

**Outcome 3.** The ability to design and conduct experiments, analyze and interpret data, develop implementation strategies, and shape recommendations so that results will be achieved and findings will be communicated effectively.

Course	Performance indicators
IENG 561	Design, conduct experiments, analyze, data, implementation strategies, recommendations findings communicated; (labs)
IENG 564	Ability to conduct workplace and task analysis (labs)
IENG 660	Not assessed due to overlap with other ergo courses
IENG 662	Principles, methods of control of physical, chemical hazards (project)
IH&S 460/495	Formulate or design a system (exams)
IH&S 527	Assess qualitative and quantitative aspects of exposure assessment (e.g., dose calculations) (exams)
	Conduct study or lab and write report (reports)
IH&S 528	Do laboratory and write report (reports)
Thesis/Problem Report	Thesis or problem report and defense

Tools used: Course assessment tools.

Data Collection: The data are collected at least twice for each course during the 5-year accreditation period. The faculty assess outcome/key ability for each individual student using specific activities for item to be assessed. The specific activities may be combinations of student projects, homework, papers, lab reports, presentations, and portions of examinations relevant to the outcome/key ability that is being assessed. For each outcome/key ability, each

student is rated by the instructor on a scale of 1 to 5. A score of 5 indicates the complete fulfillment of the key ability, 3 indicates acceptable performance, and 1 indicates a poor level of performance with respect to that key ability or outcome. The correspondence between grades and assessment score is at the discretion of the instructor. The number of students achieving at each level is summed and the fraction achieving a level of at least a 3 is calculated from those results. An acceptable performance overall for a given outcome for a class is at least 70% of students achieving a 3 or better.

Frequency of data collection:

The data are collected at least twice during the accreditation period.

Data Analysis:

The data obtained are analyzed by the instructor each time the course is assessed.

Closing the loop:

Each outcome is reviewed by the instructor at the end of the semester that the course is assessed. The instructor develops specific action items, if necessary, to revise the content, presentation, and/or assessment method of the course. The IH Program Coordinator summarizes the data and action plans for presentation to the Visiting Committee in the fall.

*Performance criterion:*

- a) Students must be able to demonstrate the ability to apply knowledge of math, science, and general engineering in activities related to specific courses.

*Metrics:*

- a) At least 70% of the students must be able to demonstrate the fulfillment of the outcome in course assessments by way of obtaining a score of 3 or higher in each key ability being assessed.

**Assessment Tool:**

**Course assessment tools**

Course assessments

- (1) Each instructor creates their own rubric for course assessments
- (2) Others are listed below

**Table 4-2. Overall Assessment of Defense of Research**

Based on the written thesis or problem report, assess:	Written (1-5)	Oral (1-5)
Principles and methods of industrial hygiene, where applicable		
a. ergonomics		
b. Principles and methods of safety		
c. Principles of environmental sciences (i.e., toxicology)		
d. Principles of epidemiology and biostatistics		
e. Principles and methods of control of physical and chemical hazards		
2. An ability to apply knowledge of math, science, and Industrial Hygiene;		
3. An ability to design and conduct experiments, analyze and interpret data, develop implementation strategies, shape recommendations so that results will be achieved and findings will be communicated effectively;		
4. An ability to formulate or design a system, process or program to meet desired needs;		
5. An understanding of professional and ethical responsibility and the broad education and a knowledge of contemporary issues necessary to understand the impact of solutions in a global and societal context;		
6. A recognition of the need for and an ability to engage in life-long learning;		
7. Strong grasp of information and concepts		
8. Answered question clearly and succinctly:		
9. Avoided errors in written and verbal syntax.		
10. Logical progression of ideas and information.		
11. Overall competence in writing, speaking		
12. Neatness and appropriateness of figures and text		
13. Professional appearance		
Overall		

**Table 4-3. Industrial Hygiene Student Exit Assessment Survey Results for last 10 years**

Through my education and training while attaining my Master's Degree in Industrial Hygiene I have acquired:	Student Self-Ranking
1. An ability to use the techniques, skills, and modern scientific and technical tools necessary for professional practice, such as:	
a. Principles and methods of industrial hygiene	
b. Principles and methods of ergonomics	
c. Principles and methods of safety	
d. Principles of environmental sciences (i.e., toxicology)	
e. Principles of epidemiology and biostatistics	
f. Principles and methods of control of physical and chemical hazards	
2. An ability to apply knowledge of math, science, and Industrial Hygiene;	
3. An ability to design and conduct experiments, analyze and interpret data, develop implementation strategies, shape recommendations so that results will be achieved and findings will be communicated effectively;	
4. An ability to work individually, on teams, and/or on multi-disciplinary teams to identify, formulate and solve problems using Industrial Hygiene, safety, and ergonomics knowledge, skills and tools;	
5. An ability to formulate or design a system, process or program to meet desired needs;	
6. An understanding of professional and ethical responsibility and the broad education and a knowledge of contemporary issues necessary to understand the impact of solutions in a global and societal context;	
7. A recognition of the need for and an ability to engage in life long learning;	
8. The professional characteristics expected of a successful Industrial Hygienist.	