



## School of Engineering Assessment Plan For University Compliance

### Guiding Principles on Assessment

The University of Dayton considers assessment to be an integral component of the daily operations of every unit on campus, both in the classroom setting and outside of the classroom. All units at UD engage in some form of assessment. Units continually evaluate the success of their efforts and view assessment as a tool rather than a target. The definition of “unit” is left to the discretion of the deans and vice presidents – whatever is appropriate for their situation. A unit might be a department, a program, or a function. Faculty or staff could conceivably belong to more than one unit for the purposes of assessment.

The School of Engineering assessment process is designed to satisfy both our ABET professional assessment requirements and those of the University. Our plan is to use the ABET assessment tools currently in place and use the data from our internal annual assessment reports for each program to map to the University outcomes. ABET specifies that every engineering program must assess outcomes a through k as a minimum.

Our approach to satisfying the University Assessment requirements is to select two University level outcomes per year, map the appropriate ABET outcome data, and use our annual ABET assessment data to assess the University outcome.

### Goals/Outcomes

#### Learning outcomes

The UAC has adopted a set of seven university-wide overarching learning outcomes as guidelines for units to follow when drafting their student learning goals. These university-level goals were taken from the *Habits of Inquiry and Reflection* document approved by the academic senate. Each of the seven overarching objectives will be covered by at least one unit or activity on campus. No one unit will be expected to cover all seven objectives.

Even though these outcomes are worded in the context of the undergraduate student experience, that does not diminish the importance of the graduate student experience at UD. Assessment of graduate programs are conducted by the academic units in conjunction with assessments of their undergraduate programs. Units identify separate learning outcomes for their graduate programs.

The overarching objectives are as follows:

1. Scholarship: All undergraduates will develop and demonstrate advanced habits of academic inquiry and creativity through the production of a body of artistic, scholarly or community-based work intended for public presentation and defense.
2. Faith traditions: All undergraduates will develop and demonstrate ability to engage in intellectually informed, appreciative, and critical inquiry regarding major faith traditions. Students will be familiar with the basic theological understandings and central texts that shape Catholic beliefs and teachings, practices, and spiritualities. Students' abilities should be developed sufficiently to allow them to examine deeply their own faith commitments and also to participate intelligently and respectfully in dialogue with other traditions.
3. Diversity: All undergraduates will develop and demonstrate intellectually informed, appreciative, and critical understanding of the cultures, histories, times, and places of multiple others, as marked by class, race, gender, ethnicity, religion, nationality, sexual orientation, and other manifestations of difference. Students' understanding will reflect scholarly inquiry, experiential immersion, and disciplined reflection.
4. Community: All undergraduates will develop and demonstrate understanding of and practice in the values and skills necessary for learning, living, and working in communities of support and challenge. These values and skills include accepting difference, resolving conflicts peacefully, and promoting reconciliation; they encompass productive, discerning, creative, and respectful collaboration with persons from diverse backgrounds and perspectives for the common purpose of learning, service, and leadership that aim at just social transformation. Students will demonstrate these values and skills on campus and in the Dayton region as part of their preparation for global citizenship.
5. Practical wisdom: All undergraduates will develop and demonstrate practical wisdom in addressing real human problems and deep human needs, drawing upon advanced knowledge, values, and skills in their chosen profession or major course of study. Starting with a conception of human flourishing, students will be able to define and diagnose symptoms, relationships, and problems clearly and intelligently, construct and evaluate possible solutions, thoughtfully select and implement solutions, and critically reflect on the process in light of actual consequences.
6. Critical evaluation of our times: Through multidisciplinary study, all undergraduates will develop and demonstrate habits of inquiry and reflection, informed by familiarity with Catholic Social Teaching, that equip them to evaluate critically and imaginatively the ethical, historical, social, political, technological, economic, and ecological challenges of their times in light of the past.
7. Vocation: Using appropriate scholarly and communal resources, all undergraduates will develop and demonstrate ability to articulate reflectively the purposes of their life and proposed work through the language of vocation. In collaboration with the

university community, students' developing vocational plans will exhibit appreciation of the fullness of human life, including its intellectual, ethical, spiritual, aesthetic, social, emotional, and bodily dimensions, and will examine both the interdependence of self and community and the responsibility to live in service of others.

### ABET outcomes

Each program accredited by ABET must demonstrate that their students attain the following outcomes:

- a) An ability to apply knowledge of mathematics, science, and engineering
- b) An ability to design and conduct experiments, as well as to analyze and interpret data
- 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
- d) An ability to function on multi-disciplinary teams
- e) An ability to identify, formulate, and solve engineering problems
- f) An understanding of professional and ethical responsibility
- g) An ability to communicate effectively
- h) The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context
- i) A recognition of the need for, and an ability to engage in life-long learning
- j) A knowledge of contemporary issues
- k) An ability to use the techniques, skills and modern engineering tools necessary for engineering practice.

