Safety Program Assessment Plan

5220.04.2.1

The mission of the safety program at Illinois State University is to prepare graduates who will serve society as competent and ethical safety and health professionals. The undergraduate program is designed to develop the broad skill set and intellectual confidence that is required by individuals who seek to manage loss in an increasingly diverse global economy. Resources and energy are devoted to creating student-centered learning opportunities that are based upon a foundation of mathematics and science, emphasizing the technological, management, and ethical aspects of a career in safety and health, and preparing graduates to function as effective collaborators and leaders.

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Chapter 1: Program Educational Objectives (PEOs)

The professional objectives of the safety program at Illinois State University are to prepare graduates who, within five years of graduating, will have independently demonstrated:

1. Efficient risk management within their organization. Our graduates critically identify and assess recognized hazards according to accepted standards and best practices, develop and implement creative hazard control strategies, and anticipate unrecognized hazards and conditions as new technologies, processes, and industries emerge.
2. Effective communication of safety and health issues within their organization or local/regional/global industry sector. Our graduates can advocate the development of new loss prevention and control programs to multiple stakeholders. They are recognized for the quality of their written reports, presentations and training programs.
3. Characteristics of effective leadership within their organization or local/regional/global industry sector. Our graduates adhere to ethical safety and health practices. They supervise entry-level safety and health professionals, manage committees, conduct investigations and serve as a professional resource for their peers.
4. Continued professional growth and pursuit of life-long learning in an ever-changing global economy. Our graduates attain professional certification, are active members within their professional member societies, and continuously seek to integrate new knowledge into the practice of safety and health.

Chapter 2: Student Learning Outcomes (SLOs)

The learning outcomes for students in the safety program at Illinois State University support curricula that will prepare graduates with the knowledge and skill to apply college algebra, statistics, chemistry, physics, and human physiology as it pertains to the practice of the safety, health, and environmental discipline. At the time of graduation, students in the safety program at Illinois State University will be able to:

a. apply knowledge of mathematics, science, and applied sciences to the anticipation, recognition, evaluation, and development of control strategies for hazardous conditions and work practices;
b. conduct experiments and accident/incident investigations, as well as analyze and interpret data;
c. design and evaluate safety, health, and/or environmental programs to meet desired needs;
d. function on multidisciplinary teams;
e. identify and solve applied sciences problems using fundamental aspects of safety, industrial hygiene, environmental science, fire science, hazardous materials, emergency management, ergonomics and/or human factors;
f. discuss the importance of professional and ethical responsibility;
g. communicate effectively in writing, oral presentation, and the application of adult learning theory to safety training methodologies;
h. discuss the impact of business and risk management solutions in a global or societal context;
i. recognize the need for and ability to engage in life-long learning;
j. identify contemporary safety and health issues and apply relevant standards, regulations, and codes or best practices, and;
k. apply principles of safety and health in a non-academic setting through a supervised, professional practice experience.

Table 1: Relationship Between ISU Student Learning Outcomes, ABET General Criteria for Student Outcomes, ABET Program Criteria For Safety and Similarly Named Applied Science Programs, and ISU Safety Program Educational Objectives

			Efficient risk management within organizations			
				Effective communication of safety and health issues…		
					Characteristics of effective leadership…	
						Continued professional growth…
ISU, SLO	**ABET,** General	**ABET,** Safety	**ISU,** PEO 1	**ISU,** PEO 2	**ISU,** PEO 3	**ISU,** PEO 4
a.	*a.*	*1*	✓			
b.	*b.*	*7*	✓			
c.	*c.*	*4*	✓			
d.	*d.*			✓	✓	
e.	*e.*	*3*	✓			
f.	*f.*				✓	
g.	*g.*	*5*		✓	✓	
h.	*h.*	*2*	✓	✓		
i.	*i.*					✓
j.	*j.*	*6*	✓			
k.	*k.*	*8*				✓

Table 2: ISU Student Learning Outcomes Mapping for ISU Safety Curriculum

	Required Courses												***Electives***		
SLO	**248**	**271**	**359**	**362**	**370**	**372**	**378**	**380**	**381**	**382**	**385**	**398**	**272**	**383**	**384**
a.	✓	✓	✓	✓		✓		✓	✓	✓	✓	✓	✓	✓	✓
b.	✓		✓	✓		✓	✓			✓	✓	✓			
c.		✓			✓	✓	✓	✓	✓	✓		✓		✓	✓
d.				✓			✓			✓		✓			
e.	✓	✓	✓	✓			✓	✓	✓		✓	✓	✓	✓	✓
f.	✓							✓				✓			
g.	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
h.							✓			✓	✓				
i.								✓	✓			✓	✓		
j.	✓	✓	✓		✓			✓	✓	✓		✓	✓	✓	✓
k.												✓			

