

**Mechanical Engineering**  
**Annual Program Improvement Report**  
**2012-2013**

Prepared by  
Chuen H. Hsu  
Professor and Program Improvement Coordinator

**August 30, 2013**

Department of Mechanical and Mechatronic Engineering  
and Sustainable Manufacturing  
California State University, Chico

## Contents

1. INTRODUCTION	3
2. ACTIONS TAKEN IN 2011-2012 to IMPROVE THE PROGRAM	
2.1 Areas recommended for Improvement in 2011-2012 Annual Report	3
3. ASSESSMENT DATA GATHERED IN 2012-2013	
3.1 Embedded Assessment of Student Learning Outcomes	8
3.2 Fundamentals of Engineering (FE) Exam	9
3.3 Graduating Senior Survey	13
3.3.1 Educational Satisfaction	13
3.3.2 Program Outcomes	14
3.3.3 Project Management Skills	17
3.3.4 Written Comments	17
3.4 Student Evaluation of Teaching	18
4. RECOMMENDATIONS FOR PROGRAM IMPROVEMENTS	
4.1 Faculty	20
4.2 Fundamentals of Engineering (FE) Requirement	21
4.3 Curriculum	21
4.4 Graduating Senior Survey & Student Evaluation of Teaching	21
4.5 Student Learning Outcome Assessment embedded in CIVL 495	21
APPENDICES	
A. Statement of Mechanical Engineering Program Outcomes	23
B. Sample Student Learning Outcomes Assessment Record Sheet	24
C. ECC Graduating Senior Survey Instrument	27
D. Mechanical Engineering Specific Supplemental Survey Instrument	32
E. Student Evaluation of Teaching (SET) Instrument	33
F. Summary of Evaluation Ratings in SET Spring 2013	37

## 1. INTRODUCTION

The *Mechanical Engineering Program Improvement Plan, edition 3* (August 23, 2012) documents the educational objectives, outcomes, and process to make improvements to the Program. With a unanimous decision of faculty at the August-22-2012 meeting, this revised edition of Program Improvement Plan discontinued the direct tie of final course grade to outcome assessment result – the student no longer automatically receives an F for the course solely due to failure to pass the assessment(s) embedded in the course. Also removed is the policy of providing details on Program Outcome assessments in the syllabi of courses designated for assessments. These changes became effective in fall 2012.

This document, the *Mechanical Engineering Annual Program Improvement Report*, provides a summary of findings and actions for the 2012-2013 academic year resulting primarily from the implementations of the *Mechanical Engineering Program Improvement Plan*. This report is divided into three main sections: actions taken in 2012-2013 to improve the Program, assessment data gathered in 2012-2013, and recommendations for improvements to the Program based on assessment results. While some detailed data are reported here, more complete data can be found in the assessment files in the file cabinet located in the Department storeroom (OCNL 436A) and in the MEMM Department folder on Chico State Bay server.

## 2. ACTIONS TAKEN IN 2012-2013 TO IMPROVE THE PROGRAM

### 2.1 Areas Recommended for Improvement in 2011-2012 Annual Improvement Report

The 2011-2012 Annual Program Improvement Report identified five areas to consider for improvements. These areas are faculty performance consistency, FE exam participation rate, curriculum, graduating senior survey participation rate, and program outcome assessments embedded in CIVL 495. Actions taken during 2012-2013 in the identified areas are summarized in the following.

#### 2.1.1. Faculty Performance Consistency

Sub-areas recommended for improvement in the faculty satisfaction in the 2011-2012 Annual Program Improvement Report include instructional quality, fairness of tests, and consistency of grading.

##### **Instructional Effectiveness**

A few student written comments in the 2011-2012 Graduating Senior Survey were fairly critical of the large variation of faculty teaching skills and effectiveness. The comments were also supported by the wide distribution curve in the *Course Outcomes* and *Overall Evaluation* categories of the spring 2012 SET (Student Evaluation of Teaching).

In an attempt to address the issue, the written comments and supporting data were shared with faculty at a department faculty meeting, and faculty were urged to be more conscientious about instruction-related practices. Another remedy, although not an ideal one, was adjusting course assignments slightly for certain instructors. Similar complaints were not observed in the 2012-2013 Graduating Senior Survey, although it might not be entirely a result of the actions taken.

Two sets of data may be used again to gauge the change in students' perception of faculty instructional skills and effectiveness from 2011-2012 to 2012-2013: SET and Graduating Senior Survey results. It should be pointed out that SET is course-specific, and thus instructor-specific, on all courses taught in one semester while the senior exit survey is limited to graduating seniors based on their overall experience cumulated over the years in the program.

The SET Course Outcomes ratings for nearly the same courses taught in spring 2012 and spring 2013 are presented in Figure 1; ratings for Overall Evaluation are in Figure 2.

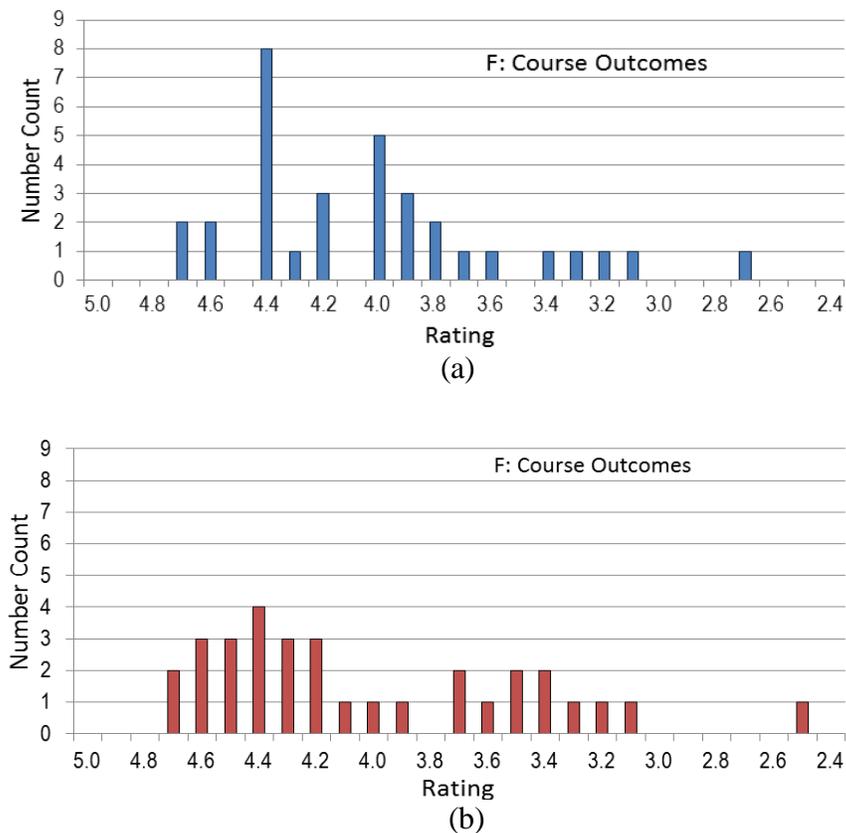


Figure 1 – Distribution of SET ratings for Course Outcomes of courses taught in spring semesters from (a) spring 2012 and (b) spring 2013. (Likert scale of 1-5 with 5 being very satisfied)

Between parts (a) and (b) of Figure 1, it is clear that the course outcome ratings in spring 2013 SET are more uniform between 3.1 and 4.7, except for a lone low rating at 2.5. It is also clear that about half of the course ratings are clustered in the more satisfying range of 4.2 to 4.7.

