	100.0%

	Preparation in: Non-Engineering Related	
	Count	%
Very Unprepared	2	1.4%
Unprepared	8	5.6%
Somewhat Prepared	51	35.9%
Adequately Prepared	35	24.6%
Very Prepared	15	10.6%
N/A	31	21.8%
Total	142	100.0%

	CE program goals: Effective engineers		CE program goals: Effective problem solvers		CE program goals: Educated in engineering sciences		CE program goals: Engineering tools and techniques	
	Count	%	Count	%	Count	%	Count	%
Very Unprepared	3	2.0%	2	1.3%	1	.7%	2	1.4%
Unprepared	3	2.0%	3	2.0%	3	2.0%	3	2.0%
Somewhat Prepared	16	10.8%	20	13.4%	16	10.8%	26	17.7%
Adequately Prepared	69	46.6%	67	45.0%	82	55.4%	70	47.6%
Very Prepared	57	38.5%	57	38.3%	46	31.1%	46	31.3%
Total	148	100.0%	149	100.0%	148	100.0%	147	100.0%

	CE program goals: Regulatory/professional issues		CE program goals: Effective technical writers		CE program goals: Effective oral communicators		CE program goals: Function in multi disciplinary teams	
	Count	%	Count	%	Count	%	Count	%
Very Unprepared	6	4.1%	4	2.7%	5	3.4%	2	1.4%
Unprepared	29	19.6%	18	12.2%	33	22.1%	8	5.4%
Somewhat Prepared	61	41.2%	65	43.9%	64	43.0%	41	27.7%
Adequately Prepared	37	25.0%	41	27.7%	28	18.8%	60	40.5%
Very Prepared	15	10.1%	20	13.5%	19	12.8%	37	25.0%
Total	148	100.0%	148	100.0%	149	100.0%	148	100.0%

	CE program goals: Appreciate citizenship, community svc, ethical conduct		CE program goals: Aware of impact of their designs	
	Count	%	Count	%
Very Unprepared	3	2.0%	8	5.4%
Unprepared	10	6.8%	11	7.4%
Somewhat Prepared	36	24.3%	49	33.1%
Adequately Prepared	61	41.2%	54	36.5%
Very Prepared	38	25.7%	26	17.6%
Total	148	100.0%	148	100.0%

Civil Engineering Alumni Survey
Fall 2008
Total Respondents = 152
Q17 to Q39 Crosstabs by Graduation Year

Grad Year * Preparation in: Land Surveying Crosstabulation

			Preparation in: Land Surveying					Total
			Very Unprepared	Unprepared	Somewhat Prepared	Adquately Prepared	Very Prepared	
Grad Year	1984 and Earlier	Count	0	0	7	26	25	58
		% within Grad Year	.0%	.0%	12.1%	44.8%	43.1%	100.0%
	1985-1990	Count	0	1	2	5	3	11
		% within Grad Year	.0%	9.1%	18.2%	45.5%	27.3%	100.0%
	1991-1996	Count	0	0	4	5	2	11
		% within Grad Year	.0%	.0%	36.4%	45.5%	18.2%	100.0%
	1997-2002	Count	0	0	6	3	2	11
		% within Grad Year	.0%	.0%	54.5%	27.3%	18.2%	100.0%
	2003-2008	Count	1	0	1	4	0	6
		% within Grad Year	16.7%	.0%	16.7%	66.7%	.0%	100.0%
Total		Count	1	1	20	43	32	97
		% within Grad Year	1.0%	1.0%	20.6%	44.3%	33.0%	100.0%

Grad Year * Preparation in: Land Development Crosstabulation

			Preparation in: Land Development					Total
			Very Unprepared	Unprepared	Somewhat Prepared	Adquately Prepared	Very Prepared	
Grad Year	1984 and Earlier	Count	5	12	18	15	5	55
		% within Grad Year	9.1%	21.8%	32.7%	27.3%	9.1%	100.0%
	1985-1990	Count	1	4	6	1	0	12
		% within Grad Year	8.3%	33.3%	50.0%	8.3%	.0%	100.0%
	1991-1996	Count	0	3	5	0	0	8
		% within Grad Year	.0%	37.5%	62.5%	.0%	.0%	100.0%
	1997-2002	Count	2	4	4	1	0	11
		% within Grad Year	18.2%	36.4%	36.4%	9.1%	.0%	100.0%
	2003-2008	Count	0	1	1	3	1	6
		% within Grad Year	.0%	16.7%	16.7%	50.0%	16.7%	100.0%
Total		Count	8	24	34	20	6	92
		% within Grad Year	8.7%	26.1%	37.0%	21.7%	6.5%	100.0%

Grad Year * Preparation in: Construction Crosstabulation

			Preparation in: Construction					Total
			Very Unprepared	Unprepared	Somewhat Prepared	Adquately Prepared	Very Prepared	
Grad Year	1984 and Earlier	Count	1	9	24	29	16	79
		% within Grad Year	1.3%	11.4%	30.4%	36.7%	20.3%	100.0%
	1985-1990	Count	1	5	5	3	2	16
		% within Grad Year	6.3%	31.3%	31.3%	18.8%	12.5%	100.0%
	1991-1996	Count	0	1	7	2	1	11
		% within Grad Year	.0%	9.1%	63.6%	18.2%	9.1%	100.0%
	1997-2002	Count	2	7	3	4	0	16
		% within Grad Year	12.5%	43.8%	18.8%	25.0%	.0%	100.0%
	2003-2008	Count	2	1	3	1	0	7
		% within Grad Year	28.6%	14.3%	42.9%	14.3%	.0%	100.0%
Total		Count	6	23	42	39	19	129
		% within Grad Year	4.7%	17.8%	32.6%	30.2%	14.7%	100.0%

Grad Year * Preparation in: Structures Crosstabulation

			Preparation in: Structures					Total
			Very Unprepared	Unprepared	Somewhat Prepared	Adquately Prepared	Very Prepared	
Grad Year	1984 and Earlier	Count	1	2	19	31	23	76
		% within Grad Year	1.3%	2.6%	25.0%	40.8%	30.3%	100.0%
	1985-1990	Count	0	1	2	8	5	16
		% within Grad Year	.0%	6.3%	12.5%	50.0%	31.3%	100.0%
	1991-1996	Count	0	0	3	3	4	10
		% within Grad Year	.0%	.0%	30.0%	30.0%	40.0%	100.0%
	1997-2002	Count	0	0	1	10	5	16
		% within Grad Year	.0%	.0%	6.3%	62.5%	31.3%	100.0%
	2003-2008	Count	0	0	2	5	1	8
		% within Grad Year	.0%	.0%	25.0%	62.5%	12.5%	100.0%
Total		Count	1	3	27	57	38	126
		% within Grad Year	.8%	2.4%	21.4%	45.2%	30.2%	100.0%

Grad Year * Preparation in: Geotechnical/Soil Mechanics Crosstabulation

			Preparation in: Geotechnical/Soil Mechanics				Total
			Unprepared	Somewhat Prepared	Adquately Prepared	Very Prepared	
Grad Year	1984 and Earlier	Count	5	23	31	13	72
		% within Grad Year	6.9%	31.9%	43.1%	18.1%	100.0%
	1985-1990	Count	2	2	5	5	14
		% within Grad Year	14.3%	14.3%	35.7%	35.7%	100.0%
	1991-1996	Count	0	3	3	5	11
		% within Grad Year	.0%	27.3%	27.3%	45.5%	100.0%
	1997-2002	Count	0	3	9	3	15
		% within Grad Year	.0%	20.0%	60.0%	20.0%	100.0%
	2003-2008	Count	1	2	4	1	8
		% within Grad Year	12.5%	25.0%	50.0%	12.5%	100.0%
Total		Count	8	33	52	27	120
		% within Grad Year	6.7%	27.5%	43.3%	22.5%	100.0%

