ABET Preparation Handout #4
Faculty Guide for using the
"Student Outcomes Assessment Spreadsheet"

This guide explains how to use the "Student Outcomes Assessment Spreadsheet" (enclosed on page 4 of this handout) as the grading spreadsheet for each ABET course. The data from the grading spreadsheet from each course is used by the Department to determine the program's overall effectiveness achieving Student Outcomes.

The spreadsheet details the relationship between assignments associated with Student Outcomes and determines the level of achievement of Student Outcomes for a single course in a program.

Excerpts of the example spreadsheet are included in the narrative.

1. Use your normal grading system for the class with the Student Outcomes Assessment Spreadsheet.

To use this spreadsheet, fill out the parts in green - everything else should take care of itself.

The grade sheet uses faculty assigned weighting factors for each test and homework assignment in the. The maximum possible points is the weighting factor * 100.

		HW1	HW2	HW3	HW4	HW5	HW6	HW7	HW8	HW9	HW10	HW11	FINAL EXAM		
ABET Student (Yes/No)	Student Name	Descriptive Title of HW [100]	Descriptive Title of HW [100]	Descriptive Title of HW [100]	Descriptive Title of HW [100]	Descriptive Title of HW [100]	Descriptive Title of HW [100]	Descriptive Title of HW [100]	Descriptive Title of HW [150]	Descriptive Title of HW [100]	Descriptive Title of HW [100]	Descriptive Title of HW [100]	FINAL EXAM [300]	Assigned Grade	Overall Percent
		92	93	98	93	90	90	89	130	92	88	87	275	A-	91%
		92	86	88	90	40	80	0	0	94	0	70	240	C-	61%
		100	94	100	98	90	98	81	130	95	90	95	280	A	93%
		92	88	94	93	97	95	93	130	94	90	95	285	A	93%
		90	95	97	94	90	95	93	135	95	92	94	282	A	93%
		100	95	90	86	0	93	94	120	90	0	92	275	B-	78%
		92	86	85	88	95	88	90	135	92	93	85	261	A-	89%
		83	80	86	93	91	88	90	130	93	95	87	265	HP	88%
		95	90	100	98	0	88	90	137	95	100	96	295	HP	89%
		100	96	90	91	90	92	78	135	93	90	90	270	A-	91%
		80	94	98	97	0	94	98	145	93	100	95	282	HP	88%
		100	95	100	98	91	97	94	135	93	100	100	288	H	96%
	weighting factor	1	1	1	1	1	1.0	1	1.5	1.0	1.0	1.00	3.0		

2. Assign a fractional component of the outcomes associated with this particular course to each relevant graded exercise.

	HW1	HW2	HW3	HW4	HW5	HW6	HW7	HW8	HW9	HW10	HW11	FINAL EXAM	
ABET Outcome													Percent of Course
1					0.5		0.5				0.75		12.1%
2													0.0%
3		0.5				0.5		0.5	0.5			0.2	19.7%
4	1	0.5	1	0.5	0.5								24.1%
5				0.5			0.5					0.4	15.2%
6								0.5		0.5	0.5	0.5	22.4%
7									0.5			0.2	7.6%
(should sum to 1)	1	1	1	1	1	1	1	1	1	1	1	1	101%

This last column shows how much of the a-k goes into the course grade. This will be useful information for evaluating our program.

3. These fractional components determine the percentage of the course devoted to each outcome.

Ex:
% outcome a in a specific course =

$$\frac{(50\%\ HW5)(1\ wt.factor\ HW5)+(50\%\ Exam\ 1)(1\ wt.factor\ Exam\ 1)+(75\%\ Exam\ 2)(1\ wt.factor\ Exam2)}{Total\ of\ wt.factors}$$

$$= \frac{(0.5)(1)+(0.5)(1)+(0.75)(1)}{14.5} = 12.1\ \%$$

4. Establish numerical threshold for Unsatisfactory/ Acceptable/ Exemplary performance in this course.

Please enter performance cutoff percentages below. These are the numbers that determine the cutoff between Unsatisfactory, Acceptable, and Exemplary.

Cutoff Percentages	
80	Unsatisfactory
95	Exemplary

Breakdown of Student Performance by Assignment

*Each column should add up to the number of students in the course.

	Descriptive Title of HW [100]	Descriptive Title of HW [100]	Descriptive Title of HW [100]	Descriptive Title of HW [100]	Descriptive Title of HW [100]	Descriptive Title of HW [100]	Descriptive Title of HW [100]	Descriptive Title of HW [150]	Descriptive Title of HW [100]	Descriptive Title of HW [100]	Descriptive Title of HW [100]	FINAL EXAM [300]
Unsatisfactory	0	0	0	0	4	0	2	1	0	2	1	0
Acceptable	7	8	6	8	6	8	9	10	9	6	6	9
Exemplary	5	4	6	4	2	4	1	1	3	4	5	3

5. The number of students in each performance category is calculated by the spreadsheet for each graded assignment/exam.

6. A summary of the class performance in each relevant outcome is calculated by the spreadsheet based on scores in the relevant assignments as:

