

The department has four certificate programs: (a) Rescue Technician Certificate, (b) Firefighter Technician (Firefighter II training), (c) Fire Science Technology, and (d) Fire Administration. The Firefighter Technician Certificate also includes a course in Fire Safety Inspector. These certificates serve training needs in four categories: volunteer, experienced firefighters, rescue technicians, and private fire protection.

Also, basic emergency rescue courses are taught for BERT certification (Basic Emergency Rescue Technician) in a nine module format. The BERT modules have been articulated as FST courses and are included in the Rescue Technician Certificate.

Many curriculum changes have taken place in the past two years. SRM 151 (OSHA 1910.120 Hazardous Waste Operations) replaced. SRM 151 is more comprehensive in terms of understanding and handling of hazardous materials. Firefighter certificate (Level II) is not part of the Fire Science Technology degree, but some of the credits earned for that certificate can be substituted for courses required in the fire administration option. Other anticipated changes include a fire instructor course, a safety officer course and a fire brigade course (currently SRM 297 courses). A new course, FST 181, Firefighter Level I, was approved. This course combined FST 191, Firefighter Level IA, and FST 192, Firefighter Level IB, and falls in line with new state requirements. FST 191 and 192 are still available. Five new courses have been developed and approved: FST 209, Fire Safety Instructor, was developed to meet State of Ohio certification requirements. FST 251, 252, 253, and 254, Fire Officer I, II, III, and IV, were developed to meet NFPA Standard 1021.

The Master Syllabi were reviewed in 2001.

There is an Advisory Committee for the fire science programs. Feedback from members (mostly local chiefs) concerns both the quality of the program and the new working relationship that Sinclair has with the community due to the new training facility. The department follows up on all Advisory Committee concerns. Sinclair's work with the Alliance enhances the quality of the training and insures compliance with state and local requirements.

- 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*.

Program learning outcomes for this program have not changed, but the courses related to the outcomes have been revised. These revisions were prompted by prerequisite issues and the lack of student preparedness in some courses. Prerequisite courses have been added to the curriculum and linked to the appropriate learning outcomes. These changes have helped to clarify the differences in course requirements between the fire science options so that students can acquire appropriate background for entry level job skills.

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

Learning Outcomes	Related Courses
1. Apply chemistry, mathematics, and physics to solve fire protection problems.	CHE 131 or 141; PHY 131 or 141; 132 or 142; MAT 131 or 116; 132 or 117
2. Use the computer to solve fire protection problems.	FST 103, 201, 204, 210
3. Apply/interpret the National Fire Codes in reviewing plans and detection and suppression systems.	FST 103, 116, 117, 202, 204, 210; SRM 230
4. Evaluate flammables and combustible liquids, solids, and gasses using appropriate scientific test equipment.	FST 101, 204, 210; SRM 151
5. Understand the characteristics of hazardous materials to ensure safe handling, transporting, and storage as well as to deal effectively with spills and fires involving them.	FST 101, 103; SRM 151, 230
6. Investigate a fire to determine point of origin and cause of the fire.	FST 101, 125, 202
7. Develop an understanding of the principles of managing a fire protection organization.	FST 102, 103, 218; PLS 101; SRM 221, 222
8. Apply the principles of fire protection in solving safety problems within the community.	FST 270

An entry-level graduate with an Associate of Applied Science degree in Fire Science Technology, Fire Science Administration option, from Sinclair Community College will be able to:

Learning Outcomes	Related Courses
1. Apply mathematics concepts to solve fire protection problems.	MAT 102, 116, 122
2. Use the computer to solve fire protection problems.	FST 201, 202,204, 210; MET 198
3. Apply/interpret the National Fire Codes in reviewing plans and detection and suppression systems.	FST 115, 116, 202, 204

Learning Outcomes	Related Courses
4. Evaluate flammables and combustible liquids, solids, and gasses using appropriate scientific test equipment.	FST 102, 204
5. Understand the characteristics of hazardous materials to ensure safe handling, transporting, and storage as well as to deal effectively with spills and fires involving them.	FST 102, 204; SRM 151
6. Investigate a fire to determine point of origin and cause of the fire.	FST 120, 125, 202
7. Develop an understanding of the principles of managing a fire protection organization.	FST 201, 251, 252, 253, 254; MAN 205; PLS 103, 104; ACC 111
8. Apply the principles of fire protection in solving safety problems within the community.	FST 120, 125, 200, 251, 252, 253, 254; SRM 151
9. Understand the administrative workings of a fire department including budget preparation, resource allocation, long range planning, and fiscal projections.	FST 251, 252, 253, 254; ECO 201; MAT 122

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).