Table 1 shows the mapping of the ABET outcomes to the University Learning Outcomes.

| University Outcome     | ABET Outcomes |   |   |   |   |   |   |   |   |   |   |
|------------------------|---------------|---|---|---|---|---|---|---|---|---|---|
|                        | a             | b | c | d | e | f | g | h | i | j | k |
| Scholarship            | x             | x | x |   |   |   |   |   | x |   |   |
| Faith Traditions       |               |   |   |   |   |   |   | x |   |   |   |
| Diversity              |               |   |   |   |   |   |   |   |   | x |   |
| Community              |               |   |   | x |   | x | x | x |   |   |   |
| Practical Wisdom       |               |   |   |   | x |   |   |   | x |   |   |
| Critical Eval of times |               |   |   |   |   |   |   | x |   |   |   |
| Vocation               |               |   |   |   |   | x | x |   | x |   | x |

Table 1. ABET/University Outcome Mapping.

### Other goals/objectives

We also have requirements to assess the effectiveness of our advising and the capability of our facilities to support our mission.

## Organization of Assessment Activities in SOE

### Assessment and Continuous Improvement (ACI) Committee

The Dean has established the ACI committee to coordinate assessment activities in the School of Engineering (SOE). This committee is composed of faculty members from each engineering program and is chaired by an Assistant Dean. The Chair of the ACI committee is also the representative to the University Assessment Committee.

### Assessment Schedule for SOE

Table 2 lists the proposed assessment schedule for SOE.

| Year  | University Outcomes | Data Source   | Comments   |
|-------|---------------------|---|--|
| 06-07 | 1 & 5               | CME, MEE, CEE<br>mid-term reports                                 | Baseline data based on current reporting<br>Baseline report will be available by Jan 31<br>2008. |
| 07-08 | 6 & 7               | CME, MEE, CEE,<br>ECE, Tech, annual<br>reports                    | Pilot year for all programs  |
| 08-09 | 2 & 4               | CME, MEE, CEE,<br>ECE, Tech, annual<br>reports                    |  |
| 09-10 | 1, 3 & 5            | CME, MEE, CEE,<br>ECE, Tech, ABET<br>Self Studies (visit<br>year) |  |
| 10-11 | 6 & 7               | CME, MEE, CEE,<br>ECE, Tech, annual<br>reports                    |  |
| 11-12 | 2 & 4               | CME, MEE, CEE,<br>ECE, Tech, annual<br>reports                    |  |
| 12-13 | 1, 3 & 5            | CME, MEE, CEE,<br>ECE, Tech, annual<br>reports                    |  |
| 13-14 | 6 & 7               | CME, MEE, CEE,<br>ECE, Tech, annual<br>reports                    |  |
| 14-15 | 2 & 4               | CME, MEE, CEE,<br>ECE, Tech, annual<br>reports                    |  |

|       |          |  |                           |
|-------|----------|--|---------------------------|
| 15-16 | 1, 3 & 5 | CME, MEE, CEE, ECE, Tech, ABET Self Studies (Visit Year) | Projected ABET Visit Year |
| 16-17 | 6 & 7    | CME, MEE, CEE, ECE, Tech, annual reports                 | NCA-HLC Visit Year        |

**Table 2. SOE Assessment Schedule.**



## Report Template

### Actions Taken As a Result of Assessment

Department / Program / Unit / Activity:

Date submitted:

1. Outcome/objective/goal reviewed:
  
2. Changes made since the last time this goal was reviewed: (If this was the first time this goal was reviewed skip to question 4.)
  
3. What prompted those changes? (previous assessment results, discussions with colleagues, etc) Were the changes effective?
  
4. After reviewing the assessment results the department/program/unit has decided to:
  - Stay the course and continue to monitor; we're satisfied that this goal is being met
  - Monitor the results and investigate causes; we may need to make changes in the future; we don't have enough information to make an informed decision yet
  - Make changes (list below)
  - Other:

Comments:

5. Changes to goal itself –  
After working with this particular goal the department/program/unit has decided to:
  - Keep the wording of this goal as is and keep the same measures
  - Keep the wording of this goal but use different measures next time (list below)
  - Keep these same measures but change the wording of the goal (list below)
  - Change the wording of the goal *and* change the measures used (list below)
  - Drop this goal entirely (list reason below)

Comments: