

MECHANICAL ENGINEERING PROGRAM ASSESSMENT PLAN

Program Learning Objectives

The faculty has identified specific program outcomes that can be tied to the ABET outcomes (letters in {} refer to the 11 canonical outcomes (a)-(k) provided by ABET):

1. The ability to identify problems that can be reduced to engineering problems, and to distinguish them from those that cannot (for example: technological vs. societal). {e, f, h, j}
2. The ability to formulate engineering problems. {e}
3. The ability to identify and successfully apply the appropriate tools (analytical, computational or experimental) for solution of engineering problems. {a, b, k}
4. The ability to recognize and deal with novel situations in engineering practice, both technological and societal, including the ability to acquire new knowledge as needed. {d, e, h, i, j,k}
5. The ability to design, individually or in groups, systems or processes to address specific needs, which implies the ability to understand needs phrased in a nontechnical manner, and the ability to explain one's solution and the process by which it was reached to lay clients. {b, c, d, e, f, g, h}

Relationship between ABET outcomes and required ME courses. (Courses listed in programmatic order.)

Course	a	b	c	d	e	f	g	h	i	j	k
110											
120											
121	X				X						X
123	X			X	X		X	X		X	X
226	X		X	X	X		X				X
211	X		X		X		X				X
225	X				X						X
280	X	X	X	X	X		X		X		X
223	X		X	X	X	X	X	X			
241	X	X		X	X		X		X		X
204											
242	X	X	X	X	X		X		X		X
251											
205											
213	X	X	X	X			X				X

Program Assessment Methods

Each course has its individual outcomes. The course outcomes support the program outcomes. The tables show the relationship between the individual course outcomes and the five program objectives. The numbers in the table show which course outcomes address each specific program outcome. For example, outcome 12 of ME 121 addresses program outcome 1. Courses above the heavy line are freshman and sophomore courses.

program outcome	1	2	3	4	5
course					
ME 104Q		1	1-8, 10	8,9	9,11
ME 110					
ME 120			1-3	4	
ME 121	12	4-11	1-3	4,12	
ME 123	3	1-3	1-4		5
ME 226		1	2-5,7		6
ME 211		2	1-5	6	3-5
ME 223	4	1, 7	2-3, 5	6	6-10
ME 225	6	1,3,5-6	2,4,7	8	
ME 241	4	4	1,3	7	2,6,7
ME 280		1-4	5	7	5-6
ME 204	8	3	1-2,4-5		6-8
ME 205			11	1	2-10, 12-14
ME 213	5	1	2-4		5-7
ME 242		2	1-3	5	4-5
ME 251	5	1-3	2-3	5	4-7

Course assessments (direct):

The only opportunity that we have to evaluate directly the achievement of outcomes is at the course level. We believe that achievement of course outcomes (not grades) assures the achievement of program outcomes. The use of projects with final oral and poster presentations in many of the upper level courses (ME 211, 205, 213, 241, 242) gives us a continuing awareness of what our colleagues are doing in their courses. We have further faculty interaction through the lab courses (ME 241 and 242): faculty often propose experimental projects that are then carried out in the labs. This provides direct, cross-departmental assessment of all five program objectives.

Each faculty member is expected to assess the outcomes for his/her course(s). The five program outcomes were distilled from recommendations provided by faculty familiar with each course. The entire faculty is aware of the outcomes expected from each course, and has agreed to address these specific outcomes when teaching these courses. It is important to note that pedagogic methods are not prescribed. Full allowance is made for different teaching styles and possibly different methods of assessment.

Course evaluations (indirect):

In addition to assessment of the achievement of outcomes based on actual student performance many members of the faculty use the College-supplied Student Course Evaluation Questionnaire (SCOQ) process to supplement the information. Provision is made for “Instructor-Supplied Questions”. Every class may participate in this process.

EBI Engineering Senior Exit Survey (indirect):

In addition to the internal assessments by the faculty, we have some comparative data from the EBI survey described in the previous criterion.

