

Another major influence on the QET program comes from Advisory Committee members. Several new advisory members have been added during the past year. In addition, faculty expertise coupled with input from major employers such as Delphi, Wright Patterson Air Force Base, and Meade have influenced the development of the program.

The national expectations of employers has changed resulting in a need for quality professionals to be able to deal with productivity improvements, waste reduction, and safety issues. The program faculty plan to review and revise the curriculum to reflect these national trends.

Master syllabi were last reviewed in 2000.

- II. Program Learning Outcomes:** A description of what you intend for students to know (cognitive), think/feel (affective), or do (psychomotor), when they have completed your degree program. A suggested manageable number of outcomes should be in the range of five to ten. Describe Program Learning Outcomes review activities.*

Learning Outcomes will be reviewed and revised as a part of the planned curriculum review to reflect changing national trends in the field.

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

Learning Outcomes	Related Courses
1. Demonstrate the basic laws of applied chemistry and physics.	QET 105, 111, 112, 113, 120, 131
2. Develop a continual improvement system.	QET 101, 201, 221, 295
3. Describe the impact of cultural diversity.	EGR/HUM 132; MET 104
4. Design a complete quality system.	QET 221, 223, 224, 231
5. Apply reliability management techniques.	QET 211
6. Employ appropriate technical communication techniques.	ENG 121, 122, 113; DRT 196, 198; social science elective, MET 104, QET 102, 201, 211, 295
7. Apply systematic problem solving to the solution of technical problems.	QET 101; MAT 131, 132; MET 198; QET M30, QET 201, 295

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

Learning Outcomes	Related Courses
1. Demonstrate the basic laws of applied chemistry and physics.	QET 105, 111, 112, 113, 120, 132; PHY 131, 133; CHE 131
2. Develop a Continual Improvement Program.	QET 101, 201, 221
3. Study the impact of cultural diversity.	EGR 132; MET 104
4. Design a complete quality system.	QET 221
5. Apply reliability management techniques.	QET 211, 212
6. Employ appropriate technical communication techniques.	COM 206 or 211; ENG 121, 122, 113; DRT 196, 198; social science elective, MET 104, QET 102, 201, 211
7. Apply systematic problem solving to the solution of technical problems.	QET 101; IET 198; MAT 131, 132, 133; MET 198; QET M30, 201

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. Students in MET 104 complete small projects. All 200-level courses incorporate teamwork and some 100-level courses do also. Hands-on labs are used in nearly every course. The QET 131-132-134 sequence has labs where students use equipment to do materials testing. Students are also assessed through tests and quizzes. Eleven NCE/AME modules have been adopted in the program. Projects at the end of courses frequently integrate contexts across several courses.

- 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 is completed through capstone courses. The Quality Assurance Option (QASO) uses QET 211 and 212 as capstones. In these courses students are required to complete a project in which they apply previously acquired knowledge and skills. Students examine a product and determine the design capability with respect to the failure modes, effect analyses, and a study of the criticality of failures. Students work in teams and are assessed on their contributions as a team member as well as their individual contributions.

Students who are taking the core QET program complete QET 295, Quality Seminar. Students work on interventions, selecting a problem, and designing an intervention plan. Projects focus on solving a major problem in the student's company or in society. Students also complete a written research paper and develop and present an oral report.

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

QET 295 has been offered for three years. The course has evolved in response to national trends in the field. Student response has been positive and they view the application of problem solving skills as quite valuable. Feedback from employers is also positive. Approximately 30% of the capstone projects have been implemented at the student's workplace. The current Spring 2002 class has had 100% implementation of the projects.

In QET 211, 212 students do well in the course assessments. Students work on a project and apply their techniques in class. Students and employers concur this is a valuable learning activity.

There is consistently good feedback from employers. Those students in the QASO and QET programs do exceptionally well. Graduates have a high employment rate.

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 department has incorporated more outcomes based assessment within the curriculum. Eleven of the NSF modules are now included in the curriculum. Faculty plan to revise the program curriculum during the next academic year in anticipation of the new TAC/ABET outcomes based assessment methods.

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.

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

Writing is reinforced throughout the program through the use of required written laboratory reports in every QET lab course. Research papers are also required in some classes. The QET department rubric is used to assess group presentations in four courses within the program.

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

Oral communication skills are emphasized through the Communications general education requirement. The department had previously discussed changing the Communications requirement to COM 206 (Interpersonal Communication) from COM 211(Speech) but has decided to give students a choice. The QET department rubric is used to assess group presentations within four courses in the program.

- 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.

Students have to apply problem-solving skills in all QET courses. Students work with ill-structured, complex, and contextual problems.

- 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.

Values/community/citizenship skills are reinforced through informal discussions in courses. Professionalism and ethics are a part of MET 104 and QET 221. Students use teamwork self-assessment.

* 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 were piloted by faculty during the 1998-99 academic year.