The FST program includes formative assessment practices using activity-based methods. Students in FST 103 (Fire Prevention Fundamentals, Codes & Ordinances) participate in fire inspections; students in FST 125 (Fire Investigation Procedures) are out in the community to complete fire investigations; FST 204 (Water Suppression Systems I) includes hands-on projects to utilize fire code research and the National Fire Protection Association (NFPA); FST 251-254 (Fire Officer I-IV) include simulation exercises and group interactions and extensive use of Fire Command and Tactical simulations. Formative assessment is also based on course-by-course evaluations and grades.

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

FST 210 (Water Suppression Systems II) and FST 218 (Fire Safety Plans Review) are used for summative assessment of the Fire Science Technology program. FST 254 (Fire Officer IV) is used for summative assessment of the Fire Science Administration Option. Students are asked to provide solutions to problems which would be encountered in the workplace; students typically will need to draw on content from previous courses in order to do well in the class. The FST 206-207 sequence uses simulation exercises and group interactions.

The FST program is in the process of being accredited by the National Board on Fire Service Professional Qualifications as a training organization for the fire officer series, Fire

Officer I to IV. The FST program will be the first training organization in the State of Ohio to receive this Pro Board certification.

The pass rate on the Firefighter I and II examinations, Fire Safety Inspectors examination, and Fire Safety Instructor certification is close to 100%.

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

There are a limited number of students who are enrolled in the capstone courses of the Fire Science programs (usually 4 or 5). It is rare that a student would fail a capstone course.

Informal feedback from students indicates that the capstone courses (especially FST 206) are useful for them in their job setting. Students also report that they have improved communication skills and a greater understanding of the operation of their fire department.

Level II training, followed by SRM 151 (which has OSHA certificate embedded in it) builds team skills. The trainees become a close group and are very team-oriented when they finish the program. Team building is achieved within the context of what they need to learn to be effective in the workplace.

Students who have completed the Fire Science Administration Option report they have a much better chance of promotion with that option than with the technical option. The department keeps a list of both Fire Science Technology and Administration Option graduates.

The FST Department students have a 99 percent passing rate on the State Certification exam. Passing the exam is required to be a certified firefighter.

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 continue to monitor professional changes and developments in the field at both the national and state levels.

Through the leadership of the Miami Valley Fire/EMS Alliance Sinclair has standardized training throughout the Miami Valley.

Career fire fighters see medics as fire-fighting medics. SCC is providing the necessary training so that all Firefighters II's can be certified at least as first-level paramedics. Many local employers desire full paramedic certification for all firefighters. The fire fighter certificate includes emergency medical services courses. The FST department is also involved in training paramedics to be firefighters.

SRM 151 was added to the FST curriculum to insure that all Level II firefighters are OSHA certified in hazardous waste operations .

The department has developed courses for Fire Officer I, II, III and IV certification. Presently the power to award these certifications is only held by the State of Ohio. The department is seeking national accreditation for SCC to award these certificates.

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.

Writing is required and evaluated in every course. Most courses require a term paper or a project paper. FST 254 requires a written capstone project.

- 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 required in some of the courses. Courses that require oral presentations include FST 206, 207, 208 (Incident Command System II), and FST 251, 252, 253, and 254 (Fire Officer I-IV). Courses that require small group communication skills for teamwork include FST 180, 181, 191, 192 and 193 (Volunteer Firefighter and Firefighter I and II). Students in FST 193 must communicate effectively while wearing a mask. Evaluation of these skills is on faculty-by-faculty basis.

- 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.

Thinking skills are evident in every course, especially the Firefighter II training. Problem solving and creative thinking are emphasized in FST 206, 207, 208, 251, 252, 253, and 254. A city model is used to simulate interactive roles where students are given a complex problem to solve. Students in FST 253 and 254 address a variety of complex administrative issues.

Courses involving national codes and standards now involve the student in using computers, the Internet, CD ROM, and other high technology vehicles.

- 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.

Elements of values/citizenship/community are included in all courses. Safety issues are included in all courses. Students must work as teams in all courses. A military-type training environment, which builds character, trust and discipline, is used in the practical skills courses (FST 180 and 190 series).

- * 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.