

Proposed Remapping of BME Courses to Student Outcomes

Background:

- The definition of Student Outcomes (SOs) has changed in the last year. See the list provided at the end.
- The SOs are further broken down into performance indicators (PIs), so technically we will be remapping courses into PIs (also given at the end).
- The mapping of a specific course to a specific SO/PI must be assessed (through FCARs), so it is in our best interest to keep the map consistent with what we are teaching and assessing. Linking courses to random SOs will likely backfire (plus it's more work).
- Curriculum committee met in March to redefine how the (core) BME classes should be mapped.
- We were guided by the principle that each course should map into a small number of SOs/PIs that are robust with respect to instructor changes.
- If more than one class maps into a specific SO/PI, the class that is more senior (closer to graduation) carries more weight for assessment (this is per ABET recommendations). Ergo, if you are teaching a junior and especially a senior class, please make sure that your assessments are sound.

Table 1: Current mapping of BME courses into SOs and the proposed changes in mapping to both SOs and PIs

Course	Current SOs ¹	Proposed SOs	Proposed PIs
BME1	(d) (e) (f) (g) (j)	(f) (h) (j)	f1, h1, j1
BME50A	(a) (b) (c) (f) (h) (j) (k)	(a)	a2
BME50B	(a) (b) (c) (e) (f) (h) (j) (k)	(a)	a2
BME60A	NA	(a) (k)	a2, k1
BME60B	NA	(a) (e) (k)	a2, e2, k2
BME60C	NA	(a) (k)	a2, k3
BME110A	(a) (b) (e) (k)	(a)	a1, a3
BME110B	(a) (k)	(a)	a1, a3
BME110C	(a) (b) (c) (d) (e) (f) (g) (h) (i) (j) (k)	(a)	a1, a3
BME111	(a) (b) (c) (d) (e) (f) (g) (h) (i) (j) (k)	(a)	a2
BME120	(a) (c) (e) (g)	(a) (i)	a2, i1
BME121	(a) (c) (e) (f) (g) (h) (i) (j) (k)	(a) (d) (i)	a2, d1, d2, d3, d4, i1
BME130	(a) (b) (k)	(a) (k)	a1, k2
BME135	(a) (k)	no recommendations	no recommendations
BME136	(a) (e) (h) (i) (j) (k)	no recommendations	no recommendations
BME137	(a) (b) (c) (e) (f) (g) (k)	no recommendations	no recommendations
BME140	(a) (b)	(a) (b) (k)	a3, b1, b2, b3, k1, k2
BME146	(a) (e) (k)	no recommendations	no recommendations
BME150	(a) (c) (g) (h) (i) (j) (k)	(a) (e)	a1, a3, e2
BME160	(a) (b) (c) (d) (e) (f) (g) (h) (i) (j) (k)	(a) (f) (j)	a2, f1, j1
BME170	(a) (b) (d) (e) (f) (g) (k)	(b) (g) (k)	b1, b2, b3, g2, k1
BME180A	(a) (b) (c) (d) (e) (f) (g) (h) (i) (j) (k)	(a) (c) (d) (e) (f) (g) (h) (k)	a3, c1, d1, d2, d3, d4, e1, f1, g1, h1, k3
BME180B	(a) (b) (c) (d) (e) (f) (g) (h) (i) (j) (k)	(a) (c) (d) (e) (f) (g) (h) (k)	a3, c1, d1, d2, d3, d4, e1, f1, g1, h1, k3
BME180C	(a) (b) (c) (d) (e) (f) (g) (h) (i) (j) (k)	(a) (c) (d) (e) (f) (g) (h) (k)	a3, c1, d1, d2, d3, d4, e1, f1, g1, h1, k3

BME core courses

New courses

BME electives

¹ SOs were previously referred to as Program Outcomes

Student Outcomes and the Corresponding Performance Indicators

- (a) **An ability to apply knowledge of mathematics, science, and engineering.**
 - (a1) Students can apply knowledge of mathematics to problems in Biomedical Engineering.
 - (a2) Students can apply knowledge of science to problems in Biomedical Engineering.
 - (a3) Students can apply knowledge of engineering to problems in Biomedical Engineering.
- (b) **An ability to design and conduct experiments, as well as to analyze and interpret data.**
 - (b1) Students can design biomedically relevant experiments.
 - (b2) Students can conduct biomedically relevant experiments.
 - (b3) Students can analyze and interpret data from biomedically relevant experiments (including living systems).
- (c) **An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.**
 - (c1) Students can design a biomedical system to meet desired needs within realistic constraints.
- (d) **An ability to function on multidisciplinary teams.**
 - (d1) Students understand team and project objectives.
 - (d2) Students combine skills and methods from different disciplines.
 - (d3) Students participate in team activities.
 - (d4) Students complete assigned duties.
- (e) **An ability to identify, formulate, and solve engineering problems.**
 - (e1) Students can identify and formulate biomedical engineering problems.
 - (e2) Students can develop a solution to biomedical engineering problems.
- (f) **An understanding of professional and ethical responsibility.**
 - (f1) Students understand professional and ethical responsibility required of engineers.
 - (f2) Students understand professional and ethical responsibility specific to health-related fields.
- (g) **An ability to communicate effectively.**
 - (g1) Students can communicate orally technical issues related to biomedical engineering.
 - (g2) Students can communicate in writing technical issues related to biomedical engineering.
- (h) **The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context.**
 - (h1) Students understand the impact of biomedical engineering solutions in economic, environmental, and societal context, both locally and globally.
- (i) **A recognition of the need for, and an ability to engage in life-long learning.**
 - (i1) Students can access resources to solve open-ended biomedical problems.
- (j) **A knowledge of contemporary issues.**
 - (j1) Students understand contemporary biomedical issues in economic, environmental, and societal context.
- (k) **An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.**
 - (k1) Students can collect data from biomedical systems.
 - (k2) Use software tools to model biomedical systems, and analyze and interpret biomedical data.
 - (k3) Students are proficient in using computer-aided design tools for biomedical applications.