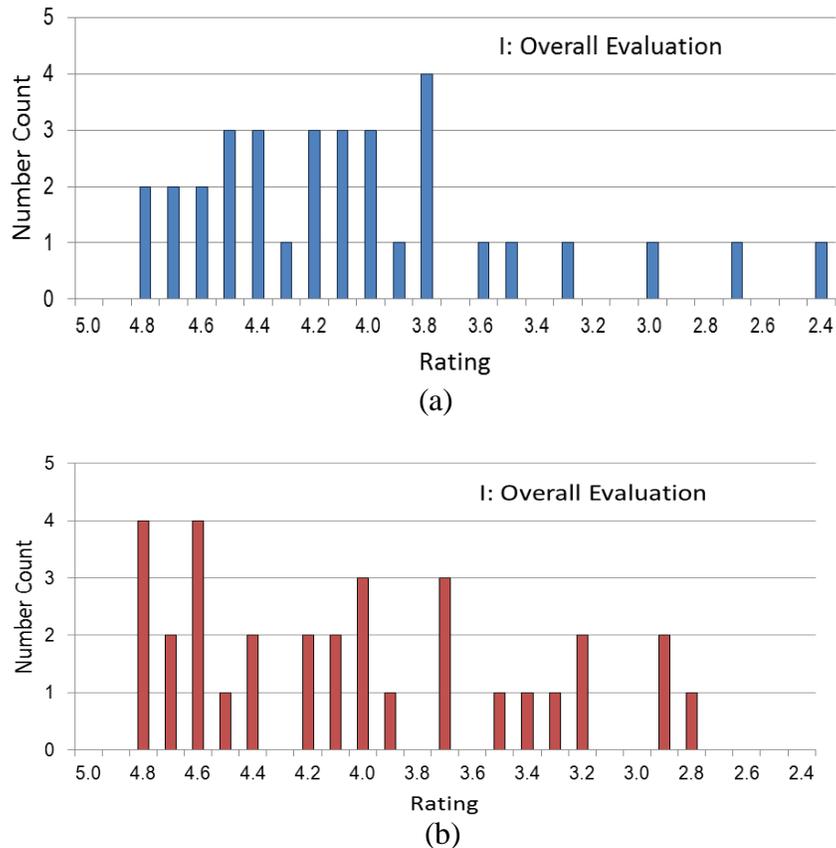


Figure 2 – Distribution of SET ratings for Overall Evaluation of courses taught in spring semesters from (a) spring 2012 and (b) spring 2013. (Likert scale of 1-5 with 5 being very satisfied)

As shown in Figure 2, there is a smaller range of rating distribution, between 2.8 and 4.8, for faculty instructional skills and effectiveness in the spring 2013 SET.

The spring 2013 Graduating Senior Survey on faculty teaching quality, however, posts a continuous decline in the past three years as shown in Table A.

**Table A:** Averages of responses to the question on faculty teaching quality in 2010 to 2013 Graduating Senior Surveys. (Likert scale of 1-5 with 5 being very satisfied)

Question in Exiting Senior Survey	2010 Rating	2011 Rating	2012 Rating	2013 Rating
Quality of teaching by faculty in your department. (Q15)	3.70	4.00	3.95	3.83

It is likely the opposite trends shown in Figures 1 & 2 and Table A result from the cumulated experience of the graduating seniors (Table A) while the more course-specific SET results in Figures 1 & 2 are only for the spring semesters.

### **Tests fairness and grading consistency**

It was recommended that some faculty need to exercise better judgment in designing tests and grading. There were no similar critical written comments in the spring 2013 SET and graduating senior survey. The spring 2013 SET rating mean of *Assignments, Exams, and Grading* was 4.0 on a Likert scale of 1-5 with 5 being very satisfied. No comparison was made between pre-2012 years and 2013 because a different evaluation instrument was implemented.

### **2.1.2 Fundamentals of Engineering (FE) Exam Requirement and Participation Rate**

Although the faculty have voted unanimously to remove taking FE exam as a graduation requirement for Mechanical Engineering students starting in fall 2012, students were still encouraged to take the FE exam before leaving Chico.

The number of students taking FE exam during the academic years 2011-2012 and 2012-2013 are tabulated in Table B. Comparing with the previous year, about 33% less students (a decrease from 48 to 31) took the FE exam during 2012-2013. Despite the effort, the number of students taking FE exam likely will continue to decrease as it is no longer a requirement for graduation.

**Table B:** Number of Mechanical Engineering students took the FE exam from October 2011 to April 2013.

FE Exam Admin.	October 2011	April 2012	October 2012	April 2013
No. of Students Took FE Exam	17	31	12	19
Academic Year	2011-2012		2012-2013	
No. of Students Took FE During Academic Year	48		31	

### **2.1.3 Curriculum**

#### **Lab experience**

In the 2011-2012 Graduating Senior Survey, students expressed appreciation of hands-on lab experience that serves to enhance their learning. The recommendation was to consider adding or restoring lab component to a couple required courses;

specifically MECH 308 (Finite Element Analysis) and MECA 482 (Control System Design).

Faced with growing number of Mechanical Engineering majors and shrinking faculty size from retirements, the department, however, could barely staff enough sections of courses to meet student demands. It appears the desired lab additions to courses will probably be a lower priority than offering additional sections of required courses in the next couples, at least until new faculty hires are realized.

#### **Lab equipment upgrade**

As a result of diminishing state funding in recent years, department labs and equipment have gradually become outdated. The faculty were encouraged to be more creative in locating resources for equipment upgrades.

In response, faculty tried to take advantage of the Student Learning Fee (SLE) funding to acquire new equipment. In 2012-2013, the SLE funded Engineering Wind Tunnel Upgrade was implemented. Also, three proposals were approved to receive funds for implementation in 2013-2014: Universal Testing Machine Upgrade, Computing Cluster for Engineering Students, and Distributed/Remote Data Acquisition and Monitoring.

#### **Capstone project funding**

Students expressed dissatisfaction of delayed or late cancellation of external funding for senior design projects in previous years' graduating senior surveys. The primary instructor of the capstone projects, Dr. Greg Watkins, tried all he could in 2012-2013 to collect funds upfront for sponsored projects before adopting and assigning projects in MECH 440A. Careful selection of projects also helped to reduce the default rate. As a result there were no written comments on the capstone project funding in the spring 2013 Graduating Senior Survey.

### **2.1.4 Graduating Senior Survey Process and Participation Rate**

It was suggested in 2011-2012 to make the Graduating Senior Survey a course requirement for MECH 440B, which is required of all graduating Mechanical Engineering seniors, to raise the participation rate. The approach apparently worked well and it contributed to the 100% participation rate in spring 2013, comparing to the 76% recorded in spring 2012.

### **2.1.5 CIVL 495 for Program Outcome Assessment**

Despite the involving College Dean in the collection of embedded outcome assessment data in CIVL 495 taught by Civil Engineering faculty, no useful assessment data has been made available to the Mechanical Engineering program.

## **3. ASSESSMENT DATA GATHERED IN 2012-2013**

### 3.1 Embedded Assessment of Student Learning Outcomes

Instruments and results of Program Outcomes assessment embedded in selected courses are summarized in Table C. A complete list of identified Program Outcomes can be found in Appendix A. Sample assessment record sheets are reproduced in Appendix B.

**Table C:** Methods and results of embedded Student Learning Outcomes assessments for 2012-2013.

Program Outcome	Course	Assessment Instrument	Demonstration of basic competency above a minimum grade or score	Number of MENG majors failing to demonstrate basic competency / Number of MENG majors enrolled	
				Fall 2012	Spring 2013
a	MECH 340	Exams (x3)	Average of C- or better	<i>not taught</i>	13/48
b <sub>1</sub>	MECH 440B	Individual written test plan	Pass/fail assessment	<i>not taught</i>	3/39
b <sub>2</sub>	MECA 380	Lab assignment	C- (1.7/4.0) or better	<i>not taught</i>	3/46
c <sub>1</sub>	MECH 340	Individual design project	Average of C- or better	<i>not taught</i>	3/48
c <sub>2</sub>	MECH 338	Design problems (x2)	At least 70% on one of the two	<i>not taught</i>	4/51
d	CIVL 495			<i>no data</i>	<i>no data</i>
	MECH 440A	Individual in group project	Faculty advisor & peer evaluation	0/40	<i>not taught</i>
e <sub>1</sub>	MECH 440A	Individual assignment	Pass/fail grading	0/40	<i>not taught</i>
e <sub>2</sub>	MECA 482	Quizzes (x3) on system design	Average of C- or better	4/23	<i>not taught</i>
f	CIVL 495			<i>no data</i>	<i>no data</i>
g <sub>1</sub>	MECH 440A	Individual final design review	Pass/fail assessment	0/40	<i>not taught</i>
g <sub>2</sub>	MECH 340	Individual design project memo	Average of C- or better	<i>not taught</i>	8/48
g <sub>3</sub>	MECH 340	Design project drawings	Average of C- or better	<i>not taught</i>	5/48
h	CIVL 495			<i>no data</i>	<i>no data</i>
i	CIVL 495			<i>no data</i>	<i>no data</i>
j	CIVL 495			<i>no data</i>	<i>no data</i>
k	MECH 306	Test questions (x5)	At least 4 out of 5 tests to achieve 66%, 66%, 75%, 50%, 60% to pass	9/40	<i>not taught</i>
	MECH 308	Final project	Pass/fail assessment	<i>not taught</i>	3/46
	MECA 380	Programming assignment	12/20 or better	<i>not taught</i>	2/46

Most Program Outcomes assessments generated satisfactory pass rates, except for MECH 340 having a failure rate of 27% for Outcome a. The course instructor for MECH 340 in 2013-2014 should look into the underlying causes if the same assessment instruments will be used.

Instructors' input on the suitability of current assessment instruments and suggestions for improving the measuring instruments and the Mechanical Engineering program are summarized in Table D.

**Table D:** Suitability of assessment instruments and suggestions for improving assessment instruments and Mechanical Engineering program based on 2012-2013 Program Outcomes assessment results.