Grad Year * Preparation in: Transportation/Traffic Crosstabulation

			Preparation in: Transportation/Traffic				Total
			Unprepared	Somewhat Prepared	Adquately Prepared	Very Prepared	
Grad Year	1984 and Earlier	Count	6	19	33	15	73
		% within Grad Year	8.2%	26.0%	45.2%	20.5%	100.0%
	1985-1990	Count	2	3	7	3	15
		% within Grad Year	13.3%	20.0%	46.7%	20.0%	100.0%
	1991-1996	Count	0	4	1	4	9
		% within Grad Year	.0%	44.4%	11.1%	44.4%	100.0%
	1997-2002	Count	0	7	5	2	14
		% within Grad Year	.0%	50.0%	35.7%	14.3%	100.0%
	2003-2008	Count	0	1	4	1	6
		% within Grad Year	.0%	16.7%	66.7%	16.7%	100.0%
Total		Count	8	34	50	25	117
		% within Grad Year	6.8%	29.1%	42.7%	21.4%	100.0%

Grad Year * Preparation in: Environmental Crosstabulation

			Preparation in: Environmental					Total
			Very Unprepared	Unprepared	Somewhat Prepared	Adquately Prepared	Very Prepared	
Grad Year	1984 and Earlier	Count	9	11	19	20	9	68
		% within Grad Year	13.2%	16.2%	27.9%	29.4%	13.2%	100.0%
	1985-1990	Count	1	4	5	4	0	14
		% within Grad Year	7.1%	28.6%	35.7%	28.6%	.0%	100.0%
	1991-1996	Count	0	1	3	4	3	11
		% within Grad Year	.0%	9.1%	27.3%	36.4%	27.3%	100.0%
	1997-2002	Count	0	1	4	5	1	11
		% within Grad Year	.0%	9.1%	36.4%	45.5%	9.1%	100.0%
	2003-2008	Count	0	0	3	2	1	6
		% within Grad Year	.0%	.0%	50.0%	33.3%	16.7%	100.0%
Total		Count	10	17	34	35	14	110
		% within Grad Year	9.1%	15.5%	30.9%	31.8%	12.7%	100.0%

Grad Year * Preparation in: Water Resources/Hydrology Crosstabulation

			Preparation in: Water Resources/Hydrology					Total
			Very Unprepared	Unprepared	Somewhat Prepared	Adquately Prepared	Very Prepared	
Grad Year	1984 and Earlier	Count	2	7	17	24	19	69
		% within Grad Year	2.9%	10.1%	24.6%	34.8%	27.5%	100.0%
	1985-1990	Count	0	0	5	7	4	16
		% within Grad Year	.0%	.0%	31.3%	43.8%	25.0%	100.0%
	1991-1996	Count	0	0	2	4	4	10
		% within Grad Year	.0%	.0%	20.0%	40.0%	40.0%	100.0%
	1997-2002	Count	0	0	5	8	1	14
		% within Grad Year	.0%	.0%	35.7%	57.1%	7.1%	100.0%
	2003-2008	Count	0	1	3	1	1	6
		% within Grad Year	.0%	16.7%	50.0%	16.7%	16.7%	100.0%
Total		Count	2	8	32	44	29	115
		% within Grad Year	1.7%	7.0%	27.8%	38.3%	25.2%	100.0%

Grad Year * Preparation in: Water Resources/Hydraulics Crosstabulation

			Preparation in: Water Resources/Hydraulics					Total
			Very Unprepared	Unprepared	Somewhat Prepared	Adquately Prepared	Very Prepared	
Grad Year	1984 and Earlier	Count	2	6	8	28	30	74
		% within Grad Year	2.7%	8.1%	10.8%	37.8%	40.5%	100.0%
	1985-1990	Count	0	0	1	12	3	16
		% within Grad Year	.0%	.0%	6.3%	75.0%	18.8%	100.0%
	1991-1996	Count	0	0	1	5	3	9
		% within Grad Year	.0%	.0%	11.1%	55.6%	33.3%	100.0%
	1997-2002	Count	0	0	5	8	1	14
		% within Grad Year	.0%	.0%	35.7%	57.1%	7.1%	100.0%
	2003-2008	Count	0	1	3	1	1	6
		% within Grad Year	.0%	16.7%	50.0%	16.7%	16.7%	100.0%
Total		Count	2	7	18	54	38	119
		% within Grad Year	1.7%	5.9%	15.1%	45.4%	31.9%	100.0%

Grad Year * Preparation in: Management/Administration Crosstabulation

			Preparation in: Management/Administration					Total
			Very Unprepared	Unprepared	Somewhat Prepared	Adquately Prepared	Very Prepared	
Grad Year	1984 and Earlier	Count	9	25	33	10	8	85
		% within Grad Year	10.6%	29.4%	38.8%	11.8%	9.4%	100.0%
	1985-1990	Count	1	10	3	1	0	15
		% within Grad Year	6.7%	66.7%	20.0%	6.7%	.0%	100.0%
	1991-1996	Count	0	4	5	2	1	12
		% within Grad Year	.0%	33.3%	41.7%	16.7%	8.3%	100.0%
	1997-2002	Count	1	4	9	1	1	16
		% within Grad Year	6.3%	25.0%	56.3%	6.3%	6.3%	100.0%
	2003-2008	Count	2	0	3	2	0	7
		% within Grad Year	28.6%	.0%	42.9%	28.6%	.0%	100.0%
Total		Count	13	43	53	16	10	135
		% within Grad Year	9.6%	31.9%	39.3%	11.9%	7.4%	100.0%

Grad Year * Preparation in: Education Crosstabulation

			Preparation in: Education					Total
			Very Unprepared	Unprepared	Somewhat Prepared	Adquately Prepared	Very Prepared	
Grad Year	1984 and Earlier	Count	5	8	16	14	5	48
		% within Grad Year	10.4%	16.7%	33.3%	29.2%	10.4%	100.0%
	1985-1990	Count	0	3	3	3	0	9
		% within Grad Year	.0%	33.3%	33.3%	33.3%	.0%	100.0%
	1991-1996	Count	0	2	2	3	3	10
		% within Grad Year	.0%	20.0%	20.0%	30.0%	30.0%	100.0%
	1997-2002	Count	0	1	4	3	2	10
		% within Grad Year	.0%	10.0%	40.0%	30.0%	20.0%	100.0%
	2003-2008	Count	0	0	1	3	3	7
		% within Grad Year	.0%	.0%	14.3%	42.9%	42.9%	100.0%
Total		Count	5	14	26	26	13	84
		% within Grad Year	6.0%	16.7%	31.0%	31.0%	15.5%	100.0%

Grad Year * Preparation in: Other Engineering Related Crosstabulation

			Preparation in: Other Engineering Related				Total
			Unprepared	Somewhat Prepared	Adequately Prepared	Very Prepared	
Grad Year	1984 and Earlier	Count	1	18	33	12	64
		% within Grad Year	1.6%	28.1%	51.6%	18.8%	100.0%
	1985-1990	Count	0	7	6	0	13
		% within Grad Year	.0%	53.8%	46.2%	.0%	100.0%
	1991-1996	Count	0	3	5	1	9
		% within Grad Year	.0%	33.3%	55.6%	11.1%	100.0%
	1997-2002	Count	0	5	3	4	12
		% within Grad Year	.0%	41.7%	25.0%	33.3%	100.0%
	2003-2008	Count	0	2	4	1	7
		% within Grad Year	.0%	28.6%	57.1%	14.3%	100.0%
Total		Count	1	35	51	18	105
		% within Grad Year	1.0%	33.3%	48.6%	17.1%	100.0%