Chapter 3: Formative Assessment of the Safety Program and Mission

Table 3: Summary of assessment methods for formative review of the Safety program

Assessment Methods	Responsible Authority	Format of Assessment	Min. Freq./ Storage	Constituent Reviewers				
				Students	Alumni	Employers	Faculty/ISU	External[†]
1. HSC Alumni Surveys	Department Chairperson	Survey	Annually/ UA Office		✓		✓	
2. Safety Advisory Board Meetings	SAF Program Director	Discussion	Annually/ CAST Server		✓	✓	✓	
2. Safety Program Meetings	SAF Program Director	Discussion	Monthly/ CAST Server				✓	✓
3. Prof. Dev. (Safety)	SAF Program Director	Self-Report	Annually/ CAST Server				✓	✓
3. Prof. Dev. (Teaching)	SAF Program Director	Self-Report	Annually/ CTLT Office				✓	
4. Student IDEA Evaluations	Department Chairperson	Survey	Semi-Annually/ HSC Office	✓				
5. Enrollment and Transfer Scores	SAF Program Director	Self Study	Annually/ ISU Admissions				✓	✓
6. Internal Program Review (IBHE)	SAF Program Director	Self Study	8 years/ Provost Office				✓	✓
7. Benchmark Program Review	SAF Program Director	Self Study	3 years/ CAST Server				✓	✓
8. Student Section Activities	CIL Chapter President	Self Study	Annually/ CAST Server	✓			✓	✓

[†]External reviewers may include, but not be limited to the Safety Program Advisory Board, Illinois Board of Higher Education (IBHE), American Society of Safety Engineers (ASSE), and the Board of Certified Safety Professionals (BCSP) or any Qualifying Academic Program (QAP), so recognized by the board.

Section 1: Alumni Survey The university assessment office (UAO) shall gather survey data annually from 1st- and 5th-year alums of the department of health sciences and safety program. Prior to the annual assessment committee meeting, the assessment coordinator will summarize reliable results of the alumni survey in the annual assessment plan report. Of particular interest are the following:

Performance Indicator (1st-year alums)	Discussion Points
(Item 3a-h) Effectiveness of education in preparing for the workplace	Percentage of responses either *Neutral* or *Effective*
(Item 9) Confidence in technical knowledge, skills, and abilities needed for first job	Percentage of responses either *Neutral* or *High*

Performance Indicator (5th-year alums)	Discussion Points
(Item 10) Recent involvement with one or more professional associations	Percentage of responses *Member*, *Attend Meetings*, or *Involved*
(Items 12, 13) Comments re: preparation for registration/certification exams	

NOTE: To aid in the process of preserving communication with alums, the program director, with the assistance of faculty and alumni, shall maintain a database with both personal and professional contact information for each graduate of the program. The program director shall attempt to communicate with alumni and graduating seniors (prior to graduation) annually to keep records up-to-date.

Section 2: Safety Advisory Board and Program Meetings Minutes of the advisory board and program meetings shall be stored on college servers and the details related to assessment of the program summarized in the annual assessment plan report. Responses to recommendations of previous advisory board, program, or assessment committee meetings shall be included in the report.

Section 3: Professional Development Core faculty members in the safety program shall commit to the process of annual professional development. Professional development shall be defined as activities that enhance content expertise or the scholarship of teaching and learning that are in addition to those activities that occur as part of a faculty member's contractual assignments at Illinois State University. A brief summary of professional development activities and hours utilized for the professional development of the faculty members shall be included in the annual assessment report and reviewed by the safety program advisory board.

Performance Indicator	Discussion Points
Teaching Development, Scholarship of Teaching and Learning	Number of development hours/year/faculty member
Technical Development, Continuing Education, Technical Research, Professional Leadership	Number of development hours/year/faculty member

Section 4: Student Teaching Evaluations As part of the semi-annual teaching evaluations (per semester), faculty members in the safety program shall be required to ask students to assess the instructor's effectiveness in making progress toward achieving the stated learning objectives for the course. Students shall rate each faculty member on a 5-point scale, where a rating of one (1) is consistent with no progress toward the objective, two (2) is slight progress, three (3) is progress, four (4) is substantial progress, and a rating of five (5) represents exceptional progress toward achieving the stated objective.

Performance Indicator	Discussion Point
Student Teaching Evaluation: Progress on Learning Objectives	Percentage of student responses at or above 3.5/5.0

Section 5: New Student and Transfer Student Scores The faculty shall annually review the academic credentials of the new students that are admitted to the safety program. The departmental academic advisor is able to provide an annual summary of reported academic performance for students in the program. These metrics may include high school or transfer GPAs and standardized test scores such as the ACT or SAT.

Performance Indicator	Discussion Points
High School or Transfer GPA	Maintain or increase over a three to five-year period
Standardized Test Scores (e.g., ACT, SAT)	Maintain or increase over a three to five-year period

Section 6: Internal Program Review The faculty members of the safety program shall submit a self study for review by Illinois State University and the Illinois Board of Higher Education every eight years. The start of the internal program review cycle shall be the fiscal year, 1971 (FY71). Any recommendations by the Provost's office and/or the IBHE shall be included in the annual assessment plan report following the fiscal year in which the internal review was conducted so that they may be reviewed by members of the safety program's advisory board and assessment committee.

Section 7: Benchmark Program Review At least once every five years, the assessment coordinator shall conduct a benchmark review of at least three (3) other ABET-accredited safety and health programs. One program shall be designated as an "aspiration program" and the remaining programs shall be designated as "comparator programs". Aspiration and comparator programs shall be similar degree programs – undergraduate safety or industrial safety. The members of the assessment committee shall determine (by consensus) the number and names of aspiration and comparator programs for each five-year cycle. If agreeable to the benchmark institution, the minimum required metrics in the review shall be:

Performance Indicator	Discussion Metrics (by permission of institution)
Aspiration Program	Curriculum, inc. pre-requisites; ABET assessment plan; student body demographics; funding and equipment (3-yrs); professional practice program; ASSE involvement
Comparator Programs	Curriculum, inc. pre-requisites; ABET assessment plan

Section 8: Student Section Membership Activities The Student Affairs Chairperson shall provide evidence to the assessment coordinator in support of an active student section or sections in the safety program. An active student section shall be defined as meeting the following criteria:

- Remains in good standing with ISU as a registered student organization
- Annually meets the minimum requirements for the ASSE student section of the year award competition (or equivalent performance metrics)
- Actively participates in parent chapter (professional) activities

Chapter 4: Summative Assessment of the Safety Program Student Learning Outcomes

Table 4: Summary of assessment methods for summative assessment of the Safety program student learning outcomes

Performance Indicator	Delivery Methods	Courses for Assessment	Method of Assessment	Assessment Standard[1]	Timeline
Applied mathematics and science skills for anticipation, recognition, evaluation and control	HSC 248, 271, 272, 359, 362, 372, 380, 381, 382, 383, 384, 385, 398	HSC 362 HSC 385 HSC 398.04	Rubric a Rubric a Rubric k(9)(i)	≥ 70% ≥ 70% ≥ 80%	Bi-annually, *Fall* Bi-annually, *Spring* Annually
Conduct experiments and accident/incident investigations; analyze and interpret data	HSC 248, 359, 362, 372, 382, 385, 398	HSC 362 HSC 372 HSC 398.04	Rubric b(iv) Rubric b Rubrics k(9)(iii), k(11)(i)	≥ 70% ≥ 60% ≥ 80%	Bi-annually, *Fall* Bi-annually, *Fall* Annually
Design and evaluate EH&S programs to meet needs	HSC 271, 370, 372, 378, 380, 381, 382, 383, 384, 398	HSC 378 HSC 398.04	Rubric c Rubric k(8)	≥ 70% ≥ 80%	Bi-annually, *Fall* Annually
Function on multidisciplinary teams	HSC 362, 378, 382, 398	HSC 362 HSC 378 HSC 398.04	Rubric d Rubric d Rubric k(6)	≥ 70% ≥ 70% ≥ 80%	Bi-annually, *Fall* Bi-annually, *Fall* Annually
Identify and solve applied sciences problems using fundamental aspects of safety, industrial hygiene, … and/or human factors	HSC 248, 271, 272, 359, 362, 378, 380, 381, 383, 384, 385, 398	HSC 380 HSC 385 HSC 398.04	Rubric e Rubric e Rubrics k(5), k(9)(ii), k(13)	≥ 70% ≥ 70% ≥ 80%	Bi-annually, *Spring* Bi-annually, *Spring* Annually
Discuss the importance of professional and ethical responsibility	HSC 248, 372, 380, 398	HSC 380 HSC 398.04	Rubric f Rubric k(3), k(4)	≥ 70% ≥ 80%	Bi-annually, *Spring* Annually
Communicate effectively in writing …	HSC 248, 359, 362, 372, 378, 380, 381, 382, 385, 398	HSC 372 HSC 385 HSC 398.04	Rubric g(1) Rubric g(1) Rubric k(1)	≥ 70% ≥ 60% ≥ 80%	Bi-annually, *Fall* Bi-annually, *Spring* Annually

… oral presentation, and …	HSC 370, 382, 398	HSC 370 HSC 398.04	Rubric g(2) Rubric k(2)	≥ 70% ≥ 80%	Bi-annually, *Fall* Annually
… the application of adult learning theory to safety training methodologies	HSC 370, 398	HSC 370 HSC 398.04	Rubric g(3) Rubric k(10)	≥ 70% ≥ 80%	Bi-annually, *Fall* Annually
Discuss the impact of business and risk management solutions in a global or societal context	HSC 378, 382, 385	HSC 378 HSC 385	Rubric h Rubric h	≥ 70% ≥ 70%	Bi-annually, *Fall* Bi-annually, *Spring*
Recognize the need for and ability to engage in life-long learning	HSC 272, 380, 381, 398	HSC 398.04	Rubric k(7)	≥ 80%	Annually
Identify contemporary safety and health issues and apply relevant standards, regulations, and codes or best practices	HSC 248, 271, 272, 359, 370, 380, 381, 382, 383, 384, 398	HSC 372 HSC 380 HSC 398.04	Rubric k(12) Rubric k(12) Rubric k(12)	≥ 70% ≥ 70% ≥ 80%	Bi-annually, *Fall* Bi-annually, *Spring* Annually
Apply principles of safety and health in a supervised, professional practice experience	HSC 398	HSC 398.04	Registration	100%	Annually

[1] The standard of assessment is measured by the minimum percentage of the assessed sample that successfully completes the prescribed method of assessment or is scored in the two maximum categories (*Acceptable* or *Exemplary*) of the relevant rubric.

Section 1: Assessment Plan Data Assessment plan data shall be gathered from multiple sources (300-level safety courses) and evaluated by multiple constituents (faculty, professional practice site supervisors) according to the schedule outlined in Table 4. This will ensure, to the greatest degree possible, validity of the review process. The assessment of student learning outcomes shall be executed using assignments outlined below. Updates to the assessment plan or any of the assignments used for data collection shall require approval of the assessment committee as part of the annual review process that is outlined in *Chapter 2, Sections 3 and 4* of 5220.04.2: Safety Program Assessment Committee.

Job Analysis, including NIOSH Lifting Equation (HSC 362, *Fall Semesters*)

The final workshop in the ergonomics course includes a complete job analysis of a simulated workstation in the lab, including an analysis of the lifting requirements using the NIOSH lifting equation. Students will conduct a full investigation (as groups) of the risk factors associated with the work task and submit a summary report (as individuals) of their findings and recommendations. Prior to this assignment, the students will have submitted at least three similar reports and received feedback on their ability to apply math and science to recognize and control ergonomic risk factors (rubrics a & e, exams), analyze and interpret data (rubric b, exams), work on a team (rubric d) and communicate effectively in writing (rubric g). Summative data using rubrics a, b(iv), and d shall be collected bi-annually in the fall semester of odd years and reported to the assessment committee.

Safety Training Module (HSC 370, *Fall Semesters*)

As part of the development of a proposed safety-training program, students in training course will present a portion of a two-hour training module on an assigned safety-related topic to their peers and observers. Prior to this assignment, the students will have conducted at least two related presentations and received feedback on their ability to design training programs (rubric c, quizzes), present their training to a group of peers (rubric g), integrate adult learning theory into their training presentations (rubric g) and apply relevant best practices to their work (rubric k). Summative data using rubrics g(2) and g(3) shall be collected bi-annually in the fall semester of even years and reported to the assessment committee.

Incident Investigation Reports (HSC 372, *Fall Semesters*)

Students will conduct full investigations of two simulated safety-related incidents (as groups) and submit a summary report of their findings. Students will be responsible for all aspects of the simulated incident investigation, including on-site investigations, eyewitness accounts, and post-incident interviews. Prior to this assignment, the students will have submitted numerous assignments and received feedback on their ability to apply math and science to recognize contributing factors to an incident (rubric a, exams), conduct role play investigations (rubric b), analyze and interpret data (rubric b, exams), work on a team (rubric d), conduct themselves professionally, including listening and note taking (rubric f), communicate effectively in writing (rubric g) and apply relevant standards and best practices to

their work (rubric k, exams). Summative data using rubrics b, g(1) and k(12) shall be collected bi-annually in the fall semester of even years and reported to the assessment committee.

Emergency Action Plan (HSC 378, *Fall Semesters*)

Students in the disaster preparedness are responsible for preparing an emergency action plan (as individuals) based on simulated social, business, and environmental conditions. Prior to this assignment, the students will have submitted numerous assignments, earned several FEMA certifications, participated in a community table-top or disaster drill exercise and received feedback on their ability to analyze and interpret data (rubric b), design emergency plans and programs (rubric c), solve applied science problems (rubric e), communicate effectively orally and in writing (rubric g) and discuss the impact of risk management solutions in a societal or global context (rubric h). Summative data using rubrics c, d and h shall be collected bi-annually in the fall semester of odd years and reported to the assessment committee.

Life Safety Code Project (HSC 380, *Spring Semesters*)

The students will conduct an NFPA 101 Life Safety Code assessment (as groups) of assembly occupancies in the Bone Student Center on the campus of Illinois State University. Prior to this assignment, students will have submitted multiple assignments and received feedback on their ability to identify contemporary regulations (rubric k), engage in a process of lifelong learning (rubric k – the office of the state fire marshal enforces the 2000 version of NFPA 101, so students need to deal directly with an enforcement vs. best practice issue), the ability to design a plan or program (rubric c) and the ability to communicate effectively in writing (rubric g). Summative data using rubrics e, f and k(12) shall be collected bi-annually in the spring semester of odd years and reported to the assessment committee.

Fault Tree Analysis (HSC 385, *Spring Semesters*)

Students will perform a quantitative risk assessment of an assigned outcome using the fault tree analysis methodology and submit a report of their findings and recommendations. Prior to the FTA report, students will have submitted at least two related reports using different analysis techniques and received feedback on their ability to apply math and science to quantify the risk associated with hazards (rubrics a & e, exams), analyze and interpret data (rubric b, exams), communicate effectively in writing (rubric g) and discuss the impact of business and risk management solutions (rubric h). Summative data using rubrics a, e, g(1) and h shall be collected bi-annually in the spring semester of even years and reported to the assessment committee.

Professional Practice (HSC 398.04, *Continuous*)

All students in the safety program are required to complete *at least* nine weeks of supervised professional practice. Summative data using rubric k shall be collected for each student experience and reported to the assessment committee.

Safety Program Assessment Plan

5220.04.2.1

Chapter 1: Role and Purpose

The Safety Program Assessment Committee will consist of a team of three (3) core safety program faculty members and the chairperson of the department of health sciences, who will work together, to review programs and curriculum for the Safety program at Illinois State University (ISU) and make recommendations for the continuous improvement of these programs.

Chapter 2: Process for Review of Assessment Plan Data

Section 1: The name of the review committee shall be the "Safety Program Assessment Committee"

Section 2: The assessment coordinator shall organize Safety Program Assessment Committee activities and be appointed by the Safety program director. The coordinator shall be responsible for reviewing annual assessment plan data and preparing a written annual assessment plan report in advance of regular fall committee meetings. Written reports and resulting action items shall require the approval of all committee members. The Safety program director shall determine the date and location of regular committee meetings.

Section 3: Regular committee meetings shall include a systematic review of all assessment plan data for the previous year as laid out in the coordinator's written report. Additionally, the committee shall review any action items from the previous two years to determine if implementation has been successful. Once implemented, any change to the curriculum or assessment plan shall be subject to annual review and voted on by the committee members as part of the regular assessment process. Recommendations of the committee shall be made as an addendum to the annual assessment plan report and submitted to the advisory board to be included for review as outlined in the *Role and Purpose* of 5220.04.1: Safety Program Advisory Board.

Section 4: Changes to the assessment plan or process, schedule of data collection, or recommended actions shall require a majority vote of the committee members. All curriculum changes shall be subject to a regular university curriculum review process.

Section 5: The process for gathering assessment plan data is outlined in Policies and Procedures document 5220.04.2.1: Safety Program Assessment Plan.

Section 6: Special committee meetings may be scheduled by the safety program director on an as-needed basis. The Safety program director shall determine the date and location of special committee meetings. Events that may trigger a special meeting of the Safety Program Assessment Committee include, but may not be limited to:

- Changes in university, college or department strategic plans
- Emerging themes in the professional literature or certification publications
- Program review (eight-year cycle) by the Illinois Board of Higher Education
- Special requests from the Safety Program Advisory Board or the department of health sciences chairperson