Program Outcome	Course	Suitability of Assessment Instrument	Suggestions for Assessment Instrument	Suggestions for Program Improvement
a	MECH 340	Suitable	None suggested	None suggested
b <sub>1</sub>	MECH 440B	Suitable	None suggested	None suggested
b <sub>2</sub>	MECA 380	No comments	None suggested	None suggested
c <sub>1</sub>	MECH 340	Suitable	None suggested	None suggested
c <sub>2</sub>	MECH 338	No comments	None suggested	None suggested
d	CIVL 495	Not assessed	None suggested	None suggested
	MECH 440A	Suitable	None suggested	None suggested
e <sub>1</sub>	MECH 440A	Suitable	None suggested	None suggested
e <sub>2</sub>	MECA 482	No comments	None suggested	None suggested
f	CIVL 495	Not assessed	None suggested	None suggested
g <sub>1</sub>	MECH 440A	Suitable	None suggested	None suggested
g <sub>2</sub>	MECH 340	Suitable	None suggested	None suggested
g <sub>3</sub>	MECH 340	Suitable	None suggested	None suggested
h	CIVL 495	Not assessed	None suggested	None suggested
i	CIVL 495	Not assessed	None suggested	None suggested
j	CIVL 495	Not assessed	None suggested	None suggested
k	MECH 306	Suitable	Change to “at least 3 of the 5 tests” achieving specified % to pass the assessment.	None suggested
	MECH 308	Effective	None suggested	None suggested
	MECA 380	No comments	None suggested	None suggested

All instructors for the courses designated for Program Outcomes assessments felt their current assessment instruments were suitable. There was only one suggestion to modify the competency criteria for MECH 306 where the assessment of Program Outcome a was conducted. The suggestion should be referenced by the course instructor in 2013-2014.

### 3.2 Fundamentals of Engineering (FE) Exam

The performance of CSUC Mechanical Engineering majors at the Fundamentals of Engineering (FE) exam during 2012-2013 is summarized in Tables E where comparisons are also made with national and Carnegie 3 Universities’ averages.

**Table E:** Pass-rates in the Mechanical Engineering specific and general PM exams for Mechanical Engineering students who were enrolled at CSUC when taking the exams in (a) October 2012 and (b) April 2013.

(a) October 2012 FE exam pass-rates

Institution	Percent Students Took ME-Specific PM Exam	Pass-rate
CSUC	92% (n=11)	82%
National Average	85%	81%
Carnegie 3 Average	76%	80%
	Percent Students Took General PM Exam	Pass-rate
CSUC	8% (n=1)	0%

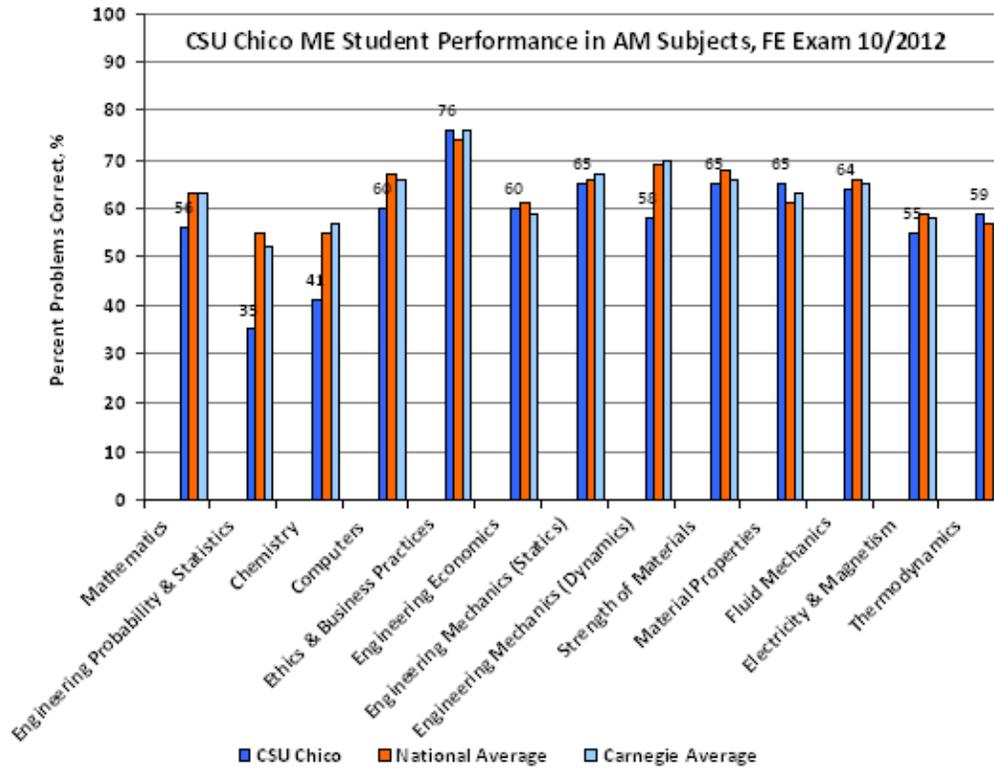
National Average	15%	70%
Carnegie 3 Average	24%	71%

(b) April 2013 FE Exam pass-rates

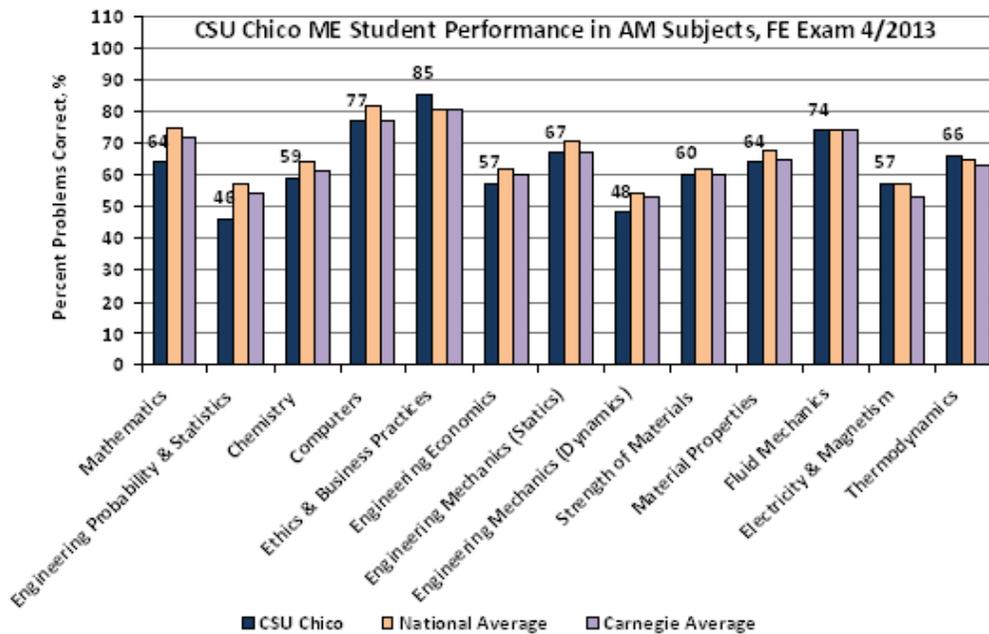
Institution	Percent Students Took ME-Specific PM Exam	Pass-rate
CSUC	95% (n=18)	61%
National Average	88%	83%
Carnegie 3 Average	86%	73%
	Percent Students Took General PM Exam	Pass-rate
CSUC	5% (n=1)	100%
National Average	12%	77%
Carnegie 3 Average	14%	82%

Performance in subject areas in the AM session of the FE exam for students who took ME-specific PM session is summarized in Figure 3(a) for the 10/2012 administration and in Figure 1(b) for the 4/2013 administration. It should be noted that starting in 10/2012 the taking of FE exam was no longer a graduation requirement for CSUC Mechanical Engineering students.

Figure 3 shows that Chico's ME students demonstrated similar proficiency in most AM subject areas to that of students at national and Carnegie 3 universities. In particular, Chico's ME students performed consistently better in *Ethics and Business Practices*, *Material Properties*, and *Thermodynamics*, but noticeably not as proficient in *Mathematics*, *Engineering Probability and Statistics*, *Chemistry*, and *Engineering Mechanics (Dynamics)*.



