

Faculty Survey: Program Outcomes for the Curriculum

Course _____ Instructor _____

To be sure that we are prepared to meet the new accreditation criteria for ABET, the faculty has agreed on a set of outcomes we expect our undergraduate program to attain. The next step in this process is a preliminary assessment to determine where in our program we are helping our students to reach those outcomes. That's what this survey is for; it will provide valuable information for enabling us to make our IE major even better. Please fill out a survey for **each course you teach** to students in the major. **But before you fill out the survey, please read the following directions.**

Directions

Filling out the survey

Each of the following statements or questions contains a set of choices. Select the choice(s) that applies to your course. If no choices apply to your course, don't select any. **Please remember that the outcomes are defined for the program as a whole, not for each individual class.** The two main items you need to consider for each outcome are kinds of teaching practice and kinds of assignments.

Kinds of teaching practice

If you address any of the identified outcomes in your course, you will be asked what kind of teaching practice you use to teach that outcome. Generally speaking, there are three kinds of teaching practices (which can be applied individually or in various combinations).

- **Opportunity for practice** means that you create situations in or outside the classroom that provide students the occasions to develop the ability in question.
- **Direct instruction** means that you teach students the generalizable principles and concepts that underlie the ability in question.
- **Guided practice** means that you give students feedback during the process (directed assistance, advice, suggestions, preliminary evaluation) before evaluating the final outcome.

For the survey, select one or more of the kinds of teaching practices you normally use in your class.

Kinds of assignments

For each of the program outcomes, you will be asked to identify the kinds of assignments you give students to help them learn and/or demonstrate the ability in question. Select one or more of the kinds of assignments you normally make in your class. And if you make assignments not listed in the choices, please describe them under **other**.

Survey

1. The ability to apply general principles, theories, concepts, and/or formulas from science, mathematics, and engineering to engineering problems:

- You provide **opportunity for practice** **direct instruction** **guided practice** for your students to help them develop ability (a).
- You assign and evaluate work to help students learn and/or provide them the opportunity to demonstrate ability (a): **homework sets** **tests** **class projects** **collaborative class activities**.

Other _____

- Do you make any assignments that specifically ask students to:
 1. Define and describe the pertinent principles and appropriate assumptions, theories, concepts, and/or formulas to be applied to an engineering problem;
 Yes **No**
 2. Explain how they are appropriate to the problem;
 Yes **No**
 3. Demonstrate how they have been applied in the solution of the problem?
 Yes **No**

2. The ability to design and conduct experiments as well as analyze and interpret data:

- You provide **opportunity for practice** **direct instruction** **guided practice** for your students to help them develop the ability to design experiments (develop a hypothesis, define variables, and establish an experimental method to test the hypothesis).
- You assign and evaluate work to help students learn and/or provide them the opportunity to demonstrate the ability to design experiments: **homework sets** **tests** **laboratory reports** **class projects**

Other _____

- You provide **opportunity for practice** **direct instruction** **guided practice** for your students to help them develop the ability to conduct experiments and analyze and interpret data.

Other _____

- You assign and evaluate work to help students learn and/or provide them the opportunity to demonstrate the ability to conduct experiments and analyze and interpret data: **laboratory reports** **laboratory presentations** **laboratory notebooks**

Other _____

3. The ability to design a system, component, or process to meet desired needs:

- You provide **opportunity for practice** **direct instruction** in the design process **guided practice** the design process for your students to help them develop ability (c).
- You assign and evaluate work to help students learn and/or provide them the opportunity to demonstrate the ability to design **a system** **a component** or **a process::** **homework sets** **class projects** **collaborative class activities** **technical reports** **technical presentation** **posters** **design notebooks**

Other _____

- Do you make any assignments that specifically ask students to keep a design process log for a design project?

Yes **No**

4. The ability to function on multi-disciplinary teams:

- You provide **opportunity for practice** of teamwork skills **direct instruction** in teamwork skills **guided practice** in teamwork skills for your students to help them develop this ability.
- You assign and evaluate work to help students learn and/or provide them the opportunity to demonstrate this ability: **collaborative class activities** **collaborative homework sets** **class projects** **design projects**.

