

There is an active advisory committee for the SRM degree programs. Members include representatives from OSHA (Occupational Safety and Health Administration), the OEPA (Ohio Environmental Protection Agency), and local government and industry representatives.

In 2002 the Safety Engineering Technology department was selected as an OSHA regional training center for six Midwestern states. This training began in the fall of 2003. Seventeen courses were developed and are being offered through the Mid-America OSHA Training Center at Sinclair. These courses are offered at various locations throughout the six states as well as through the Internet. In 2003 these seventeen courses were included in two new short-term certificates: Construction Safety and General Industry Safety. Sinclair and Ohio Valley Construction Education Foundation combined to form the Mid-American OSHA Education Center in 2003.

There are currently about 45 students in the SRM program.

The master syllabi were reviewed in 2004.

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

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*.

Safety Engineering Technology program learning outcomes were reviewed in 2004.

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

Learning Outcomes	Related Courses in CMT Database
1. Apply mathematics, chemistry, biology, and physics to the technology.	
2. Conduct an accident investigation and recommend appropriate corrective measures.	
3. Conduct job safety analysis to determine and resolve hazards.	

Learning Outcomes	Related Courses in CMT Database
4. Recognize/evaluate/control environmental conditions that can have adverse effects on health or safety.	
5. Develop and manage a safety risk program.	
6. Anticipate, recognize and control hazards in the workplace.	
7. Recognize, understand and comply with federal and state occupational, safety and health standards, and environmental regulations.	
8. Be proficient in handling hazardous situations, responding to hazardous chemical spills, preparing hazardous wastes for transportation and protecting the environment.	

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

Formative assessment is primarily accomplished through course-by-course evaluation in the SRM program. Students are assessed through completion of course projects that usually consist of working in a team with a deliverable to be completed by the end of the quarter. The projects are designed for students to experience tools and resources that would be used in actual practice. Some projects are completed individually. Course projects may include activities such as field trips, site assessments, compliance assessments, and pollution prevention surveys. Many projects require written reports and oral presentations. Checklists are used for team evaluations for peer and faculty review.

Faculty continue to develop formative, classroom based assessment of the Engineering Core Competencies on a course by course basis focusing especially on professionalism, communication and citizenship.

- b. **Summative Assessment Methods:** a measurable indicator of end-of-program success in attaining the stated program learning outcomes.

Summative assessment is completed via the capstone, SRM 278. Students must incorporate aspects of safety engineering technology in this course. The course is organized so that the students operate as a contractor team and must divide the work and make sure that each necessary aspect is completed. Because they must operate as a team, this capstone builds group skills as well. Evaluation for the course is based on a checklist, which the instructor shares with students when the project is assigned. Course requirements also include an oral presentation from each student on their piece of the project. Evaluation is given as a group grade. Students are also expected to network with the community by demonstrating their skills to potential employers. This helps students build confidence in their job skills.

Students who completed SRM 278 have completed different capstone projects. Recently, one SRM 278 class completed an evaluation study of the Voluntary Protection Safety program initiated and piloted by OSHA during the Great American Ball Park construction. Students identified success factors and initiated cost assessment for a life-cycle costing of a safety program.

A formal survey of employers was conducted in 2004 to evaluate the program outcomes and suggestions regarding local industry needs were included in the review of the Safety Engineering program outcomes. Exit interviews have been conducted with most graduating students who consistently relate their belief this is a great program. The students indicated that some courses were not offered when they needed them and, based on this feedback, the program course offerings have been adjusted. Also, some students are utilizing College Without Walls to meet their course needs.

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

Results indicated that students needed to be more prepared to apply fundamental engineering principles to safety. The department faculty members have integrated more math, science and quality engineering into the program coursework to enable students to have enough preparation to complete what is asked of them in the capstone.

Student projects from SRM 278 are shared at the Engineering Advisory Committees meeting and receive positive feedback.

Curriculum changes were shared with and evaluated by the Advisory Committee and their comments were incorporated into 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.

Faculty are working to prepare students to transfer to four-year institutions and changes were made to the curriculum to facilitate this goal.

Graduates are increasingly recruited by the community due to active publicity of the program and increased participation by OSHA in industrial safety.

The department faculty reviewed program outcomes and made changes to the curriculum based upon a review of standards of the Board of Certified Safety Professionals and the American Society of Safety Engineers as well as the general criteria of the TAC-ABET self-study.

Curriculum changes were shared with and evaluated by the Advisory Committee and their comments were incorporated into the program.

- 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 exercises are included and assessed in all required technical courses in this program. Emphasis on general education skills is on a course-by-course basis and the individual instructor evaluates these skills. Some faculty utilize their own rubrics to assess written communication.

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

Oral skills are practiced through team discussion and team reports in SRM 101, 211, 212, 221, 222, and 278 and EVT 110 and 200.

The evaluation checklist for oral communication is currently used in SRM and required EVT courses.

- 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.

All SRM and required EVT courses include creative thinking and problem solving exercises. Students use thinking skills in SRM 101 to explain concepts. Students

discuss controversial issues in EVT 110 and 200. Students complete essay questions involving critical thinking in SRM 101, 211, 212, and 222. Students use critical thinking skills to complete a case study in SRM 215 and 217.

- 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.

Many SRM and EVT courses, especially EVT 200, EVT 110, SRM 211, SRM 212, and SRM 22 involve teamwork. Some courses take students out into the community through field trips and research, which involve local organizations. Outside speakers are used extensively in SRM 101, SRM 278 and EVT 110 from community organizations like OSHA and the EPA. Students do peer assessment of participation related to team work.

Faculty members have integrated the Core Competencies of the Engineering & Industrial Technology Division, including citizenship, professionalism and life-long learning, into the curriculum.