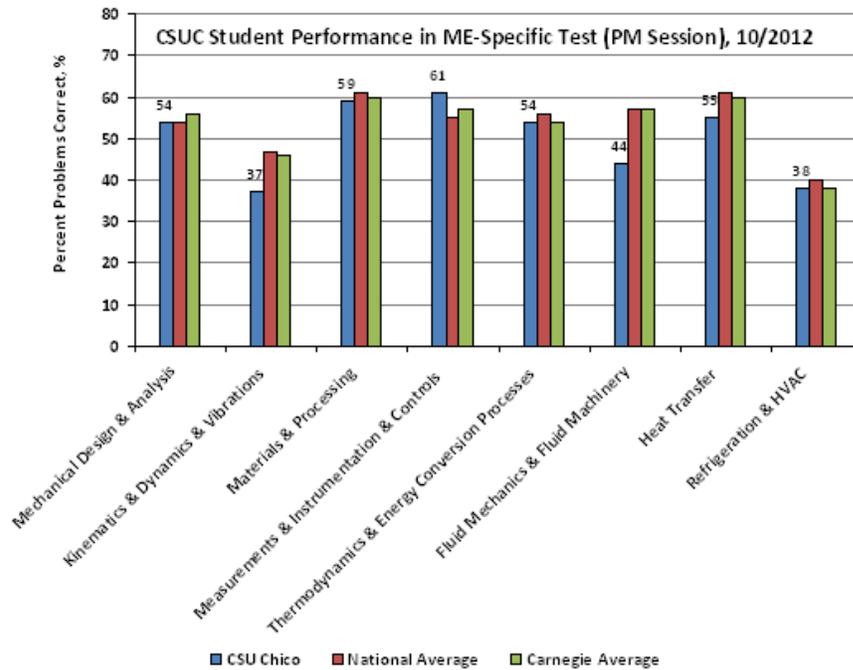
(a)



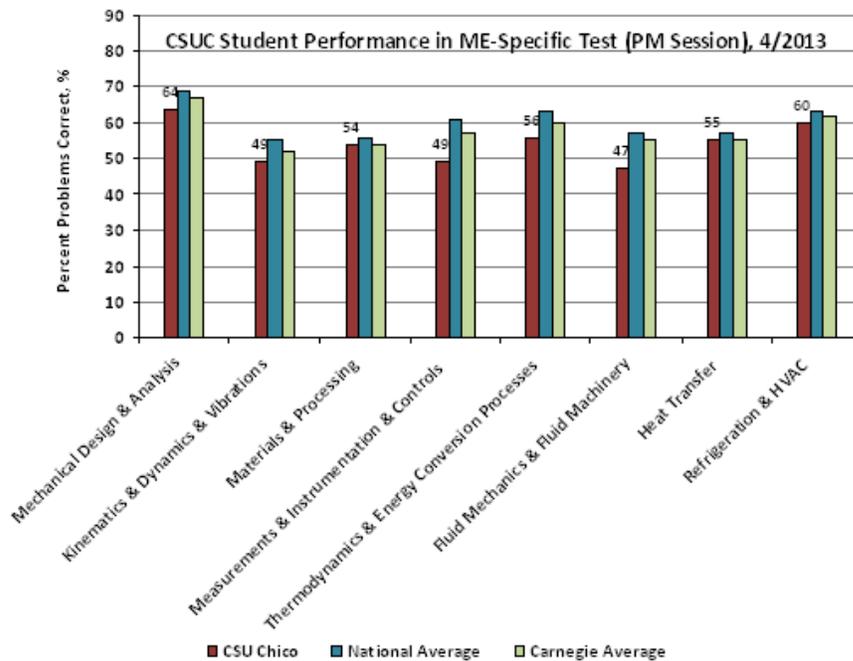
(b)

**Figure 3-** FE exam performance by subject area in the morning exam session for Mechanical Engineering majors who were enrolled in CSUC when taking the exam in (a) October 2012 (n =11) and (b) April 2013 (n=18).

Performance of CSUC Mechanical Engineering students in the ME-specific afternoon exam session is summarized in Figure 4 for (a) October 2012 and (b) April 2013 FE administrations.



(a)



(b)

**Figure 4** – Performance in the ME-specific afternoon session of FE exam by CSUC Mechanical Engineering majors who were enrolled at CSUC when taking the exam at (a) October 2012 (n=11) and (b) April 2013 (n=18) FE exams.

As indicated in Figure 4, CSUC Mechanical Engineering student scored roughly the same as National and Carnegie 3 averages, although slightly lower in most subject areas. However, it is clear that CSUC Mechanical Engineering students are not as proficient as national and Carnegie 3 comparators in *Fluid Mechanics and Fluid Machinery*.

The performance summary of CSUC Mechanical Engineering majors in the general FE afternoon exam session is not documented in this report because there was only one student making the selection in each of the two FE exams during in 2012-2013..

### 3.3 Graduating Senior Survey

In spring 2013 an annual online survey of graduating seniors was conducted. The survey targeted students enrolled in MECH 440B – Mechanical Engineering Design Project II as it is a required course and is typically taken by seniors shortly before graduation. The survey questionnaires are reproduced in Appendix C. The survey questions are grouped into areas relating to (1) demographics and post-graduate plans (which will not be discussed further in this report), (2) educational satisfaction, (3) Learning Outcomes, (4) project management skills, and (5) other outcomes. Responses of the Mechanical Engineering majors who participated in the survey are summarized in the following.

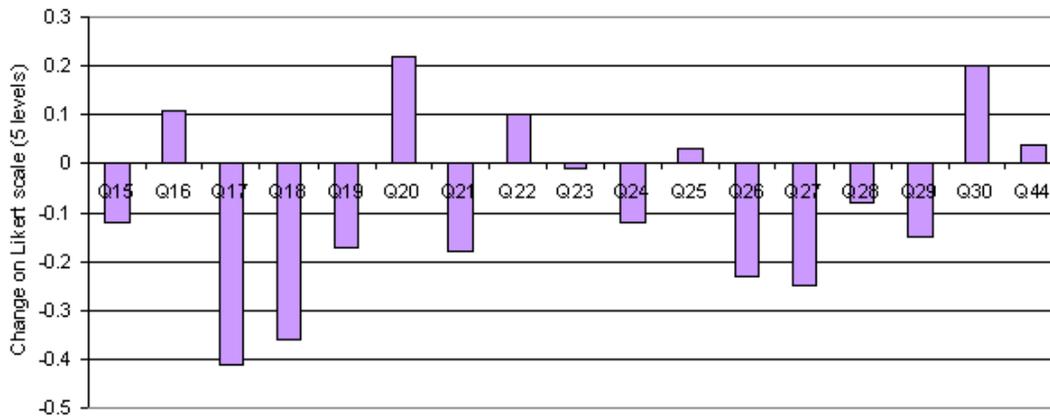
#### 3.3.1 Educational Satisfaction

Survey results on educational satisfaction from 2008 to 2013 and changes from 2012 to 2013 are summarized in Table F and Figure 5, respectively.

**Table F:** Means of responses to survey questions regarding Educational Satisfaction

(5 level Likert scale: 1 = very dissatisfied and 5 = very satisfied; for question 44 only, 1 = strongly disagree and 5 = strongly agree.)

No.	At Chico State, how satisfied were you with the . . .	2008	2009	2010	2011	2012	2013
Q15	Quality of teaching by faculty in your department	3.60	3.75	3.70	4.00	3.95	3.83
Q16	Quality of teaching by other faculty	3.46	3.63	3.60	3.45	3.48	3.59
Q17	Access to faculty in your department	4.30	4.19	4.10	4.27	4.41	4.00
Q18	Availability of courses in your department	3.53	2.81	3.13	3.52	3.70	3.34
Q19	Quality of courses in your department	3.74	3.69	3.62	3.88	4.14	3.97
Q20	Access to lab facilities and equipment	3.62	3.75	3.38	3.97	3.68	3.90
Q21	Quality of laboratories and equipment	3.33	3.25	3.35	3.70	3.73	3.55
Q22	Access to computer facilities	4.15	4.13	3.87	4.15	3.66	3.76
Q23	Quality of computer facilities	3.68	3.41	3.30	3.27	3.05	3.04
Q24	Academic advising from your major advisor	3.55	3.84	3.60	3.94	3.98	3.86
Q25	Academic advising from the Advising Office	3.13	3.13	3.32	3.24	3.18	3.21
Q26	Career information from your department	3.43	2.77	2.80	3.36	3.37	3.14
Q27	Availability of GE courses	3.90	3.69	3.65	3.45	3.59	3.34
Q28	Quality of GE courses	3.23	3.13	3.20	2.85	3.05	2.97
Q29	Overall quality of your education	3.90	3.88	3.90	4.18	4.18	4.03
Q30	Your overall experience at Chico State	4.23	4.16	4.20	4.30	4.18	4.38
Q44	I would recommend my major at CSU, Chico to others	4.28	4.22	4.08	4.39	4.30	4.34



**Figure 5:** Changes of responses to survey questions regarding educational satisfaction from 2012 to 2013.

According to Figure 5, in the spring 2013 survey, questions directly related to educational satisfaction had mixed results comparing with those in the spring 2012 survey. The most significant negative changes were in “*Access to faculty in your department (Q17)*”, and *Availability of courses in your department (Q18)*”. Of particular concern is rating of 4.00 for “*Access to faculty in your department (Q17)*” which was the lowest since 2008 as shown in Table E.

