ABET Student Learning Outcomes with Performance Criteria

Performance criteria used to measure the student achievement of each outcome are shown below the learning outcome.

Upon graduation, students are expected to have
1. an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics

    Students should
    - Define and articulate a complex problem in engineering terms.
    - Research and collect information pertaining to the problem.
    - Select appropriate math, science, and engineering methods to solve the problem, and apply those methods to reach a solution.
    - Evaluate the solution effectiveness and modify if needed.

2. an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors

    Students should
    - Based on an identified need, define a problem statement in engineering terms.
    - Develop design specifications (materials, geometry, operating parameters, etc.)
    - Generate design concepts for a system, component or process and perform analysis and verification. Select the best design.
    - Incorporate public health, safety, welfare, and environmental concerns in design decisions.
    - Perform a simple economic analysis of the design
    - Evaluate global, cultural and social considerations in design and/or manufacturing

3. an ability to communicate effectively with a range of audiences

    Students should
    - Produce reports and presentations that use clear and correct language and terminology to describe context, methodology, results, and conclusions.
    - Produce reports and presentations of appropriate length (time) and technical breadth and depth for a given audience and setting.
    - Produce reports and presentations that use clear and effective visuals to supplement written or verbal descriptions.

4. an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts

Students should

- Demonstrate knowledge of a professional code of ethics and apply it to a real engineering problem.
- Describe and explain the ways in which the engineering profession and work products can impact society and the environment.
- Use proper citations to properly acknowledge other people's work.

5. an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives

   Students should
   - Participate in project management, including assigning tasks to team members, developing a schedule, tracking progress, and adjusting the project schedule as needed to ensure completion.
   - Participate fully in team work, meet commitments and due dates, and contribute quality work to the project.
   - Treat all team members respectfully, communicate professionally and consistently, encourage and listen to ideas from all team members, and avoid and resolve conflicts when appropriate.

6. an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions

   Student should
   - Design an experiment to acquire data by determining the data to measure and formulating an experimental methodology.
   - Select appropriate measurement equipment, perform calibration, and acquire measurements.
   - Analyze the data, evaluate the accuracy of the results, and draw conclusions or make predictions.

7. an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

   Students should
   - Demonstrate the ability to access and utilize information from external sources, including vetting sources for validity and synthesizing information from multiple sources.
   - Learn to use CAD software and simulators (ANSYS, Solidworks, Matlab, etc.) and apply them to solve engineering problems