



The program learning outcomes were last reviewed in 2001. The program outcomes have not been changed since they were first defined.

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

<b>Learning Outcomes</b>	<b>Related Courses</b>
1. Demonstrate technical engineering skills appropriate to program requirements.	IET 101, 115, 111, 135; IET electives; DRT 106; QET 101, 201; EGR 115
2. Analyze engineering problems (general and technical) and make appropriate decisions.	IET 101, 111, 115, 135; EGR 206
3. Demonstrate science and mathematical skills required for occupational needs.	MAT 131, 132, 133; PHY 131, 132
4. Demonstrate the principles of industrial engineering technology through application of the computer.	IET 198; DRT 198; MET 198
5. Use sound business practices in relation to people management.	IET 126; PSY 229
6. Identify new changes in career field and build personal skills to maintain state-of-the-art competencies.	IET 110, 130, 201, 202, 205, 207
7. Demonstrate applied and theoretical techniques in the areas of process engineering and facilities layout.	IET 101, 130, 201, 202, 205, 207, 216
8. Demonstrate appropriate technical communication skills (written, verbal, and drawing).	ENG 111, 121, 122; DRT 106, 198; MET 918; COM 211

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 is completed on a course-by-course basis. PLA 106 and 150 assess student learning through tests and written reports. Other courses in the program use a combination of labs and teamwork activities. In lab, students complete exercises and projects. The classes are usually small so teamwork is particularly appropriate for group work.

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

Summative assessment for the plastics/composites program is in progress. The program currently has approximately 20 students. A capstone course will eventually be used for summative assessment. For the first few students, a cooperative education internship was required so that the department chair could observe student skills and abilities in the workplace. The department will use the internship option until the capstone course is in place.

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

Informal feedback indicates that students do well. All graduates are fully employed. Students are actively recruited from the program.

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.

The Plastics and Composites program typically draws students who are already active in that employment area. Most of the entering students have a strong, but limited practice base, with very little theory. Younger students (Tech Prep) don't typically enroll in this program, although the department would like to be able to attract younger students. Employers who approach the program for employees are very pleased with the students' knowledge and skills and, as a result, continue to send job descriptions seeking additional employees.

Some of the courses have been modified through use of student feedback. Courses now include more hands-on, authentic learning tasks. Recycling was added to PLA 106 by student request. Also, more emphasis is being placed on the mold design, assembly, and safety of plastics manufacturing. Information is being gathered to include a future course on composites to enhance the entire program.

Students enrolled in the program have three options. Many of the students who are enrolled in this program take a few plastics courses to enhance their job skills based on current employment needs. Several of them are interested in the certificate program, and the local Society of Plastics Engineers is encouraging Sinclair to develop and promote certificates. The local employers want to have graduates in this area, but they would prefer emphasis on more plastics/composites content and reduce general education, mathematics, and science requirements. Local employers want technicians but don't often value a generally educated employee. Finally, students may choose to pursue an associate degree.

The department has discussed offering the plastics/composites as a short-term certificate program consisting of six Plastics courses. Employers often send students to the program for cross-training purposes or to develop trouble-shooting skills. Other students are enrolled in order to acquire training that would help them get promoted. Another scenario is the employer wants the student trained in an attempt to flatten the organization. All of these examples speak to the continued need for some short-term training in the Plastics industry.

The program has a strong plastics piece; it does, however, need to place more emphasis on developing the composites part of the curriculum. Information is being gathered to include a future course on composites to enhance the entire program.

**VI. General Education:** Are you using any tool(s) to assess any of the three primary general education outcomes\* (communication, thinking, values/citizenship)? If so, describe.

Because the Plastics and Composites curriculum is linked to the IET curriculum, there is an emphasis on general education as mandated by ABET. Oral and written communication skills, critical thinking and problem-solving skills are all required.

Student choice on sequencing and completion of courses does impact the attention that the department can give to general education skill development.

None of the departmental faculty uses the general education checklists which have been developed by the college.

Engineering and Industrial Technologies Core Competencies have been integrated into the curriculum.

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

Employers don't encourage completion of the general education courses so most students do not take the English courses.

None of the departmental faculty uses the general education checklists which have been developed by the college.

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

Students give oral presentations related to specific projects. Teamwork activities encourage oral communication development.

None of the departmental faculty uses the general education checklists which have been developed by the college.

- 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.

The courses in the Plastics program often require design and problem solving skills. Open-ended projects are used requiring students to think independently of the instructor.

- 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.

The department assists students to learn professional behaviors such as being on time, meeting deadlines, and coming prepared. These are tied to course assessment. Course content also addresses the ethics, responsibility and liability of modes of failure. The department is exploring the feasibility of establishing student chapters of the Society of Manufacturing Engineers and the Society of Plastics Engineers.

- \* Note: The oral communication checklist and the written communication checklist developed by the General Education Committee were adopted for college-wide use during the 1997-98 academic year by Academic Council. Thinking Guidelines developed by the General Education Committee are being piloted by faculty during the 1998-99 academic year.