On the other hand, students appreciated their experience at Chico State (rating of 4.38 for Q30, the highest since spring 2008 survey) and would recommend Chico State’s Mechanical Engineering program to others (rating of 4.34 for Q44).

### 3.3.2 Student Learning Outcomes

Response means for survey questions relating to learning outcomes are tabulated in Table G. Note that the Q-questions (Q31 to Q43) are common survey questions for all ECC graduating seniors while S-questions (S1 to S18) are supplemental survey questions for Mechanical Engineering graduating seniors.

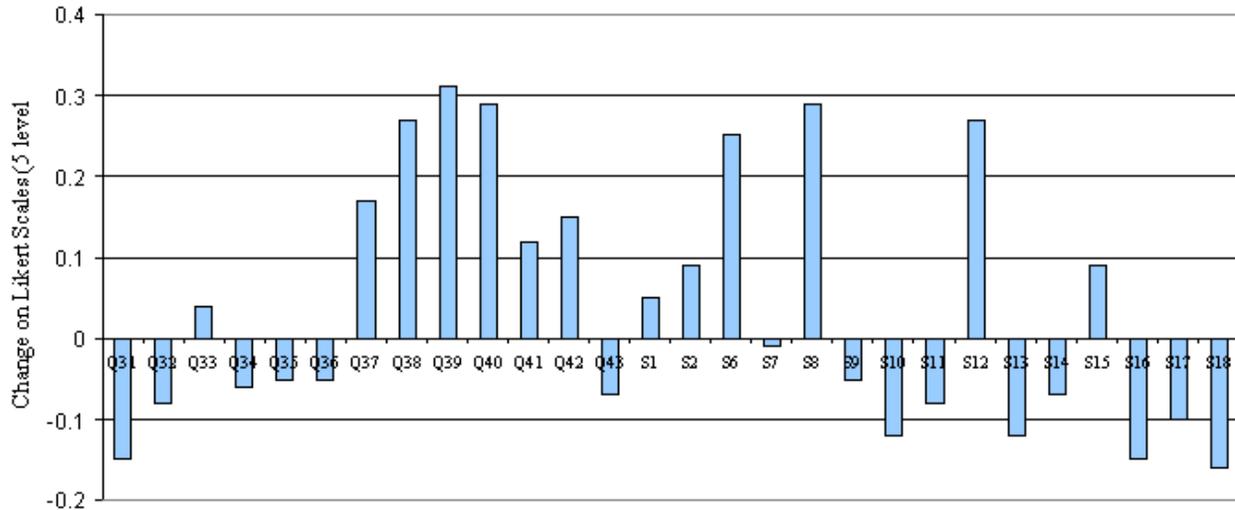
**Table G:** Means of responses to survey questions relating to Program Outcomes (5 level Likert scale: 1 = very unprepared and 5 = very well prepared)

No.	Based on your educational experience here at Chico State, how well prepared are you to ...	2008	2009	2010	2011	2012	2013
Q31	Apply knowledge of math, science, engineering, or technology to solve problems	4.23	4.13	4.15	4.36	4.43	4.28
Q32	Design and conduct experiments	4.00	3.69	3.80	4.15	4.36	4.28
Q33	Analyze and interpret data	4.10	4.03	3.93	4.21	4.30	4.34
Q34	Design a component or system to meet desired needs	4.15	4.31	4.25	4.36	4.34	4.28
Q35	Function on a multidisciplinary team	4.23	4.28	4.42	4.36	4.39	4.34
Q36	Identify, formulate, and solve technical problems	4.20	4.31	4.30	4.33	4.36	4.31

Q37	Communicate technical matters in writing	3.98	3.94	3.82	4.27	4.07	4.24
Q38	Communicate technical matters orally	4.13	3.94	3.95	4.27	4.11	4.38
Q39	Understand & apply professional & ethical principles	4.15	4.35	3.80	4.21	4.07	4.38
Q40	Understand contemporary issues facing society	3.95	3.84	3.70	3.82	4.02	4.31
Q41	Use modern tools and technology	3.85	4.03	3.85	4.06	4.16	4.28
Q42	Enter the workplace (I)	3.95	3.90	3.77	4.15	4.30	4.45
Q43	Continue learning	4.23	4.25	4.36	4.48	4.52	4.45
S1	Communicate manufacturing needs to a technician	3.83	<i>no data</i>		4.30	4.02	4.07
S2	Write verifiable engineering specifications based on customer needs	<i>not surveyed</i>				4.30	4.39
S6	Present information for a design review	3.80	<i>no data</i>		4.21	4.21	4.46
S7	Prepare and execute an experimental plan	3.63	<i>no data</i>		4.21	4.23	4.22
S8	Select hardware and develop software for automated data collection	<i>not surveyed</i>				3.60	3.89
S9	Analyze pressure drop and select a pump for a piping system	<i>not surveyed</i>				4.12	4.07
S10	Select a material for a specific application	<i>not surveyed</i>				4.30	4.18
S11	Use simulation software for stress or heat transfer analysis	<i>not surveyed</i>				4.29	4.21
S12	Verify finite element analysis results through traditional analysis techniques	<i>not surveyed</i>				4.05	4.32
S13	Solve equations using numerical techniques	<i>not surveyed</i>				4.19	4.07
S14	Simulation or write equations of the performance of a system	<i>not surveyed</i>				4.00	3.93
S15	Select machine parts and lubrication for a particular application	<i>not surveyed</i>				3.77	3.86
S16	Analyze a thermal problem and select a suitable heat exchanger or heat sink	<i>not surveyed</i>				4.47	4.32
S17	Solve a heat transfer problem using thermal resistances	<i>not surveyed</i>				4.53	4.43
S18	Select a motor for a particular application	<i>not surveyed</i>				3.77	3.61

(I) Question number 42 is not a defined Student Learning Outcome.

In the spring 2012, the Mechanical Engineering specific supplemental questions were revised to better survey a broader range of learning outcomes. The same questionnaires were adopted again in the spring 2013 survey, making the comparison from 2012 to 2013 possible. Changes in the ratings for surveyed areas from 2012 to 2013 are summarized in Figure 6.



**Figure 6:** Changes of responses to survey questions relating to Program Outcomes from 2012 to 2013.

Table F shows that, of the surveyed learning outcome areas, 2012-2013 graduating Mechanical Engineering seniors were most confident in “*Enter the workforce (Q42), Continue earning (Q43)*”, “*Present information for a design review (S6)*”, and “*Solve a heat transfer problem using thermal resistances (S17)*”.

By average ratings below 4.00 on the Likert scale of 1 to 5, with 5 being the very well prepared, 2012-2013 graduating seniors were considered not as confident about their ability to “*Select hardware and develop software for automated data collection (S8, rating 3.89)*”, “*Select machine parts and lubrication for a particular application (S15, rating 3.86)*”, and “*Select a motor for particular application (S18, rating 3.61)*”. However, both Q8 and Q15 saw improvement from 2012 to 2013.

On the other hand, the confidence of 2012-2013 graduating seniors was the highest since 2008 in the following areas:

- Q33: Analyze and interpret data (4.34 rating)
- Q38: Communicate technical matters orally (4.38 rating)
- Q39: Understand & apply professional & ethical principles (4.38 rating)
- Q40: Understand contemporary issues facing society (4.31 rating)
- Q41: Use modern tools and technology (4.28 rating)
- Q42: Enter the workplace (4.45 rating)
- S6: Present information for a design review (4.46 rating)

As shown in Figure 6, the most improved areas from spring 2012 to spring 2013 surveys are

- Q39: Understand & apply professional & ethical principles (+0.31)
- S8: Select hardware and develop software for automated data collection (+0.29)

- Q40: Understand contemporary issues facing society (+0.29)  
 Q38: Communicate technical matters orally (+0.27)  
 S12: Verify finite element analysis results through traditional analysis techniques (+0.27)

### 3.3.3 Project Management Skills

Responses to questions on management skills are tabulated in Table H.

**Table H:** Means of responses to survey questions relating to Project Management skills. (5 level Likert scale: 1 = very unprepared and 5 = very well prepared)

No.	Based on your educational experience here at Chico State, how well prepared are you to	2008	2009	2010	2011	2012	2013
S3	Create a Gantt chart for a project	3.53	<i>no data</i>		3.91	3.93	4.04
S4	Identify the critical path for a project	3.78	<i>no data</i>		4.09	4.26	4.25
S5	Develop a detailed project budget	3.70	<i>no data</i>		4.18	4.12	4.18

The ratings for all three areas of management skills in spring 2013 survey are either close to the highest or higher than those from previous years since 2008. A steady trend of improvement can be observed in all three surveyed areas despite the lack of data from 2009 and 2010 surveys.

### 3.3.4 Written Comments

Parts of written responses to the open-ended question “please provide additional comments that will help faculty to improve the quality of the education they provide” in the Mechanical Engineering supplemental questions are categorized and summarized in the following. The comments presented here are direct quotes, including spelling and grammatical errors.

#### Courses

- “Should keep important classes high units and not cut back labs/activities. if units need to be cut, eliminate some ge units. ”
- “I think a budgeting and estimating class would be helpful for mechanical engineers. Something like what the construction management department has.”
- “I would suggest that a Manufacturing Minor be highly recommended to Mechanical Engineering Majors as the only Manufacturing course required is suggested to be taken freshmen year. ... ”
- “Mech 306, the matlab course, was by far my hardest due to a steep learning curve without coding experience..... ”
- “Need more availability of upper TE classes.”

- “I would have been nice to see more hands on projects like in mech 140 and mech 440, getting the material to from class to work in a real life situation.”

#### Instruction

- “Faculty members should always show examples in class, post homework solutions on blackboard, and upload lectures to blackboard as well .....”
- “Access to professors was a great aid to my success as a student. Good professors who were interested and posed useful, interesting, and challenging engineering problems made my education very valuable to me ”
- “Keeping lecture material fresh and relevant helps a lot. ....”

#### Faculty

- “Overall faculty is above par and approachable. They create a learning community that is unlike any other. ”
- “i would like to extend my thanks to my professors. they were very good and helpful :) ”
- “My biggest compliment towards Chicos engineering dept is that the professors are very strong.”
- “There are a number of really bad teachers in the engineering department.... ”
- “There are some really excellent teachers in the engineering school and some really poor ones.”
- “.....For the most part, the instructors are good. ....”

#### Lab Experience

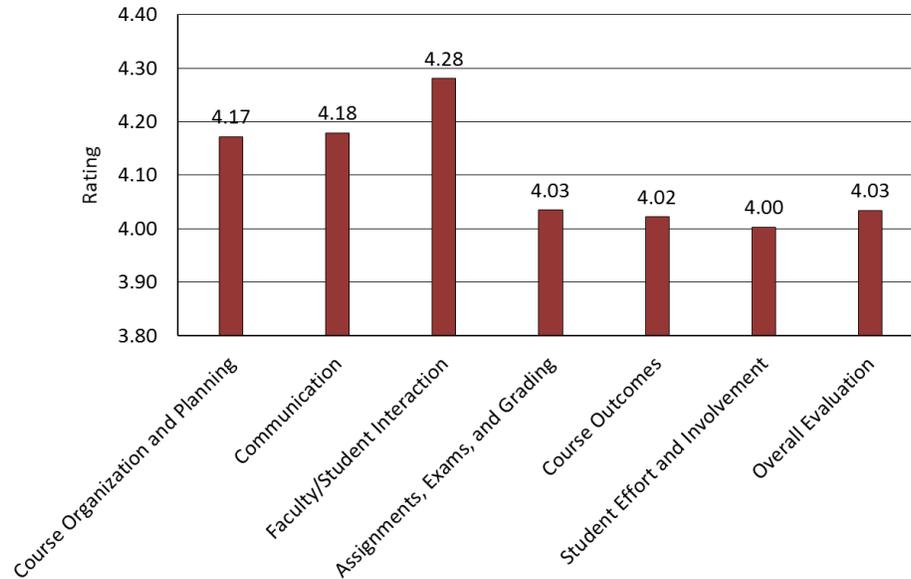
- “Education quality is good. Lab equipment needs to be updated and needs to be accessible more often then they currently are. ”
- “The department needs bigger laps and better computers with extended access hours to the labs.”
- “....Class size is generally good, but our lab equipment certainly needs significant updating. ....”
- “ ”

### **3.4 Student Evaluation of Teaching (SET)**

Mechanical Engineering students take courses taught by the MEM department as well as those by other academic departments. Besides an optional SET in fall semesters, the mandatory SET is conducted in all classes containing lecture component in spring semesters. In spring 2012 the department started adopting a new evaluation instrument, SIR II, which is more comprehensive comparing with the ones used in the years past. The

SIR II questionnaire contains ten categories that each comes with a set of related questions. The ten sets of questions can be found in Appendix E.

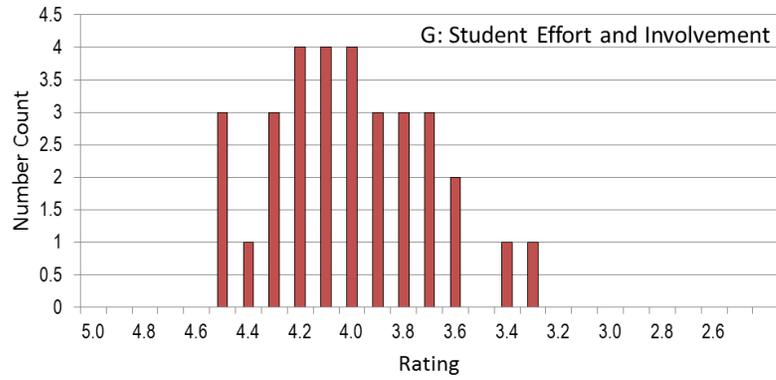
Here the average ratings for seven of the ten question sets for MEM courses in the spring 2013 SET are summarized in Figure 7. The remaining three question sets did not generate meaningful data and department means for evaluation purpose. Rating distribution for each of the seven categories is also collected in Appendix F.



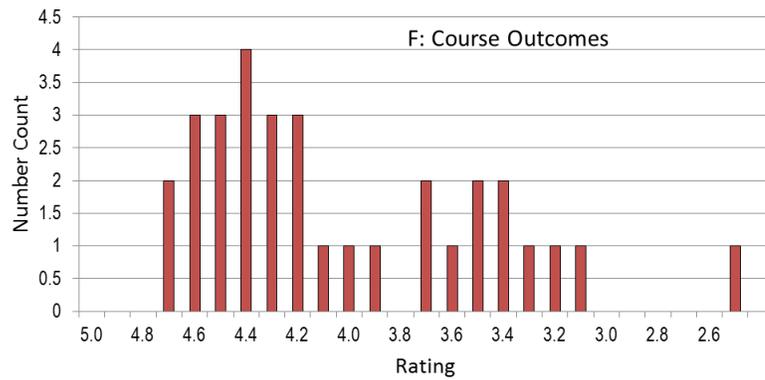
**Figure 7** – Average ratings for seven surveyed categories in MECH and MECA courses from spring 2013. The rating scale is 1 to 5 with 5 being the “most effective”.

As can be seen in Figure 7, all evaluated categories received ratings at or above 4.0, which is encouraging on a scale of 1 to 5 with 5 being the “most effective”. The highest rating (4.28) is for the “*interaction between faculty and students*” – a tradition the department is well known for. The lowest rating (4.0) is for “*student effort and involvement*”. Interestingly, this category also has the most concentrated ratings (Figure 8a) of the seven presented in this section.

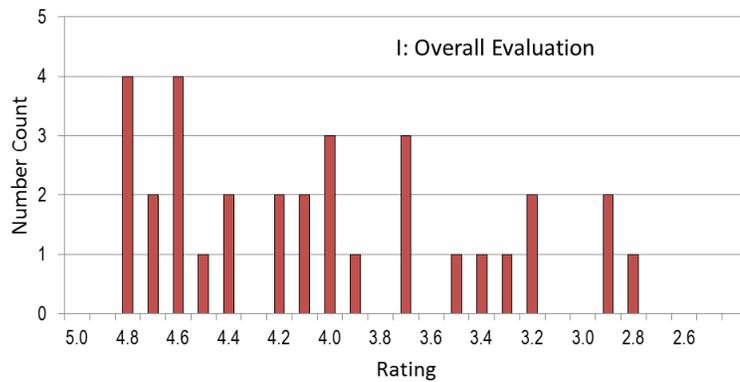
Of the seven reported evaluation categories, the ratings for *Student Effort and Involvement* has the narrowest distribution (3.3 to 4.5 in Figure 8a) while the *Course Outcomes* has the widest distribution from 2.5 to 4.7 (Figure 8b). The wide distribution of ratings for *Course Outcomes* (Figure 8b) and *Overall Evaluation* (2.8 to 4.8 in Figure 8c) points to a large variation in instructional skills and effectiveness of faculty.



(a)



(b)



(c)

**Figure 8** – Rating distribution for three categories of the spring 2013 SET.

## 4. RECOMMENDATIONS

### 4.1 Faculty

#### 4.1.1 Instructional Effectiveness

Although the majority of the student written comments in the Graduating Senior Survey are fairly positive, there are still wide rating distribution in the *Course*

*Outcomes* and *Overall Evaluation* categories of the spring 2013 SET. It is necessary to continue to urge faculty to be conscientious about instruction-related practice.