Other _____

- Do you specifically ask students to write a peer evaluation of their teamwork experience?

Yes **No**

5. The ability to identify, formulate, and solve engineering problems:

- You provide **opportunity for practice** **direct instruction** **guided practice** for your students to help them develop specifically the ability to recognize and define engineering problems.
- You provide **opportunity for practice** **direct instruction** **guided practice** for your students to help them develop specifically the ability to analyze or partition problems (into what is given, what is known, and what is unknown).
- You provide **opportunity for practice** **direct instruction** **guided practice** for your students to help them develop specifically the ability to represent problems in visual formats.
- You assign and evaluate work to help students learn and/or provide them the opportunity to demonstrate the ability to recognize and define, analyze and represent engineering problems: **homework sets** **tests** **class projects** **brainstorming notes** **design notebooks**.

Other _____

- You provide **opportunity for practice** **direct instruction** **guided practice** for your students to help them develop the ability to create technical visuals (graphs, charts, tables, equations, drawings, presentational graphics, etc.).

6. An understanding of professional and ethical responsibility:

- You provide **opportunity for practice** **direct instruction** **guided practice** for your students to encourage the development of this understanding.
- You assign and evaluate work to encourage the development of this understanding:
 homework sets **collaborative class activities** **class projects** **design notebooks.**

Other _____

- Do you make any assignments that specifically ask students to:
 1. Identify the ethical issues pertinent to a project,
 2. Generate ethical criteria related to the project,
 3. Incorporate those criteria in the justification of the final outcome of the project, and
 4. Argue effectively for the responsibility of the project engineer in maintaining the optimal balance between the contending forces of utility, cost, and risks.

Yes **No**

7. The ability to communicate effectively:

- You provide **opportunity for practice** **direct instruction** **guided practice** for your students to help them develop the ability to write and/or speak in the professional discourses of engineering.
- You assign and evaluate work to help students learn and/or provide them the opportunity to demonstrate the ability to write and/or speak in the professional discourses of engineering:
 laboratory report **progress report** **technical report** **technical presentation.**

Other _____

- You provide **opportunity for practice** **direct instruction** **guided practice** for your students to help them develop the ability to summarize technical material.
- You assign and evaluate work to help students learn and/or provide them the opportunity to demonstrate the ability to summarize technical material: **laboratory report**
 abstracts **executive summaries** **literature reviews.**

Other _____

- You provide **opportunity for practice** **direct instruction** **guided practice** for your students to help them develop the ability to communicate successfully for obtaining and maintaining employment.

- You assign and evaluate work to help students learn and/or provide them the opportunity to demonstrate the ability to communicate successfully for obtaining and maintaining employment:
 resumes **letters of application** **mock job interviews** **memos** **professional letters** **email messages** **proposals** **various reports** (progress, personnel, maintenance, etc.) **oral presentations** to a variety of audiences.

Other _____

8. Understanding the impact of engineering solutions in a global and societal context.

9. A recognition of the need to engage in life-long learning:

- You provide **opportunity for practice** **direct instruction** **guided practice** for your students to help them use the critical information-seeking tools that enable engineers to continue to stay up to date in their profession: **internet resources** **engineering journals** **U.S. and foreign patent materials** **standards** **literature bases.**

Other _____

- You specifically encourage your students to become actively involved in the profession:
 join an engineering society **achieve and maintain professional registration for engineers** **become involved in continuing education.**

Other _____

10. A knowledge of contemporary issues.

11. The ability to use the techniques, skills, and modern engineering tools necessary for engineering practice:

- You provide **opportunity for practice** **direct instruction** **guided practice** for your students to help them use modern engineering tools: **computer-based analysis** **computer-aided design** **solids modeling** *production 2-D drawings* **engineering graphics literacy** **presentation skills and graphical displays** **computer literacy.**

Other _____