



degree program. A suggested manageable number of outcomes should be in the range of five to ten. Describe Program Learning Outcomes review activities\*.

Program Learning Outcomes were reviewed and revalidated in 2004. One new outcome was added. Learning outcomes were reviewed and approved by the program advisory committee.

\* Note: Every department is required to review Master Syllabi and Program Learning Outcomes a minimum of every two years.

An entry-level graduate with an Associate of Applied Science Degree in Industrial Design & Graphic Technology from Sinclair Community College will be able to:

Learning Outcomes	Related Courses
1. Communicate effectively, orally, in writing and graphically, on an interdisciplinary team, as a design technician using appropriate CADD tools.	DRT 110, 196, 198, 199, 200, 217, 234, 240, 250, 260, 265, 270, 278; COM 206; ENG 121, 122
2. Organize and Manage: As an interdisciplinary team member empowered to develop products, processes, solve problems, project planning, time estimates, ethics and make sound decisions.	COM 206; IET 125; MET 198; DRT 200, 240, 250, 260, 270, 278
3. Design in detail individual parts from functional sketches provided by an engineer, and model them using a three-dimensional geometric modeler. (i.e, 3D CAD)	INT 109, 113; MAT 131, 132; PHY 131; MET 203, 207; DRT 110, 200, 217, 234, 240, 250, 260, 270, 278
4. Analyze parts for important product properties: Use mathematical and scientific skills to analyze product properties including form, function, fit, strength, thermal, fluid, etc.	INT 109, 113; MAT 131, 132; PHY 131, 132; MET 203, 207; DRT 110, 200, 217, 234, 240, 250, 260, 265, 278
5. Desk-top manufacturing of models, or patterns using solid model data as input to drive rapid prototyping or N/C machining equipment.	MET 198; DRT 196, DRT 198, 199, 200, 255, 260, 265, 278

Learning Outcomes	Related Courses
6. Document the product/process model using appropriate means. (multi-view drawings, pictorials, catalog/manual illustrations, charts/graphs, shaded image, animation, etc.)	MET 198; DRT 196, 198, 199, 200, 240, 250, 260, 265, 270, 278
7. Recognize professional, ethical and societal responsibilities, respect diversity and commit to life long learning.	DRT 110, 200, 234, 240, 250, 278; IET 125; COM 206; SOC ELE; HUM ELE

**III. Assessment Method(s):** A measurable indicator of success in attaining the stated learning outcome(s). The methodology should be both reliable and valid. Please describe in detail.

- a. **Formative Assessment Method(s) and Description:** a measurable indicator of student in-progress success in attaining the stated learning outcome(s).

Formative assessment methods are a part of the continuous improvement plan developed for the TAC-ABET accreditation evaluator. Program faculty are moving towards more direct measure of program outcomes. Formative assessment is conducted on a course-by-course basis. A variety of activities are used: examinations, projects, etc. The faculty have the freedom to select course assessment activities which are appropriate to the content. Most courses are project oriented. There are some examples of end-of-sequence courses. For example DRT 198, 199 and 200 are sequenced courses and students do well in 200 only if they've performed well in the earlier classes. Faculty are exploring a third quarter/formal formative assessment process in the 200 class to verify that learning is taking place and that program outcomes are being met for courses previously taken.

- b. **Summative Assessment Method(s) and Description:** A measurable indicator of end-of-program success in attaining the stated program learning outcome(s).

Summative assessment is completed through, DRT 278, Drafting and Design Technologies Capstone. It is a lab-based, team-oriented design project with both written and oral presentations.

Divisional core competencies are assessed as graduates complete a self-analysis of their growth in these areas. This data is used as a part of the DRT program assessment process.

The department chair interviews each graduate and that data is included in the DRT program assessment process.

Additional data is required for TAC-ABET accreditation. Institutional Planning and Research assisted with the data gathering needs of accreditation.

**IV. Results:** A description of the actual results of overall student performance gathered from the summative assessment(s). (see III.b.)

As a result of the TAC-ABET self study process changes were made to course sequencing and a calculus courses was added to the program requirements.

Students who graduate are ready for design jobs. They are hard to keep until they graduate. Students come with diverse career goals or may be majors in other Engineering programs. Some students reach certain skill levels, become employable and drop out due to success in the program, and met their personal goals. There are between 100-200 DRT majors, but very few graduates. There are some indications that the time needed to complete the program prompts students who are employable to drop out of the program before graduation.

**V. Analysis/Actions:** From analysis of your summative assessment results, do you plan to or have you made any adjustments to your program learning outcomes, methodologies, curriculum, etc.? If yes, describe. If no, explain.

In conjunction with the program advisory committee program objectives were formally established and program outcomes and master syllabi were updated and revised to meet TAC-ABET criterion. Course sequencing was also modified to provide a clearer graduation path for students. Courses were added to help meet TAC-ABET requirements

Faculty meet at a yearly summer retreat to review assessment data related to the divisional core competencies, capstone course, and graduate and employer feedback from IPR. This analysis is used by faculty as the basis for review of program outcomes and course master syllabi.

Faculty continue to monitor the professional knowledge base in the field and modify course content as necessary.

The department Continuous Improvement Plan, developed as a part of the TAC-ABET process, guides the program in the curriculum change process.

**VI. General Education:** A description of where and how within the major the three primary general education outcomes\* (communication, thinking, values/citizenship/community) are assessed.

- a. Where within the major do you assess written communication? Describe the assessment method(s) used. Describe assessment results if available.

Written communication is part of the program learning outcomes; written reports are required in many of the courses. The capstone course includes a written report. The department has identified specific courses where the student must be assessed for either written or oral communication skills. Faculty are encouraged to use the Gen Ed checklist.

- b. Where within the major do you assess oral communication? Describe the assessment method(s) used. Describe assessment results if available.

Oral communication is part of the program learning outcomes; oral presentations are required in many of the courses. The capstone course includes an oral presentation. The department has identified specific courses where the student must be assessed for either written or oral communication skills. Faculty are encouraged to use the Gen Ed checklist.

- c. Where within the major do you assess thinking? Thinking might include inventing new problems, seeing relationships and/or implications, respecting other approaches, demonstrating clarity and/or integrity, or recognizing assumptions. Describe the assessment method(s) used. Describe assessment results if available.

Creative and analytical thinking is embedded in all courses. It is assessed formatively in all courses and summatively in the capstone course.

- d. Where within the major do you assess values/citizenship/community? These activities might include behaviors, perspective, awareness, responsibility, teamwork, ethical/professional standards, service learning or community participation. Describe the assessment method(s) used. Describe assessment results if available.

A new program outcome specifically related to this area was added in 2004. This program outcome is emphasized in several courses and evaluated in the capstone course. Faculty within the department practice role modeling in order to convey Professional behaviors to students. Faculty members continue to work to integrate the Core Competencies of the Engineering & Industrial Technology Division, including citizenship, professionalism and life-long learning into the curriculum