#### **4.2 Fundamentals of Engineering (FE) Exam Requirement**

Although the faculty have voted unanimously to remove the FE exam as a graduation requirement for Mechanical Engineering students starting in fall 2012, students should still be encouraged to take the FE exam before leaving Chico. The FE exam workshops should continue.

#### **4.3 Curriculum**

##### **4.3.1 Lab experience**

As stated in the student written comments in the graduating senior survey, lab exercises can serve to enhance learning. Lab or activity component was reduced or removed from a few courses in the previous workload (WTU) reduction due to State fiscal decline. It is still a goal for faculty to consider adding or restoring lab component in courses such as *Control System Design* (MECA 482) and *Finite Element Analysis* (MECH 308).

##### **4.3.2 Lab and equipment upgrade**

The department has made limited progress in upgrading lab equipment. The department and faculty will need to be more diligent in utilizing possible resources such as Consolidated Course Fee and Student Learning fee for equipment upgrade.

#### **4.4 Graduating Senior Survey and Student Evaluation of Teaching**

The department was successful in linking the Graduating Senior Survey to MECH 440B, and achieved 100% participation rate. This practice should continue to attain a good participation rate for more inclusive, representative data for program improvement.

It is a growing concern that the participation rate for online Student Evaluation (SET) is slipping, typically lower than 50% comparing to the 80% rate in classroom SETs. The faculty may consider looking into the matter and find approaches for raising the online SET participation rates.

#### **4.5 Student Learning Outcome Assessment embedded in CIVL 495**

The unavailability of student learning outcomes data from assessments embedded in CIVL 495 continues to be a problem. It continues to affect other engineering programs since CIVL 495 has long been adopted for learning outcome assessments. The instructors of CIVL 495 are simply not interested in compiling assessment data and the Civil Engineering Department Chair has been ignoring the repeated requests.

The department faculty probably should consider (a) conducting the assessments in MECH courses or (b) removing CIVL 495 from the Mechanical Engineering curriculum.

## Appendix A

### Statement of Mechanical Engineering Student Learning Outcomes\*

*Mechanical Engineering Program graduates must have:*

- a. An ability to apply knowledge of mathematics, science, and engineering*
- b<sub>1</sub>. An ability to design experiments to evaluate the performance of a mechanical/thermal system or component with respect to specifications*
- b<sub>2</sub>. An ability to conduct experiments, as well as analyze and interpret data*
- c<sub>1</sub>. An ability to design a mechanical system, component, or process to meet desired needs*
- c<sub>2</sub>. An ability to design a thermal system, component, or process to meet desired needs*
- d. An ability to function effectively as members of multidisciplinary teams*
- e<sub>1</sub>. An ability to define engineering problems*
- e<sub>2</sub>. An ability to solve engineering problems*
- f. An understanding of professional ethical responsibility*
- g<sub>1</sub>. An ability to communicate technical matters effectively in oral form*
- g<sub>2</sub>. An ability to communicate technical matters effectively in written form*
- g<sub>3</sub>. An ability to communicate technical matters effectively in graphical form*
- h. The broad education necessary to understand the impact of engineering solutions in a global and societal context*
- i. A recognition of the need for, and an ability to engage in, life-long learning*
- j. A knowledge of contemporary issues*
- k. An ability to use the techniques, skills, and modern mechanical engineering tools necessary for engineering practice*

\* From Mechanical Engineering Program Improvement Plan, edition 2 (October 23, 2008)

## Appendix B

### Sample Student Learning Outcome Assessment Record Sheet

**Mechanical Engineering Program Outcome Record-Sheet**

<b>Course:</b>		<b>Semester:</b>	
<b>ME Program Outcome:</b>		<b>Instructor:</b>	
<b>Description of instruments used in this course to measure attainment of program outcome:</b>	1		
	2		
	3		
	4		
	5		
	6		

<b>How instruments are used to measure achievement of program outcome:</b>	1		
	2		
	3		
	4		
	5		
	6		

<b>Number of ME students in class achieving program outcome:</b>	0	#DIV/0!
<b>Number of ME students in class not achieving program outcome:</b>	0	#DIV/0!

**Comments on the suitability of the instruments used to measure achievement of the program outcome:**

**Suggestions for possible changes of how achievement of the program outcome can be measured:**

**Suggestions for improving the program:**

*Note: Shaded fields are to be fill-in.*



Appendix C  
ECC Graduating Senior Survey Instrument  
Spring 2013

## ECC Graduating Senior Survey

### College of Engineering, Computer Science, and Construction Management CSU, Chico

Dear Graduating Senior,

The College of ECC has developed this Survey to give you a forum for letting us know what you think of your experience at CSU, Chico, and to help us to continually improve the curriculum and services we offer. We care a great deal about the programs and your feedback is essential to helping us provide the highest quality education we can deliver. Thank you in advance for your time and attention to this survey.

We hope the years you have spent with us have enriched your life and provided you with the foundation for a successful career. Please stay in touch!

With best wishes, The College of ECC Faculty

1. Major:
2. Graduation Date  
Semester  
 Spring  Summer  Fall  
Year  
 2011  2012  2013  2014
3. Did you come to Chico State as a ...  
 First-time freshman  Transfer
4. How many semesters did you attend Chico State?  
 1-3  4-6  7-9  10-12  13+
5. What is your Overall GPA?  
 Below 2.25  
 2.25-2.49  
 2.50-2.74  
 2.75-2.99  
 3.00-3.24  
 3.25-3.49  
 3.50-3.74  
 3.75-4.00
6. If you had an internship, co-op, or job related to your major while in school, how valuable was the experience?  
 Did not have internship, co-op, or job  
 Very Valuable  
 Valuable  
 Somewhat Valuable  
 Not Valuable
7. If you were involved in any student/professional society, activities, or clubs, how valuable was the experience?  
 Was not involved in societies, activities, or clubs  
 Very Valuable  
 Valuable  
  
 Somewhat Valuable  
 Not Valuable

8. Immediately after graduating are you planning to...

Attend graduate School

Yes  No

Begin Working

Yes  No

If you are **NOT** planning to work full-time, or if you have not begun looking for a job, please skip to Question 13.

9. How many job offers have you received?

None  One  Two  Three  Four +

10. Do you currently have a job offer that you are likely to accept?

Yes

No

11. If you interviewed through the campus Career Planning & Placement Office, how helpful was it?

Did not interview through campus office

Very Helpful

Helpful

Somewhat Helpful

Not Helpful

12. If you found a job that you are likely to accept, how did you find it?

Campus Career Planning & Placement Office

Faculty/department referral

Online Posting

Mailed resume

Personal Connections

Other

13. Did you take a comprehensive exam (FE, CMdgT, MFT or other) for your discipline?

No, did not take

Yes, and passed

Yes and did not pass

Yes and waiting for results

14. If you took a comprehensive exam, did you also attend a review course to prepare you for the exam?

Yes

No

Next

For Survey Content Questions,  
contact Lynn Abbiati: [labbati@csuchico.edu](mailto:labbati@csuchico.edu)

For Technical Questions,  
contact Paul Weatherby: [pweatherby@csuchico.edu](mailto:pweatherby@csuchico.edu)

Educational Satisfaction Questions

At Chico State, how satisfied were you with the...

	Very Dissatisfied				Very Satisfied
15. Quality of teaching by faculty in your department	<input type="radio"/>				
16. Quality of teaching by other faculty	<input type="radio"/>				
17. Access to faculty in your department	<input type="radio"/>				
18. Availability of courses in your department	<input type="radio"/>				
19. Quality of courses in your department	<input type="radio"/>				
20. Access to laboratory facilities and equipment	<input type="radio"/>				
21. Quality of laboratories and equipment	<input type="radio"/>				
22. Access to computer facilities	<input type="radio"/>				
23. Quality of computer facilities	<input type="radio"/>				
24. Academic Advising from your major advisor	<input type="radio"/>				
25. Academic Advising from the University Advising Office	<input type="radio"/>				
26. Career information from your department	<input type="radio"/>				
27. Availability of General Education courses	<input type="radio"/>				
28. Quality of General Education courses	<input type="radio"/>				
29. The overall quality of your education	<input type="radio"/>				
30. Your overall experience at Chico State	<input type="radio"/>				

Program Outcomes Questions

Based on your educational experience here at Chico State, how well prepared are you to...