Grad Year * Preparation in: Non-Engineering Related Crosstabulation

			Preparation in: Non-Engineering Related					Total
			Very Unprepared	Unprepared	Somewhat Prepared	Adequately Prepared	Very Prepared	
Grad Year	1984 and Earlier	Count	2	6	29	17	9	63
		% within Grad Year	3.2%	9.5%	46.0%	27.0%	14.3%	100.0%
	1985-1990	Count	0	2	10	2	1	15
		% within Grad Year	.0%	13.3%	66.7%	13.3%	6.7%	100.0%
	1991-1996	Count	0	0	5	5	2	12
		% within Grad Year	.0%	.0%	41.7%	41.7%	16.7%	100.0%
	1997-2002	Count	0	0	6	5	2	13
		% within Grad Year	.0%	.0%	46.2%	38.5%	15.4%	100.0%
	2003-2008	Count	0	0	1	6	1	8
		% within Grad Year	.0%	.0%	12.5%	75.0%	12.5%	100.0%
Total		Count	2	8	51	35	15	111
		% within Grad Year	1.8%	7.2%	45.9%	31.5%	13.5%	100.0%

Grad Year * CE program goals: Effective engineers Crosstabulation

			CE program goals: Effective engineers					Total
			Very Unprepared	Unprepared	Somewhat Prepared	Adequately Prepared	Very Prepared	
Grad Year	1984 and Earlier	Count	3	3	6	46	32	90
		% within Grad Year	3.3%	3.3%	6.7%	51.1%	35.6%	100.0%
	1985-1990	Count	0	0	2	9	6	17
		% within Grad Year	.0%	.0%	11.8%	52.9%	35.3%	100.0%
	1991-1996	Count	0	0	1	5	8	14
		% within Grad Year	.0%	.0%	7.1%	35.7%	57.1%	100.0%
	1997-2002	Count	0	0	7	6	6	19
		% within Grad Year	.0%	.0%	36.8%	31.6%	31.6%	100.0%
	2003-2008	Count	0	0	0	3	5	8
		% within Grad Year	.0%	.0%	.0%	37.5%	62.5%	100.0%
Total		Count	3	3	16	69	57	148
		% within Grad Year	2.0%	2.0%	10.8%	46.6%	38.5%	100.0%

Grad Year * CE program goals: Effective problem solvers Crosstabulation

			CE program goals: Effective problem solvers					Total
			Very Unprepared	Unprepared	Somewhat Prepared	Adequately Prepared	Very Prepared	
Grad Year	1984 and Earlier	Count	2	2	9	46	32	91
		% within Grad Year	2.2%	2.2%	9.9%	50.5%	35.2%	100.0%
	1985-1990	Count	0	1	2	9	5	17
		% within Grad Year	.0%	5.9%	11.8%	52.9%	29.4%	100.0%
	1991-1996	Count	0	0	2	3	9	14
		% within Grad Year	.0%	.0%	14.3%	21.4%	64.3%	100.0%
	1997-2002	Count	0	0	6	7	6	19
		% within Grad Year	.0%	.0%	31.6%	36.8%	31.6%	100.0%
	2003-2008	Count	0	0	1	2	5	8
		% within Grad Year	.0%	.0%	12.5%	25.0%	62.5%	100.0%
Total		Count	2	3	20	67	57	149
		% within Grad Year	1.3%	2.0%	13.4%	45.0%	38.3%	100.0%

Grad Year * CE program goals: Educated in engineering sciences Crosstabulation

			CE program goals: Educated in engineering sciences					Total
			Very Unprepared	Unprepared	Somewhat Prepared	Adequately Prepared	Very Prepared	
Grad Year	1984 and Earlier	Count	1	3	6	52	28	90
		% within Grad Year	1.1%	3.3%	6.7%	57.8%	31.1%	100.0%
	1985-1990	Count	0	0	4	8	5	17
		% within Grad Year	.0%	.0%	23.5%	47.1%	29.4%	100.0%
	1991-1996	Count	0	0	3	6	5	14
		% within Grad Year	.0%	.0%	21.4%	42.9%	35.7%	100.0%
	1997-2002	Count	0	0	3	13	3	19
		% within Grad Year	.0%	.0%	15.8%	68.4%	15.8%	100.0%
	2003-2008	Count	0	0	0	3	5	8
		% within Grad Year	.0%	.0%	.0%	37.5%	62.5%	100.0%
Total		Count	1	3	16	82	46	148
		% within Grad Year	.7%	2.0%	10.8%	55.4%	31.1%	100.0%

Grad Year * CE program goals: Engineering tools and techniques Crosstabulation

			CE program goals: Engineering tools and techniques					Total
			Very Unprepared	Unprepared	Somewhat Prepared	Adequately Prepared	Very Prepared	
Grad Year	1984 and Earlier	Count	2	2	14	41	30	89
		% within Grad Year	2.2%	2.2%	15.7%	46.1%	33.7%	100.0%
	1985-1990	Count	0	0	7	7	3	17
		% within Grad Year	.0%	.0%	41.2%	41.2%	17.6%	100.0%
	1991-1996	Count	0	0	3	4	7	14
		% within Grad Year	.0%	.0%	21.4%	28.6%	50.0%	100.0%
	1997-2002	Count	0	1	2	12	4	19
		% within Grad Year	.0%	5.3%	10.5%	63.2%	21.1%	100.0%
	2003-2008	Count	0	0	0	6	2	8
		% within Grad Year	.0%	.0%	.0%	75.0%	25.0%	100.0%
Total		Count	2	3	26	70	46	147
		% within Grad Year	1.4%	2.0%	17.7%	47.6%	31.3%	100.0%

Grad Year * CE program goals: Regulatory/professional issues Crosstabulation

			CE program goals: Regulatory/professional issues					Total
			Very Unprepared	Unprepared	Somewhat Prepared	Adequately Prepared	Very Prepared	
Grad Year	1984 and Earlier	Count	4	17	34	26	9	90
		% within Grad Year	4.4%	18.9%	37.8%	28.9%	10.0%	100.0%
	1985-1990	Count	0	6	9	2	0	17
		% within Grad Year	.0%	35.3%	52.9%	11.8%	.0%	100.0%
	1991-1996	Count	0	2	6	3	3	14
		% within Grad Year	.0%	14.3%	42.9%	21.4%	21.4%	100.0%
	1997-2002	Count	2	3	9	5	0	19
		% within Grad Year	10.5%	15.8%	47.4%	26.3%	.0%	100.0%
	2003-2008	Count	0	1	3	1	3	8
		% within Grad Year	.0%	12.5%	37.5%	12.5%	37.5%	100.0%
Total		Count	6	29	61	37	15	148
		% within Grad Year	4.1%	19.6%	41.2%	25.0%	10.1%	100.0%

Grad Year * CE program goals: Effective technical writers Crosstabulation

			CE program goals: Effective technical writers					Total
			Very Unprepared	Unprepared	Somewhat Prepared	Adequately Prepared	Very Prepared	
Grad Year	1984 and Earlier	Count	4	12	40	23	11	90
		% within Grad Year	4.4%	13.3%	44.4%	25.6%	12.2%	100.0%
	1985-1990	Count	0	4	7	5	1	17
		% within Grad Year	.0%	23.5%	41.2%	29.4%	5.9%	100.0%
	1991-1996	Count	0	0	6	4	4	14
		% within Grad Year	.0%	.0%	42.9%	28.6%	28.6%	100.0%
	1997-2002	Count	0	2	10	6	1	19
		% within Grad Year	.0%	10.5%	52.6%	31.6%	5.3%	100.0%
	2003-2008	Count	0	0	2	3	3	8
		% within Grad Year	.0%	.0%	25.0%	37.5%	37.5%	100.0%
Total		Count	4	18	65	41	20	148
		% within Grad Year	2.7%	12.2%	43.9%	27.7%	13.5%	100.0%

Grad Year * CE program goals: Effective oral communicators Crosstabulation

			CE program goals: Effective oral communicators					Total
			Very Unprepared	Unprepared	Somewhat Prepared	Adequately Prepared	Very Prepared	
Grad Year	1984 and Earlier	Count	4	24	40	16	7	91
		% within Grad Year	4.4%	26.4%	44.0%	17.6%	7.7%	100.0%
	1985-1990	Count	1	3	8	4	1	17
		% within Grad Year	5.9%	17.6%	47.1%	23.5%	5.9%	100.0%
	1991-1996	Count	0	3	7	0	4	14
		% within Grad Year	.0%	21.4%	50.0%	.0%	28.6%	100.0%
	1997-2002	Count	0	2	8	5	4	19
		% within Grad Year	.0%	10.5%	42.1%	26.3%	21.1%	100.0%
	2003-2008	Count	0	1	1	3	3	8
		% within Grad Year	.0%	12.5%	12.5%	37.5%	37.5%	100.0%
Total		Count	5	33	64	28	19	149
		% within Grad Year	3.4%	22.1%	43.0%	18.8%	12.8%	100.0%

Grad Year * CE program goals: Function in multi disciplinary teams Crosstabulation

			CE program goals: Function in multi disciplinary teams					Total
			Very Unprepared	Unprepared	Somewhat Prepared	Adequately Prepared	Very Prepared	
Grad Year	1984 and Earlier	Count	2	6	28	40	14	90
		% within Grad Year	2.2%	6.7%	31.1%	44.4%	15.6%	100.0%
	1985-1990	Count	0	2	4	6	5	17
		% within Grad Year	.0%	11.8%	23.5%	35.3%	29.4%	100.0%
	1991-1996	Count	0	0	4	2	8	14
		% within Grad Year	.0%	.0%	28.6%	14.3%	57.1%	100.0%
	1997-2002	Count	0	0	4	11	4	19
		% within Grad Year	.0%	.0%	21.1%	57.9%	21.1%	100.0%
	2003-2008	Count	0	0	1	1	6	8
		% within Grad Year	.0%	.0%	12.5%	12.5%	75.0%	100.0%
Total		Count	2	8	41	60	37	148
		% within Grad Year	1.4%	5.4%	27.7%	40.5%	25.0%	100.0%

Grad Year * CE program goals: Appreciate citizenship, community svc, ethical conduct Crosstabulation

			CE program goals: Appreciate citizenship, community svc, ethical conduct					Total
			Very Unprepared	Unprepared	Somewhat Prepared	Adequately Prepared	Very Prepared	
Grad Year	1984 and Earlier	Count	3	7	19	39	22	90
		% within Grad Year	3.3%	7.8%	21.1%	43.3%	24.4%	100.0%
	1985-1990	Count	0	0	6	8	3	17
		% within Grad Year	.0%	.0%	35.3%	47.1%	17.6%	100.0%
	1991-1996	Count	0	0	5	4	5	14
		% within Grad Year	.0%	.0%	35.7%	28.6%	35.7%	100.0%
	1997-2002	Count	0	2	5	8	4	19
		% within Grad Year	.0%	10.5%	26.3%	42.1%	21.1%	100.0%
	2003-2008	Count	0	1	1	2	4	8
		% within Grad Year	.0%	12.5%	12.5%	25.0%	50.0%	100.0%
Total		Count	3	10	36	61	38	148
		% within Grad Year	2.0%	6.8%	24.3%	41.2%	25.7%	100.0%

Grad Year * CE program goals: Aware of impact of their designs Crosstabulation

			CE program goals: Aware of impact of their designs					Total
			Very Unprepared	Unprepared	Somewhat Prepared	Adequately Prepared	Very Prepared	
Grad Year	1984 and Earlier	Count	6	8	28	36	12	90
		% within Grad Year	6.7%	8.9%	31.1%	40.0%	13.3%	100.0%
	1985-1990	Count	0	0	8	6	3	17
		% within Grad Year	.0%	.0%	47.1%	35.3%	17.6%	100.0%
	1991-1996	Count	0	0	6	3	5	14
		% within Grad Year	.0%	.0%	42.9%	21.4%	35.7%	100.0%
	1997-2002	Count	2	2	6	7	2	19
		% within Grad Year	10.5%	10.5%	31.6%	36.8%	10.5%	100.0%
	2003-2008	Count	0	1	1	2	4	8
		% within Grad Year	.0%	12.5%	12.5%	25.0%	50.0%	100.0%
Total		Count	8	11	49	54	26	148
		% within Grad Year	5.4%	7.4%	33.1%	36.5%	17.6%	100.0%

Civil Engineering Alumni Survey
Fall 2008
Total Respondents = 152
Means and Standard Deviations

Grad Year		Preparation in: Land Surveying	Preparation in: Land Development	Preparation in: Construction	Preparation in: Structures	Preparation in: Geotechnical/ Soil Mechanics	Preparation in: Transportation/ Traffic	Preparation in: Environmental	Preparation in: Water Resources/ Hydrology
1984 and Earlier	Mean	4.31	3.05	3.63	3.96	3.72	3.78	3.13	3.74
	N	58	55	79	76	72	73	68	69
	Std. Deviation	.681	1.113	.976	.896	.843	.870	1.233	1.066
1985-1990	Mean	3.91	2.58	3.00	4.06	3.93	3.73	2.86	3.94
	N	11	12	16	16	14	15	14	16
	Std. Deviation	.944	.793	1.155	.854	1.072	.961	.949	.772
1991-1996	Mean	3.82	2.63	3.27	4.10	4.18	4.00	3.82	4.20
	N	11	8	11	10	11	9	11	10
	Std. Deviation	.751	.518	.786	.876	.874	1.000	.982	.789
1997-2002	Mean	3.64	2.36	2.56	4.25	4.00	3.64	3.55	3.71
	N	11	11	16	16	15	14	11	14
	Std. Deviation	.809	.924	1.031	.577	.655	.745	.820	.611
2003-2008	Mean	3.33	3.67	2.43	3.88	3.63	4.00	3.67	3.33
	N	6	6	7	8	8	6	6	6
	Std. Deviation	1.211	1.033	1.134	.641	.916	.632	.816	1.033
Total	Mean	4.07	2.91	3.33	4.02	3.82	3.79	3.24	3.78
	N	97	92	129	126	120	117	110	115
	Std. Deviation	.820	1.045	1.076	.829	.860	.859	1.141	.962

