



Program: B.S. Program of Mechanical Engineering	Completed By: Dr. Paul P. Lin, Chair
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Goal 1: Ability to apply math, science and engineering knowledge

Outcomes	Research Methods	Findings	Review	Actions
	Instructor's course reflection form	3.89/5.0 > 3.5 (criterion)	by department faculty and chair on a continuous basis	No further actions needed
	Senior exit survey	3.8/5.0 > 3.5 (criterion)	Same as above	Same as above
	Senior design instructor assessment	4.0/5.0 > 3.5 (criterion)	Same as above	Same as above
	Senior design evaluated by ME Advisory Committee (from industry)	3.88/5.0 > 3.5 (criterion)	Same as above	Same as above
	ME alumni survey	N/A	Conducted every three years	

Analysis: The scores from all research methods are consistently high. This is a good indication of the quality of our program.



Goal 2: Ability to perform experimental design and experimental data collection and analysis				
Outcomes	Research Methods	Findings	Review	Actions
	Instructor's course reflection form	3.67/5 > 3.5 (criterion)	by department faculty and chair on a continuous basis	Teach students how to perform experimental data collection and analysis
	Senior exit survey	3.92/5 > 3.5 (criterion)	Same as above	Same as above
	Senior design instructor assessment	5.00/5 < 3.5 (criterion)	Same as above	Same as above
	Senior design evaluated by ME Advisory Committee (from industry)	3.56/5 > 3.5 (criterion)	Same as above	Same as above
	ME alumni survey	N/A	Conducted every three years	

Analysis: The senior exit survey and senior design instructor gave high remarks in this outcome goal. This shows significant improvement over last year's.



Goal 3: Ability to perform engineering design (Thermal/Fluid and Machine Systems)				
Outcomes	Research Methods	Findings	Review	Actions
	Instructor's course reflection form	4.13/5.0 > 3.5 (criterion)	by department faculty and chair on a continuous basis	No further actions taken
	Senior exit survey	4.12/5.0 > 3.5 (criterion)	Same as above	Same as above
	Senior design instructor assessment	3.73/5.0 > 3.5 (criterion)	Same as above	Same as above
	Senior design evaluated by ME Advisory Committee (from industry)	4.06/5.0 > 3.5 (criterion)	Same as above	Same as above
	ME alumni survey		Conducted every three years	

Analysis: The ME advisory committee is very pleased with our continued improvement on the quality of our senior capstone designs.



Goal 4: Multidisciplinary teamwork				
Outcomes	Research Methods	Findings	Review	Actions
	Instructor's course reflection form	4.0/5.0 > 3.5 (criterion)	by department faculty and chair on a continuous basis	Encourage teamwork by giving more group projects
	Senior exit survey	3.67/5.0 = 3.5 (criterion)	Same as above	Same as above
	Senior design instructor assessment	N/A	Same as above	Same as above
	Senior design evaluated by ME Advisory Committee (from industry)	N/A		
	ME alumni survey	N/A	Conducted every three years	

Analysis: Generally speaking, junior and senior courses involved with design projects required teamwork. The senior exit survey indicates that our senior students had experienced plenty multidisciplinary teamwork. Our advisory committee was not asked about the teamwork.



Goal 5: Identification, formulation and solution of engineering problems				
Outcomes	Research Methods	Findings	Review	Actions
	Instructor's course reflection form	4.33/ > 3.5 (criterion)	by department faculty and chair on a continuous basis	No further actions needed
	Senior exit survey	3.83/5 > 3.5 (criterion)	Same as above	Same as above
	Senior design instructor assessment	3.27/5 ~ 3.5 (criterion)	Same as above	Same as above
	Senior design evaluated by ME Advisory Committee (from industry)	3.59/5 > 3.5 (criterion)		
	ME alumni survey	N/A	Conducted every three years	

Analysis: The scores are all very high, especially from the instructor's course reflection. Senior design evaluated by the instructor is slightly below the criterion. However, our ME Advisory Committee gave the same senior design projects a higher score (3.59).