	Very Unprepared				Very Prepared
31. Apply knowledge of math, science, engineering, or technology to solve problems	<input type="radio"/>				
32. Design and conduct experiments	<input type="radio"/>				
33. Analyze and interpret experimental data	<input type="radio"/>				
34. Design a component or system to meet desired needs	<input type="radio"/>				
35. Function in a multidisciplinary team	<input type="radio"/>				
36. Identify, formulate and solve technical problems	<input type="radio"/>				
37. Communicate technical matters in writing	<input type="radio"/>				
38. Communicate technical matters orally	<input type="radio"/>				
39. Understand and apply professional and ethical principles	<input type="radio"/>				
40. Understand contemporary issues facing society	<input type="radio"/>				
41. Use modern tools and technology	<input type="radio"/>				
42. Appreciate impact of your solutions on society and environment	<input type="radio"/>				
43. Continue learning	<input type="radio"/>				
	Strongly Disagree				Strongly Agree
44. I would recommend my major program at CSU, Chico to others.	<input type="radio"/>				

[Next](#)

For Survey Content Questions,  
contact Lynn Abbiati: [labbati@csuchico.edu](mailto:labbati@csuchico.edu)

For Technical Questions,  
contact Paul Weatherby: [pweatherby@csuchico.edu](mailto:pweatherby@csuchico.edu)

45. How satisfied are you with the department support you received while enrolled at Chico State?

- Very dissatisfied
- Somewhat dissatisfied
- Neutral
- Somewhat satisfied
- Very satisfied

46. How often did you meet with someone in the University Advising Office?

- More than once a semester
- Once a semester
- Once a year
- Less than once a year
- Never

47. How often did you meet with your major (departmental) advisor?

- More than once a semester
- Once a semester
- Once a year
- Less than once a year
- Never

48. How would a requirement for your major to purchase a laptop have impacted your decision to come to Chico State?

- Would not have impacted my decision to come
- Minor financial difficulty, but I would have still come
- Major financial difficulty, but I would have still come
- May have prevented me from coming
- Would have definitely prevented me from coming

49. How has the quality of your educational experience varied over the time period you were enrolled at Chico State?

- Quality improved significantly
- Quality improved somewhat
- Quality stayed fairly consistent
- Quality declined somewhat
- Quality decline considerably

50. Permanent e-mail Address ( so we can keep in touch )

You Have 3500 Characters Remaining.

For Survey Content Questions,  
contact Lynn Abbiati: [labbati@csuchico.edu](mailto:labbati@csuchico.edu)

For Technical Questions,  
contact Paul Weatherby: [pweatherby@csuchico.edu](mailto:pweatherby@csuchico.edu)

# Appendix D

## Mechanical Engineering Specific Supplemental Survey Questions

### ECC Graduating Senior Survey Spring 2013



[Back to Admin Home](#)

[Reset Survey](#)

### MENG Supplemental Questions

Based on your educational experience at Chico State, how well prepared are you to:

	Very Unprepared			Very Prepared
1. Communicate manufacturing needs, including tolerances, to a technician	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Write verifiable engineering specifications based on customer needs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Create a Gantt chart for a project	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Identify the critical path for a project	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. Develop a detailed project budget	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. Present information for a design review	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. Prepare and execute an experimental test plan	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. Select hardware and develop software for automated data collection	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. Analyze pressure drop and select a pump for a piping system	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. Select a material for a specific application	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. Use simulation software for stress or heat transfer analysis	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. Verify finite element analysis results through traditional analysis techniques	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13. Solve equations using numerical techniques	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14. Simulate or write equations of the performance of a system	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15. Select machine parts and lubrication for a particular application	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16. Analyze a thermal problem and select a suitable heat exchanger or heat sink	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17. Solve a heat transfer problem using thermal resistances	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18. Select a motor for a particular application	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
19. In the space provided, please provide additional comments that will help faculty to improve the quality of the education they provide.				

You Have 3500 Characters Remaining.

## Appendix E

### Student Evaluation of Teaching (SET) Instrument Spring 2013

# STUDENT INSTRUCTIONAL REPORT



Class Report  
 Subunit: ECC - Mech Engr,  
 Mechatronic Engr, Manufact Tech  
 Course: Measurements and  
 Instrumentation  
 Instructor:  
 Enrollment:  
 Survey Period: Spring 2012

## Assessing Courses and Instruction

PERCENTAGES reported below are based on the total number responding, which is: 7\*

A. Course Organization and Planning	Omit	Not Applicable	5 Very Effective	4 Effective	3 Moderately Effective	2 Somewhat Ineffective	1 Ineffective	Mean
1. The instructor's explanation of the course requirements								
2. The instructor's preparation for each class period								
3. The instructor's command of the subject matter								
4. The instructor's use of class time								
5. The instructor's way of summarizing or emphasizing important points in class								
<b>Overall Mean</b>								

B. Communication	Omit	Not Applicable	5 Very Effective	4 Effective	3 Moderately Effective	2 Somewhat Ineffective	1 Ineffective	Mean
6. The instructor's ability to make clear and understandable presentations								
7. The instructor's command of spoken English (or the language used in the course)								
8. The instructor's use of examples or illustrations to clarify course material								
9. The instructor's use of challenging questions or problems								
10. The instructor's enthusiasm for the course material								
<b>Overall Mean</b>								

C. Faculty/Student Interaction	Omit	Not Applicable	5 Very Effective	4 Effective	3 Moderately Effective	2 Somewhat Ineffective	1 Ineffective	Mean
11. The instructor's helpfulness and responsiveness to students								
12. The instructor's respect for students								
13. The instructor's concern for student progress								
14. The availability of extra help for this class (taking into account the size of the class)								
15. The instructor's willingness to listen to student questions and opinions								
<b>Overall Mean</b>								

D. Assignments, Exams, and Grading	Omit	Not Applicable	5 Very Effective	4 Effective	3 Moderately Effective	2 Somewhat Ineffective	1 Ineffective	Mean
16. The information given to students about how they would be graded								
17. The clarity of exam questions								
18. The exams' coverage of important aspects of the course								
19. The instructor's comments on assignments and exams								
20. The overall quality of the textbook(s)								
21. The helpfulness of assignments in understanding course material								
<b>Overall Mean</b>								

E. Instructional Methods and Materials	Omit	Not Applicable	5 Very Effective	4 Effective	3 Moderately Effective	2 Somewhat Ineffective	1 Ineffective	Mean
22. Problems or questions presented by the instructor for small group discussions								
23. Term paper(s) or project(s)								
24. Laboratory exercises for understanding important course concepts								
25. Assigned projects in which students worked together								
26. Case studies, simulations, or role playing								
27. Course journals or logs required of students								
28. Instructor's use of computers as aids in instruction								
<b>Means are not reported (***) for Instructional Methods</b>								

F. Course Outcomes	Omit	Not Applicable	5 Very Effective	4 Effective	3 Moderately Effective	2 Somewhat Ineffective	1 Ineffective	Mean
29. My learning increased in this course?								
30. I made progress toward achieving course objectives?								
31. My interest in the subject area has increased?								
32. This course helped me to think independently about the subject matter...								
33. This course actively involved me in what I was learning?								
<b>Overall Mean</b>								

G. Student Effort and Involvement	Omit	Not Applicable	5 Very Effective	4 Effective	3 Moderately Effective	2 Somewhat Ineffective	1 Ineffective	Mean
34. I studied and put effort into the course?								
35. I was prepared for each class [writing and reading assignments]?								
36. I was challenged by this course?								
<b>Overall Mean</b>								

H. Course Difficulty, Work Load, and Pace	Omit	Very difficult	Somewhat difficult	About right	Somewhat elementary	Very elementary
37. For my preparation and ability, the level of difficulty of this course was?						
	Omit	Much heavier	Heavier	About the same	Lighter	Much lighter
38. The workload for this course in relation to other courses of equal credit was?						
	Omit	Very fast	Somewhat fast	Just about right	Somewhat slow	Very slow
39. For me, the pace at which the instructor covered the material during the term was?						

I. Overall Evaluation	Omit	5 Very Effective	4 Effective	3 Moderately Effective	2 Somewhat Ineffective	1 Ineffective	Mean
40. Rate the quality of instruction in this course as it contributed to your learning (try to set aside your feelings about the course content):							
<b>Overall Mean</b>							

J. Student Information	Omit	A major/minor requirement	A college requirement	An elective	Other			
41. Which one of the following best describes this course for you?								
	Omit	Freshman-1st year	Sophomore-2nd year	Junior/3rd year	Senior/4th year	Graduate	Other	
42. What is your class level?								
	Omit	Better in English		Better in another language		Equally well in English and another language		
43. Do you communicate better in English or another language?								
	Omit	Female		Male				
44. Sex								
	Omit	A	A-	B+	B	B-	C+	Below C
45. What grade do you expect to receive in this course?								

## Appendix F

### Summary of MECH-MECA Student Evaluation of Teaching (SET) Data Spring 2013

## MEM SET (SIR II) Summary Spring 2013