Level of Performance =

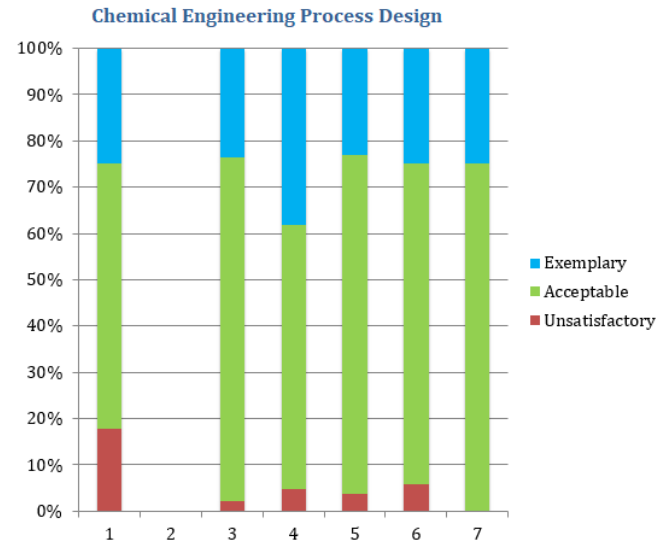
$$\frac{\sum(\#unsat\ students\ in\ ea.relevant\ assig)(fract.component\ of\ this\ assig.of\ this\ outcome)(wt\ factor\ of\ the\ relevant\ assig)}{(total\ \#\ students)(\%\ of\ outcome\ in\ the\ course)(total\ weighing\ factor)}$$

$$= \frac{(4)(0.5)(1)+(2)(0.5)(1)+(1)(0.75)(1)}{(12)(0.121)(14.5)} = 18\%$$

7. The spreadsheet quantifies the levels of performance for each outcome in the course:

Results: Course Summary for: CENG 416 (S 2018)

*If the chart does not appear, please select the tabular data on the right of the chart and insert your own column chart.



Outcome	Unsatisfactory	Acceptable	Exemplary	Total
1	18%	57%	25%	100%
2	0%	0%	0%	0%
3	2%	74%	24%	100%
4	5%	57%	38%	100%
5	4%	73%	23%	100%
6	6%	69%	25%	100%
7	0%	75%	25%	100%

Note that 1-7 items not evaluated (i.e., no entries in the matrix) do not have a column in the graph.

Sample Spreadsheet for MENG 285 (Introduction to Material Science)

YALE SCHOOL OF ENGINEERING AND APPLIED SCIENCE

MECHANICAL ENGINEERING ABET OUTCOME REVIEW

This spread sheet template tracks achievement of the ABET Student Outcomes.
To use this spreadsheet, fill out the parts in green - everything else should take care of itself.

ABET Student Outcomes:

(a) apply knowledge of mathematics, science, and engineering
(b) an ability to design and conduct experiments, as well as to analyze and interpret data
(c) design a system, component, or process to meet desired goals
(d) an ability to function on a multi-disciplinary team
(e) identify, formulate, and solve engineering problems
(f) understand professional and ethical responsibility
(g) communicate effectively
(h) the broad education necessary to understand the impact of engineering solutions in a global and societal context
(i) recognize the need for life-long learning
(j) a knowledge of contemporary issues
(k) use modern engineering tools necessary for engineering practice

Course Number:	MENG 285
Course Name:	Introduction to Material Science

To use this spreadsheet, fill out the parts in green - everything else should take care of itself.

The grade sheet uses faculty assigned weighting factors for each test and homework assignment in the. The maximum possible points is the weighting factor * 100.

		HW1	HW2	HW3	HW4	HW5	HW6	HW7	HW8	HW9	HW10	HW11	FINAL EXAM		
ABET Student (Yes/No)	Student Name	Descriptive Title of HW [100]	Descriptive Title of HW [100]	Descriptive Title of HW [100]	Descriptive Title of HW [100]	Descriptive Title of HW [100]	Descriptive Title of HW [100]	Descriptive Title of HW [100]	Descriptive Title of HW [150]	Descriptive Title of HW [100]	Descriptive Title of HW [100]	Descriptive Title of HW [100]	FINAL EXAM [300]	Assigned Grade	Overall Percent
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		100	95	100	98	91	97	94	135	93	100	100	288	H	96%
	weighting factor	1	1	1	1	1	1.0	1	1.5	1.0	1.0	1.00	3.0		

Please assign a fraction of a-k to each assignment. Since there are weekly assignments, it is not necessary to break things down to the level of individual problems. If there were only a midterm and a final, that might be appropriate.
Please scroll right to view the table in its entirety.

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(should sum to 1)	1	1	1	1	1	1	1	1	1	1	1	1	101%

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Exemplary	5	4	6	4	2	4	1	1	3	4	5	3

Results: Course Summary for: MENG 285

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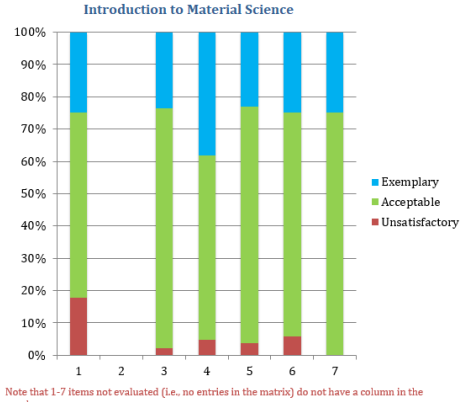

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6	6%	69%	25%	100%
7	0%	75%	25%	100%

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