Grad Year		Preparation in: Water Resources/ Hydraulics	Preparation in: Management/ Administration	Preparation in: Education	Preparation in: Other Engineering Related	Preparation in: Non-Engineering Related	CE program goals: Effective engineers	CE program goals: Effective problem solvers	CE program goals: Educated in engineering sciences
1984 and Earlier	Mean	4.05	2.80	3.13	3.88	3.40	4.12	4.14	4.14
	N	74	85	48	64	63	90	91	90
	Std. Deviation	1.045	1.089	1.142	.724	.959	.922	.851	.773
1985-1990	Mean	4.13	2.27	3.00	3.46	3.13	4.24	4.06	4.06
	N	16	15	9	13	15	17	17	17
	Std. Deviation	.500	.704	.866	.519	.743	.664	.827	.748
1991-1996	Mean	4.22	3.00	3.70	3.78	3.75	4.50	4.50	4.14
	N	9	12	10	9	12	14	14	14
	Std. Deviation	.667	.953	1.160	.667	.754	.650	.760	.770
1997-2002	Mean	3.71	2.81	3.60	3.92	3.69	3.95	4.00	4.00
	N	14	16	10	12	13	19	19	19
	Std. Deviation	.611	.911	.966	.900	.751	.848	.816	.577
2003-2008	Mean	3.33	2.71	4.29	3.86	4.00	4.63	4.50	4.63
	N	6	7	7	7	8	8	8	8
	Std. Deviation	1.033	1.254	.756	.690	.535	.518	.756	.518
Total	Mean	4.00	2.76	3.33	3.82	3.48	4.18	4.17	4.14
	N	119	135	84	105	111	148	149	148
	Std. Deviation	.930	1.033	1.112	.718	.883	.855	.833	.738

Grad Year		CE program goals: Engineering tools and techniques	CE program goals: Regulatory/professional issues	CE program goals: Effective technical writers	CE program goals: Effective oral communicators	CE program goals: Function in multi disciplinary teams	CE program goals: Appreciate citizenship, community svc, ethical conduct	CE program goals: Aware of impact of their designs
1984 and Earlier	Mean	4.07	3.21	3.28	2.98	3.64	3.78	3.44
	N	89	90	90	91	90	90	90
	Std. Deviation	.889	1.011	.995	.966	.903	1.014	1.051
1985-1990	Mean	3.76	2.76	3.18	3.06	3.82	3.82	3.71
	N	17	17	17	17	17	17	17
	Std. Deviation	.752	.664	.883	.966	1.015	.728	.772
1991-1996	Mean	4.29	3.50	3.86	3.36	4.29	4.00	3.93
	N	14	14	14	14	14	14	14
	Std. Deviation	.825	1.019	.864	1.151	.914	.877	.917
1997-2002	Mean	4.00	2.89	3.32	3.58	4.00	3.74	3.26
	N	19	19	19	19	19	19	19
	Std. Deviation	.745	.937	.749	.961	.667	.933	1.147
2003-2008	Mean	4.25	3.75	4.13	4.00	4.63	4.13	4.13
	N	8	8	8	8	8	8	8
	Std. Deviation	.463	1.165	.835	1.069	.744	1.126	1.126
Total	Mean	4.05	3.18	3.37	3.15	3.82	3.82	3.53
	N	147	148	148	149	148	148	148
	Std. Deviation	.834	.995	.957	1.018	.916	.962	1.039

40. Please comment on the program goals listed above (questions 30 - 39). What changes to these goals should be considered? Should any of these goals be eliminated or new ones added?

1951	When I graduated in 1951 there was only six students in the Chico college of engineering.
1953	Many of the questions don't really apply to us old graduates. Ask about influence to seek higher degrees. To my knowledge all 1952 graduates except one or two continued to a higher degree
1957	In 1957 Environment was not as hot as now. I had to learn management skills through OJT.
1957	Keep in mind my responses reference the program in mid-50's. It is so much different and better now.
1957	Your construction management students should have much more hands on experience in construction. They need some kind of apprenticeships in the industry.
1958	Please consider there were no computers around when I graduated. Also, environmental was not being discussed at all.
1959	Although not all of the above goals were recognized during my time at CSU, I gather that all are now very adequately covered.
1959	Writing and communication are very important in my experiences.
1959	a. personnel and wide variety of goals. B. special training. C. computer training should be required.
1960	Technical writing is one weakness in the program. Also a course in government would help.
1960	Be knowledgeable about costs and legal issues and the state public works contracting codes.
1962	More emphasis on writing and oral communications would be helpful.
1963	Need to teach more on construction and start a program on project management.
1963	Additional emphasis of business and management for engineering grads.
1963	More essay type of report writing. Homework exercise helps to improve ability of an engineer to communicate.
1963	Need more emphasis on: writing skills, environmental issues, permitting, regulatory requirements and agencies; project economics and cost management; project management; public presentations. All while continuing technical excellence.
1964	My responses are based upon graduates that we hired, as well as my own educational experiences.
1965	It appears that the program has continued in an effective manner.
1968	Since I graduated so long ago, I can't really comment on what you have in place today.
1968	
1968	Looks good. 1964-1968 too little effort made to have students give oral presentations.
1969	They were good enough for me. None eliminated, but add ethics.
1970	The goals are appropriate for the role of engineers in today's society.
1970	Good goals, but weren't as emphasized when I graduated.
1971	Prepare students in land development applications and AutoCAD.
1971	Need more emphasis on report writing.
1972	Interpersonal skills and communication skills should be emphasized in all fields and curriculums. More problems arise from failure of these skills than of any technical skills.
1973	These answers are based on my education over 30 years ago.
1973	Something should be said about continuing education and additional or higher level degrees.
1973	Try to define the difference between public vs. private sector careers.
1976	More on ethics.
1976	All are good goals - need more emphasis on 34-36 based on my experience as well as experience with most new engineering graduates.
1976	Keep surveying as part of CE and environmental curriculum. Encourage more writing and presentations in front of peers.
1976	Communication between professional and lay people needs enhancement.
1976	Keep up the emphasis on all these goals and you will continue to have a GREAT program.

1978	Balance technology with human judgment.
1978	Upper division courses should focus on applications to industry. Internships should be strongly encouraged. Strategic alliances with industry should be considered.
1978	Greater emphasis on writing and presentation skills.
1978	Some form of management and business skills training should be added.
1980	Should consider training on management vs. supervision, team building and leadership soft skills
1981	#34: Would be good to give students more information on the "resources agencies" in California and the effect they have on design and construction.
1981	It has been a long time so I don't know what has changed. Interns that I have employed still seem weak in technical writing.
1981	I graduated 27 years ago.
1982	Communication skills both oral and written are needed.
1982	Technical writing was a key class. I cannot overemphasize the value of oral and written communication skills.
1982	Need more exposure to building codes and better understanding of the regulatory process.
1983	Add: They will be able to estimate the cost of their project or design their project to meet the project's budget.
1984	Good goals
1984	These are all good goals. Stay the course!
1985	#35 & #36: Effective written and oral communication skills are extremely important and should be strongly emphasized.
1986	It has been over 20 years, I can't think of any improvements.
1986	No changes recommended.
1987	These goals are largely unrelated to what happens at the university. All that a classroom can do is introduce the idea - the individual's values/character/talent/gifts will determine their effectiveness.
1988	I think students need to first learn how important oral communication is.
1988	The goals are appropriate. CSU, Chico grads are known for being able to hit the ground running with very practical, appropriate skills.
1988	Maybe incorporate into a class (contracts?) license requirements, what to look for in an employer, what kind of background experience (summer jobs) is helpful, salary/benefits to expect - career development stuff.
1990	Management and leadership skills should be included.
1990	Keep these goals. They all apply to practicing engineers.
1990	I think the goals are great.
1991	More building code interface, more hands on design, i.e. Design a complete house - foundation to roof.
1993	More emphasis on leadership and project design. Less emphasis on exams
1993	I suggest adding a program goal that specifically addresses design.
1993	Possibly public speaking could be enhanced.
1993	More hands on construction
1994	It is hard to address the skills a young engineer needs when entering the work force. The student should be alerted to this and they should be prepared to start at square one on their first job.
1996	It is so important to communicate. I speak/present regularly and was ill equipped out of school. Focus on presenting technical information.
1996	It is so important to communicate. I speak/present regularly and was ill equipped out of school. Focus on presenting technical information.
1997	More information on land development and land surveying.
1997	They are good goals, however student personality plays a large part in the majority of them.

1998	#39: Seems extremely important. I don't think it was in the curriculum when I was there. I hope it is a large part now!
1998	Addition of land development preparation and effective managers/administrators.
1998	#36: Reinforce when giving technical presentation, know the material and practice. That saying "like, "um", "agh", and "ya know" is a BIG distraction. It not only detracts from the presentation, but the audience has lost interest in the first 5 minutes because of these "mental" pauses.
1999	Class projects in hydrology, transportation, structures, environmental, land development need to comply with current state, city and county regulations. Students need to be shown where to find these.
2000	Improve technical writing courses and add courses about current environmental issues.
2000	Overall, great program. Needs more hands on AutoCAD design.
2001	A greater number of upper level CE classes should be required to graduate and fewer general education classes.
2001	Provide and ethical ethics instructor that knows the CA Board for Prof. Engrs. Act. Also have instructors do continuing education and encourage new age thinking/approaches.
2002	Need to introduce more real world techniques into classes (county, state, city regs, where to find them, etc.)
2003	I have found that all of the goals were met and have been very useful in my professional career.
2005	Many of the goals are based on personal characteristics and drive.
2005	All those labs were absolute torture! But it was worth it to know when my writing is spot on.
2006	
2007	There should be more emphasis on working in multi-disciplinary teams. We have to prepare report for people who don't know about engineering.

41. Are there any additional comments you would like to make regarding the CE program at CSU, Chico? Consider both possible strengths and weaknesses that may exist in the program.

1951	You had a lot of special attention from our leaders. I made it---
1953	Excellent preparation under Herb Langdon in the old Applied Science program with special abilities to apply engineering training to practical applications in solving problems. 1952 represented the first four-year degree in Applied Science.
1955	I graduated (C- student), I could do anything. I became a grading and paving contractor. I have a wonderful family and am worth top 4% of USA. Thanks teachers at Chico State!
1957	I would rank my BSCE skills higher than any other school in the US!
1957	Sustainability is the current trend and I see it extending well into the future.
1957	Not aware of the present program to comment.
1958	Keep up the good work, I think Dr. Langdon would be proud of your staff.
1959	My personal knowledge of CSU's current program is very limited, but from graduate comments during the years, I believe it to deserve the marks that I gave it here.
1959	I had excellent instruction. Small class size was beneficial to learning.
1959	Surveying should be stressed/required early in career.
1960	I graduated 48 years ago. Gary Watters was a fellow student and later an instructor of mine. I'm sure the program has changed drastically since then. I therefore can't make a judgment.
1960	Do graduate work and specialize. CE is too broad, the CE grads 1958-1963 did very well. Good School!
1961	I got an excellent engineering education at Chico State, better than at U.C. in many respects!
1962	In comparison to graduates from other universities, I feel that my CSU education was superior.
1963	I felt that CSU, Chico was much more practical than theoretical and therefore made graduates ready to practice immediately upon graduation instead of needing 8 years to learn how to be an engineer.
1963	CSU prepared me well for my subsequent career concluding as General Manager and Chief Engineer of Madera Irrigation District.
1963	Incorporate business and law subjects. Will help train engineers to be more effective owner/managers and eventual success. While some of my personal skills were acquired via continuing education, I attribute my successful career as part of the CSU education.
1963	No. The current program is vastly different than the program I engaged in 45 years ago.
1964	Hire instructors with long-term practical experience, not just textbook administrators.

1965	After graduating with BSCE from Chico, four of us went to Stanford Univ. in Engineering. The four Chico engineers received 10 advanced degrees and have had successful careers since. I am retired and have a small consulting firm.
1966	1966 is too long ago to provide meaningful comments!
1968	See #40 above.
1968	Program was very good, 1964-1068, but extremely tough to graduate in four years. I had terrible handwriting even back then, good thing for computers!
1969	The engineering school was accredited on the two years (my jr. and sr. years). I am deeply in debt for that first set of professors and new buildings.
1970	My knowledge of the CE program is dated. Goals set 36-39 have evolved significantly since 1970.
1972	A BSCE should be understood as an introduction to the practice. Emphasis should be given to seeking quality experience and mentoring for first 10 years of an engineering profession.
1973	The applied science major was exceptional.
1973	I generally felt well prepared for my first jobs. Weaknesses were oral communication and construction. Thank you for a great education!
1973	Need to see CM at Chico and keeping up with technology.
1976	My education was great and I'm sure the program is improving consistently - thanks.
1976	Make them take EIT before graduating. Encourage participation in tech organizations. Nice job Chico!
1976	Emphasize outside resources, e.g. CalTrans manuals, local improvement standards, agency design criteria.
1976	Go Wildcats!
1978	I have always appreciated CSUC grads. Down to earth, practical knowledge and skills set.
1978	Chico grads are well-rounded and ready to work. Chico state should focus on this and make it Chico's reputation. I would hire a Chico grad over UC Berkeley or Stanford. Have to admit the Cal Poly grads are some of the best.
1978	More classes on environmental planning, regulatory permitting, GIS technical training.
1978	Believe that the CE program should provide for students interested in construction so they do not all end up in the construction management program. Construction needs engineers.
1979	The program provides a very good all-around education. More emphasis on management, both project management and business management skills would be helpful.
1981	Based upon my experiences working with engineers educated at other CE programs, the program at CSU, Chico is more comprehensive and complete than most other schools.
1981	Chico engineers have always been technically sound and more in tune with construction and practical in problem solving. Oral and writing skills to advance to management level should be emphasized.

1981	I consider CSUC CE applicants to be one of the most qualified for entry-level positions in the department.
1982	Strength: education was relevant to the real world.
1982	Good core education. Need more opportunity to specialize.
1983	Professors were and still very accessible. Many of my classmates and I are the leaders of our organizations. Chico grads benefit from the wonderful CE program, faculty and collaborative atmosphere. We get along with others!
1984	Good program. Graduates have good common sense to engineering issues.
1984	Overall a good program.
1984	Great to do EIT in college. There is a great ASCE chapter.
1984	One of the areas that I was knowledgeable on was the various standards that govern different disciplines - such as CalTrans standards, various building codes, various city and county standards, MUTED, etc. Strengths: A great program!
1984	Offer local workshops for continued education to local engineers.
1985	I felt well-prepared by my education at CSU, C and have had good luck working with a number of more recent graduates of the CSU, C engineering program.
1986	Engineers these days are required to know AutoCAD.
1986	Strengths: technical education; problem-solving as a team; direct involvement of instructors. Weaknesses: communication development (written and oral); non-design disciplines, such as construction management.
1987	Chico is a good school. The technical education was very good. Many of the areas listed in this survey are not taught in school, nor should they be. Your degree is the foundation of your education, not the structure itself. CSU, Chico lays an excellent foundation.
1988	Sustainability-however you define it-should be included in the curriculum if it's not already.
1988	I graduated 20 years ago, so maybe it's changed since then, but us structural guys sure would benefit from having timber, steel design classes more available than every two years. I didn't get those classes, but that's what I do every day at work! Other than a great education that really paid off - thank you!
1990	Overall, CSU, Chico prepared me for a successful career.
1990	Keep up the good work.
1990	Chico provided me a working, practical, as opposed to theoretical base in engineering. This is a good thing. Chico taught and supported team work, which is how engineering functions.
1992	The CE program prepared me very well!
1993	CSU, Chico has a strong program! We just need more engineers interested in government leadership.
1993	The program at Chico is excellent. I continue to draw upon what I learned there to improve our program. (Univ. of Tennessee Martin)
1993	Keep up the good work.