Goal 6: Understanding of professional and ethical responsibility				
Outcomes	Research Methods	Findings	Review	Actions
	Instructor's course reflection form	3.75/5.0 > 3.5 (criterion)	by department faculty and chair on a continuous basis	Requiring every student to take a course called "Engineering Ethics"
	Senior exit survey	4.0/5.0 > 3.5 (criterion)	Same as above	Same as above
	Senior design instructor assessment	N/A	Same as above	Same as above
	Senior design evaluated by ME Advisory Committee (from industry)	N/A		
	ME alumni survey	N/A	Conducted every three years	

Analysis: Understanding of professional and ethical responsibilities can be better observed when the students are working on their senior design projects, and when our alumni engage in engineering practice. In regular courses, other than senior design, instructors often mentioned the importance of professional and ethical responsibility. In addition, all engineering students are required to take a Philosophy course entitled "Engineering Ethics". In terms of professional responsibility, many of our students join ASME, and some join SME and AIAA. The senior design instructor and ME advisory committee did not give scores because they could not evaluate the students' understanding of professional and ethical responsibility.



Goal 7: Communicate effectively				
Outcomes	Research Methods	Findings	Review	Actions
	Instructor's course reflection form	4.0/5.0 > 3.5 (criterion)	by department faculty and chair on a continuous basis	No further actions needed
	Senior exit survey	3.96/5.0 > 3.5 (criterion)	Same as above	Same as above
	Senior design instructor assessment	4.27/5.0 > 3.5 (criterion)	Same as above	Same as above
	Senior design evaluated by ME Advisory Committee (from industry)	4.12/5.0 > 3.5 (criterion)	Same as above	Same as above
	ME alumni survey		Conducted every three years	

Analysis: Communication can be divided into two categories: oral communication and written communication. The ME department recognized the need to enhance our students' writing and presentation skills as early as possible by offering a course entitled "Technical Writing and Communication". This course was implemented in 1999. As a result, our faculty often mentioned that they were pleased with our students' writing and presentation skills.



Goal 8: Understanding of global/social impact of engineering solutions and contemporary issues				
Outcomes	Research Methods	Findings	Review	Actions
	Instructor's course reflection form	3.6/5.0 > 3.5 (criterion)	by department faculty and chair on a continuous basis	Instructors should try to cover these issues in all the classes
	Senior exit survey	3.88/5.0 > 3.5 (criterion)	Same as above	Same as above
	Senior design instructor assessment	N/A		
	Senior design evaluated by ME Advisory Committee (from industry)	N/A		
	ME alumni survey	N/A	Conducted every three years	

Analysis: All assessment tools indicate that perhaps we need to do more in this category, even though they all met the criterion of the outcome. We do not believe that this outcome has a direct link to the quality of our program. Understanding of global/social solution and contemporary issues are perceived as more informational than fundamental.



Goal 9: Need and ability to engage in lifelong learning				
Outcomes	Research Methods	Findings	Review	Actions
	Instructor's course reflection form	3.88/5.0 > 3.5 (criterion)	by department faculty and chair on a continuous basis	Encourage students to pursue advanced degrees
	Senior exit survey	3.76/5.0 > 3.5 (criterion)	Same as above	Same as above
	Senior design instructor assessment	N/A		
	Senior design evaluated by ME Advisory Committee (from industry)	N/A		
	ME alumni survey	N/A	Conducted every three years	

Analysis: While students are still in school, we try to educate them the importance of lifelong learning by encouraging them to do literature search through internet, and participating professional organization conferences and meetings.



Goal 10: Modern engineering practice				
Outcomes	Research Methods	Findings	Review	Actions
	Instructor's course reflection form	4.29/5 > 3.5 (criterion)	by department faculty and chair on a continuous basis	No further actions needed
	Senior exit survey	3.72/5 > 3.5 (criterion)	Same as above	Same as above
	Senior design instructor assessment	3.82/5 > 3.5 (criterion)	Same as above	Same as above
	Senior design evaluated by ME Advisory Committee (from industry)	3.71/5 > 3.5 (criterion)	Same as above	Same as above
	ME alumni survey	N/A	Conducted every three years	

Analysis: The course instructors gave highest scores. Our advisory committee also gave a good score.



Conclusion

Overall, the B.S. program of Mechanical Engineering offers a very solid program that is constantly reviewed and updated. All the program outcomes set forth by the department about four years ago have been successfully achieved. In particular, our students' ability to conduct experiments and their communication skills showed significant improvement over last year's.