1993	Overall the program prepared me for the "real world" of engineering where technical and math skills are not the only requirements.
1993	Overall a good program
1994	I feel it prepared me well. Many new graduates are being taught to rely on computer programs and many do not understand the supporting equations and processes.
1997	More emphasis on CADD and computer studies.
1998	I remember my experience there warmly. I enjoyed the engaged (with students) faculty.
1998	I am continuously amazed at the quality of education and amount of preparation I acquired at Chico State.
1998	Should require one semester of manual drafting before being allowed to take any CADD classes.
1999	The program hits the high points on most subjects and makes it easy for a graduate to become part of any team.
2000	For questions 17-29, it's difficult for me to judge. In school I wanted to be structural, but got a job in environmental/water resources. I really enjoy my field.
2001	Strengths include class size and availability of professors. Weaknesses include bridging the gap between classroom instruction and real world problems and solutions.
2002	More management/admin, economics. EPA impact reports, forensic engineering issues.
2003	I thoroughly enjoyed my years in the CE program and can see the benefit of the CSUC, CE program when compared to less comprehensive programs. The teaching staff was excellent and the educational environment was awesome!
2005	More information on land development and construction techniques, water, storm and sewer design.
2005	I came to Chico because it was the closest, despite the reputation. Thank you for the excellent program. (Being the owner's rep on a construction job was not an easy task. I was put in charge of change order negotiations, yikes! I was in TX doing this for 18 months and have moved back home here. It's good to be back!)
2006	I think there needed to be a few more professors so there would be more course offerings. Continue to strive to improve.
2007	There needs to be more classes in transportation and in water/hydraulics for the graduates to be competitive.
2007	Great program. Keep it up!

APPENDIX C: Employer Survey



California State University, Chico Department of Civil Engineering BSCE Employer Survey

To All Employers of CSU, Chico, Civil Engineering Graduates:

The most vital measure of our academic program is the success of our graduates. Our records indicate that you supervise one or more graduates of our program. Please help us to assess the preparation provided by our CE program by completing the following survey. The responses that you provide will be combined with those from other employers solely to produce summary data. Individual responses will be treated as strictly confidential.

If you are not the appropriate person to complete this survey, please ask someone who is to provide us with this information. Multiple responses from one employer are acceptable, but only if the responses are from supervisors of different graduates – otherwise, please provide only one response. For situations involving multiple supervisors of the same graduate(s), please collaborate on a single response.

Please encourage your Chico State employees to keep us informed of their contact information with the Alumni Information Form, available at <http://www.csuchico.edu/ce> - click on the Alumni and Friends tab. Thank you for your assistance. We look forward to hearing from you. To assist with program accreditation, please complete the survey as soon as possible, but no later than September 30, 2009.

Dr. Russell S. Mills, P.E., Professor of Civil Engineering and Program Assessment Coordinator

1. Organization Name

2. Address

City State Zip Code

3. Nature of employment

- Government
- Industry
- Consulting
- Education
- Other (Please Describe)

4. Your Name (First Last)

5. Position/title

6. Email address

7. Years in your current position

- 0-3
- 4-6
- 7-9
- 10-12
- More than 12

8. Are you an engineer?

- Yes
- No

9. Are you a CSU, Chico CE graduate?

- Yes
- No

10. Approximate number of all CE graduates employed at your organization

- 1-5
 6-10
 11-25
 26-50
 More than 50

11. Approximate number of all CE graduates you supervise

- 1-5
 6-10
 11-25
 26-50
 More than 50

12. Approximate number of CSU, Chico CE graduates you supervise

- 1-5
 6-10
 11-25
 26-50
 More than 50

13. Does your organization have a rotation or other type of training program for new CE graduates?

- Yes
 No

14. Does your organization provide support for continuing education of employees (including graduate studies)?

- Yes
 No

15. Does your organization encourage employees to seek professional licensure?

- No
 Yes, it is encouraged
 Yes, it is strongly encouraged
 Yes, it is expected

16. Does your organization have a matching gift program for charitable donations by employees?

- Yes
 No

17. Please mark the level of preparation demonstrated by the CSU, Chico CE graduates you supervise for the following disciplinary areas in which they practice. For each area they do not practice, please mark N/A.

	Very Unprepared	Unprepared	Neutral	Somewhat Prepared	Very Prepared	N/A
Land Surveying	<input type="radio"/>					
Land Development	<input type="radio"/>					
Construction	<input type="radio"/>					
Structures	<input type="radio"/>					
Geotechnical/Soil Mechanics	<input type="radio"/>					
Transportation/Traffic	<input type="radio"/>					
Environmental	<input type="radio"/>					
Water Resources/Hydrology	<input type="radio"/>					
Water Resources/Hydraulics	<input type="radio"/>					
Management/Administration	<input type="radio"/>					
Education	<input type="radio"/>					
Other Engineering Related	<input type="radio"/>					
Non-Engineering Related	<input type="radio"/>					

18. For each of the following CE program goals, mark the level of preparation demonstrated by the CSU, Chico Civil Engineering graduates you supervise:

	Very Unprepared	Unprepared	Neutral	Somewhat Prepared	Very Prepared
BSCE graduates will be effective engineers	<input type="radio"/>				
They will be effective problem solvers	<input type="radio"/>				
They will be educated in engineering sciences	<input type="radio"/>				
They will be able to utilize a variety of engineering tools and techniques to enhance their professional abilities	<input type="radio"/>				
They will be familiar with applicable regulatory and professional issues	<input type="radio"/>				
They will be effective technical writers	<input type="radio"/>				
They will be effective oral communicators	<input type="radio"/>				
They will be able to function effectively in multi-disciplinary teams	<input type="radio"/>				
They will appreciate good citizenship, community service, and ethical conduct	<input type="radio"/>				
They will be aware of the impact of their designs on humankind and the environment	<input type="radio"/>				

19. Please comment on the program goals listed above (question #18). What changes to these goals should be considered? Should any of these goals be eliminated or new ones added?

20. Are there any additional comments you would like to make regarding the CE program at CSU, Chico? Consider both possible strengths and weaknesses that may exist in the program.

POSTCARD SENT TO ALL EMPLOYERS IN DATABASE.

[To All Employers of CSU, Chico, Civil Engineering Graduates:

The most vital measure of our academic program is the success of our graduates. Our records indicate that you supervise one or more graduates of our program. Please help us to assess the Chico CE program by completing a short on-line survey located at the following web address, no later than September 30th.

https://cypress.csuchico.edu/IR/CE_Employer.asp

Completing the survey will take no more than ten minutes. Thank you in advance for your valuable assistance in evaluating our program prior to the ABET accreditation visit this fall.

Dr. Russell S. Mills, P.E
Professor of Civil Engineering and Program Assessment Coordinator

**California State University, Chico
 Department of Civil Engineering
 BSCE Employer Survey**

Fall 2009

Number of Respondents = 11

	Nature of employment	
	Count	%
Government	6	54.5%
Consulting	4	36.4%
Other	1	9.1%
Total	11	100.0%

	Years in current position	
	Count	%
0-3	3	27.3%
4-6	4	36.4%
7-9	1	9.1%
10-12	1	9.1%
More than 12	2	18.2%
Total	11	100.0%

	Are you an engineer		Are you a CSUC CE graduate	
	Count	%	Count	%
Yes	10	90.9%	7	63.6%
No	1	9.1%	4	36.4%
Total	11	100.0%	11	100.0%

	Approximate number of CE graduates at organization		Approximate number of all CE graduates you supervise		Approximate number of CSUC CE graduates you supervise	
	Count	%	Count	%	Count	%
1-5	1	9.1%	6	54.5%	10	90.9%
6-10	3	27.3%	1	9.1%		
11-25	3	27.3%	4	36.4%	1	9.1%
26-50	2	18.2%				
More than 50	2	18.2%				
Total	11	100.0%	11	100.0%	11	100.0%

	Organization have rotation/other type of training for new CE graduates		Organization provide support for continuing education of employees	
	Count	%	Count	%
Yes	4	36.4%	8	72.7%
No	7	63.6%	3	27.3%
Total	11	100.0%	11	100.0%

	Organization encourage employees to seek professional licensure	
	Count	%
Yes, it is encouraged	1	9.1%
Yes, it is strongly encouraged	7	63.6%
Yes, it is expected	3	27.3%
Total	11	100.0%

	Organization have matching gift program for charitable donations by employees	
	Count	%
No	11	100.0%
Total	11	100.0%

Please mark the level of preparation demonstrated by the CSU, Chico CE graduates you supervise for the following disciplinary areas in which they practice.

(1=Very Unprepared; 5=Very Prepared)

	Level of preparation of CSUC CE graduates: Land surveying		Level of preparation of CSUC CE graduates: Land Development		Level of preparation of CSUC CE graduates: Construction	
	Count	%	Count	%	Count	%
Unprepared						
Neutral						
Somewhat prepared	3	27.3%	3	27.3%	3	27.3%
Very prepared	1	9.1%	2	18.2%	4	36.4%
N/A	7	63.6%	6	54.5%	4	36.4%
Total	11	100.0%	11	100.0%	11	100.0%

	Level of preparation of CSUC CE graduates: Structures		Level of preparation of CSUC CE graduates: Geotechnical/Soil Mechanics		Level of preparation of CSUC CE graduates: Transportation/Traffic	
	Count	%	Count	%	Count	%
Unprepared						
Neutral						
Somewhat prepared	2	18.2%	4	36.4%	1	9.1%
Very prepared	4	36.4%	2	18.2%	5	45.5%
N/A	5	45.5%	5	45.5%	5	45.5%
Total	11	100.0%	11	100.0%	11	100.0%

	Level of preparation of CSUC CE graduates: Environmental		Level of preparation of CSUC CE graduates: Water Resources/Hydrology		Level of preparation of CSUC CE graduates: Water Resources/Hydraulics	
	Count	%	Count	%	Count	%
Unprepared						
Neutral						
Somewhat prepared	2	18.2%	5	45.5%	5	45.5%
Very prepared	3	27.3%	3	27.3%	3	27.3%
N/A	6	54.5%	3	27.3%	3	27.3%
Total	11	100.0%	11	100.0%	11	100.0%

	Level of preparation of CSUC CE graduates: Management/Administration		Level of preparation of CSUC CE graduates: Education		Level of preparation of CSUC CE graduates: Other Engineering Related	
	Count	%	Count	%	Count	%
Unprepared	2	18.2%				
Neutral	3	27.3%			2	20.0%
Somewhat prepared	3	27.3%	3	30.0%	4	40.0%
Very prepared	2	18.2%	2	20.0%	3	30.0%
N/A	1	9.1%	5	50.0%	1	10.0%
Total	11	100.0%	10	100.0%	10	100.0%

	Level of preparation of CSUC CE graduates: Non-Engineering Related	
	Count	%
Unprepared		
Neutral	2	20.0%
Somewhat prepared	3	30.0%
Very prepared	3	30.0%
N/A	2	20.0%
Total	10	100.0%

For each of the following CE program goals, mark the level of preparation demonstrated by the CSU, Chico CE graduates you supervise.

(1=Very Unprepared; 5=Very Prepared)

	Level of preparation demonstrated: BSCE graduates will be effective engineers		Level of preparation demonstrated: Will be effective problem solvers		Level of preparation demonstrated: Will be educated in engineering sciences	
	Count	%	Count	%	Count	%
Unprepared						
Neutral			1	9.1%		
Somewhat prepared	5	45.5%	4	36.4%	5	45.5%
Very prepared	6	54.5%	6	54.5%	6	54.5%
Total	11	100.0%	11	100.0%	11	100.0%

	Level of preparation demonstrated: Will utilize variety of engineering tools/techniques to enhance professional abilities		Level of preparation demonstrated: Will be familiar with applicable regulatory & professional issues		Level of preparation demonstrated: Will be effective technical writers	
	Count	%	Count	%	Count	%
Unprepared			3	27.3%		
Neutral					4	36.4%
Somewhat prepared	8	72.7%	7	63.6%	2	18.2%
Very prepared	3	27.3%	1	9.1%	5	45.5%
Total	11	100.0%	11	100.0%	11	100.0%

	Level of preparation demonstrated: Will be effective oral communicators		Level of preparation demonstrated: Will be able to function effectively in multidisciplinary teams		Level of preparation demonstrated: Will appreciate good citizenship, community service, & ethical conduct	
	Count	%	Count	%	Count	%
Unprepared						
Neutral	4	36.4%	2	18.2%	1	9.1%
Somewhat prepared	3	27.3%	3	27.3%	3	27.3%
Very prepared	4	36.4%	6	54.5%	7	63.6%
Total	11	100.0%	11	100.0%	11	100.0%

	Level of preparation demonstrated: Will be aware of impact of their design on humankind/environment	
	Count	%
Unprepared		
Neutral	2	18.2%
Somewhat prepared	4	36.4%
Very prepared	5	45.5%
Total	11	100.0%

19. Please comment on the program goals listed above (question #18). What changes to these goals should be considered? Should any of these goals be eliminated or new ones added?

Many of these represent personality strengths, not particularly educated strengths. Technical writing skills and oral communication skills (communication issues in general) would be helpful to emphasize. A greater emphasis on code interpretation and under

I think the goals listed above are very good and provide for a well-rounded engineer.

They look fine.

The goals continue to be relevant for today's civil engineering field.

Consider adding: Equipped for technical requirements to pass professional registration; prepared for management or leadership roles; possess deserved self confidence; Consider changing "They will be aware of the impact of their designs on humankind and

The BSCE program probably needs to provide more instruction and practice on technical writing, particularly geared toward written materials produced for non-technical staff and elected officials, and also professional speaking.

They will have a working knowledge of Computer Aided Drafting in their area of specialty.

20. Are there any additional comments you would like to make regarding the CE program at CSU, Chico? Consider both possible strengths and weaknesses that may exist in the program.

Since I graduated in 1968 I know very little about today's education through the CSU system. The engineer that I supervise also graduated in the 70's. In 1994 I took a PE preparation class at CSU Chico, which helped me pass the exam.

In general we have found CSUC, CE graduates very well balanced and capable of adapting to the business of engineering. We look exclusively to this program to fill our recruiting needs.

No comments. The CSU, Chico graduates that we have employed have all worked out well.

I have always been pleased by the real world abilities that Chico grads come out of school with. They are down to earth, nads on, and team players.

In my masters program (Stanford), we did many, many "projects" and presentations. We did not do a lot. None

Strengths: Strong practical experience; high pass rate on EIT and PE (higher than most other grads); breadth and depth of knowledge. Weaknesses: Written and oral communication; Leadership skills;

A bit more geology and particularly hydrogeology as it relates to groundwater monitoring and contamination might be helpful too, especially in today's environment.
Strengths include technical writing, technical design, and communication. Weaknesses include AutoCAD preparation.

Note: Due to a character limit on the survey, some responses are truncated.