

Industrial Hygiene (IH) Fall 2019

IENG 561 – Industrial Hygiene Engineering

Instructor: Xinjian “Kevin” He, Ph.D.
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Time: 9:30-10:45 am, Tuesday and Thursday
Classroom: MRB – Room 105
Office Hours: 2:00-4:30 pm, Tuesday

Reference materials for the class:

Fundamentals of Industrial Hygiene, 6th Edition (2012). National Safety Council. ISBN: 978-0879123123.

Industrial Hygiene Evaluation Methods, 2nd Edition (2004). Edited by M.S. Bisesi and J. P. Kohn; Published by CRC Press. ISBN: 978-1566705950.

Syllabus

Philosophy of the Course:

The philosophy of the course is to teach students the basic tenets of industrial hygiene and to impress upon them their responsibility as health and safety professionals to anticipate, recognize, evaluate, and control those environmental factors or stresses, arising in or from the workplace, which may cause sickness, impaired health and well being, or significant discomfort and inefficiency among workers or among the citizens of the community.

Introductory course in industrial hygiene with laboratory. Topic includes: recognition, evaluation, and control of occupational and environmental contaminants and physical agents; basic IH quantitative analysis; PPE selection and evaluation.

Student Learning Outcomes for the Course:

1. Implement an industrial hygiene walkthrough survey and hazard assessment strategy.
Assessment: Homework and exam.
2. Recognize major classes of occupational and environmental contaminants and how to apply to them the basic industrial hygiene tenets of anticipation, recognition, evaluation and control.
Assessment: Case study, Exam.
3. Quantitatively analyze data using scenarios of exposures and to reduce sampling and

analytical data to estimate time-weighted average exposures.

Assessment: Interaction and completion of Analytical Request with an AIHA accredited Laboratory; Writing Skills- Notification of a personal overexposure; Quizzes and Exams.

4. Correctly use and handle basic industrial hygiene assessment and analysis instrumentation.
Assessment: Each student must compete -Laboratory Instructional Field Guide; Monthly Practicum to demonstrate Laboratory Instructional Guide to date; Exams.
5. Understand the professional and ethical responsibilities and characteristics of the Industrial Hygiene profession to protect the health and safety of working men and women in global societies.
Assessment: Abstract on OSHA webpage assignment.
6. Understand the types and selection of Personal Protective Equipment used in practice; particularly respirators and to be able to use the basic types of quantitative and qualitative fit test equipment.
*Assessment: Fit-Testing -types and frequency with report sheet
Final Examination questions determining the type of respirator needed.*

Method of Instruction:

IENG 561 includes both a lecture and at least 4 laboratory practicum sessions. The lecture experience incorporates three hours of lecture each week of the semester. The laboratory practicum incorporates three hours of laboratory each month of the semester. The majority of the laboratory experiences are demonstrations in class, with some laboratories to be scheduled outside of class. Students are to develop a laboratory reference folder for future use.

Notes:

Depending on the availability of laboratories guest lecturers, lecture schedules may need to be revised. You are expected to have access to a computer with spreadsheet software and will need a basic knowledge of spreadsheets and formula writing in a spreadsheet. You are expected to have access to a computer with presentation software and be able to prepare a presentation using such software.

Course Schedule:

Week	Lecture	Class Topics
1	Lecture 1	Course Overview; IH Introduction
2	Lecture 2	Toxicology; Particulate Matter/Aerosol
2, 3	Lecture 3	Gases, Vapors, and Solvents

4	Lecture 4	Air Sampling (Lab Unit 1)
4, 5	Lecture 5	Noise Exposure
6	Lecture 6	Noise Sampling (Lab Unit 2)
7		Midterm Exam
8	Lecture 7	Ventilation – Engineering Control
9	Lecture 8	Ventilation Measurements (Lab Unit 3)
10	Lecture 9	IH Chemistry and Calculations
11	Lecture 10	Thermal Stress, Radiation
12	Lecture 11	Personal Protective Equipment (PPE)
13	Lecture 12	OSHA Respiratory Protection Fit Testing (Lab Unit 4)
14		Thanksgiving – No Class
15		Review, <i>Class Presentations</i>
16		Final Exam

Grade Allocation

Attendance/ Homework:	10%
Midterm Exam:	40%
Final Exam:	40%
Article Review Presentation:	10%

Total: 100%

Grade Scale:	90 – 100 %	= A
	80 – 89 %	= B
	70 – 79 %	= C
	60 – 69 %	= D
	< 60 %	= F

Academic Integrity Statement

The integrity of the classes offered by any academic institution solidifies the foundation of its mission and cannot be sacrificed to expediency, ignorance, or blatant fraud. Therefore, instructors will enforce rigorous standards of academic integrity in all aspects and assignments of their courses. For the detailed policy of West Virginia University regarding the definitions of acts considered to fall under academic dishonesty and possible ensuing sanctions, please see the West Virginia University [Academic Standards Policy](http://catalog.wvu.edu/undergraduate/coursecredittermsclassification) (<http://catalog.wvu.edu/undergraduate/coursecredittermsclassification>). Should you have any questions about possibly improper research citations or references, or any other activity that may be interpreted as an attempt at academic dishonesty, please see your instructor before the assignment is due to discuss the matter.

Academic Standards Policy, including Academic Dishonesty

The WVU Catalog contains the full [Academic Standards Policy](#).

- [Resources for Faculty and Students for Reporting and Appealing Violations of Academic Standards](#)

Adverse Weather Statement

In the event of inclement or threatening weather, everyone should use his or her best judgment regarding travel to and from campus. Safety should be the main concern. If you cannot get to class because of adverse weather conditions, you should contact your instructor as soon as possible. Similarly, if your instructor(s) are unable to reach the class location, they will notify you of any cancellation or change as soon as possible, using agreed upon methods to prevent students from embarking on any unnecessary travel. If you cannot get to class because of weather conditions, instructors will make allowances relative to required attendance policies, as well as any scheduled tests, quizzes, or other assessments. [adopted 9-8-2014]

Attendance Policy

The WVU Catalog contains the full [Attendance Policy](#).

Campus Safety Statement

The WVU Police are committed to creating and maintaining a safe learning environment for all students, faculty, and staff. Part of this mission includes educating the campus community on how to respond to potential campus threats, such as the threat of an active shooter on campus or other suspicious behaviors. Fortunately, WVU Police offer training - both online and in-person - on how to handle a variety of campus safety scenarios. All students are encouraged to visit the [WVU Police](https://police.wvu.edu/) (<https://police.wvu.edu/>) webpage, in particular the content under the [Active Shooter](https://police.wvu.edu/training) (<https://police.wvu.edu/training>) training program. Students are also encouraged to report any suspicious behaviors on campus using the [Report a Threat](https://police.wvu.edu/emergency-management/threat-assessment) (<https://police.wvu.edu/emergency-management/threat-assessment>) portion of the webpage.

Additional materials on campus safety prepared by WVU Police, including special safety tips and training, will also be provided on our eCampus page. [adopted 10-2-17]

Inclusivity Statement

The West Virginia University community is committed to creating and fostering a positive learning and working environment based on open communication, mutual respect, and inclusion.

If you are a person with a disability and anticipate needing any type of accommodation in order to participate in your classes, please advise your instructors and make appropriate arrangements with [the Office of Accessibility Services](https://accessibilityservices.wvu.edu/). (https://accessibilityservices.wvu.edu/)

More information is available at the [Division of Diversity, Equity, and Inclusion](https://diversity.wvu.edu/) (https://diversity.wvu.edu/) as well. [adopted 2-11-2013]

Incomplete Policy

The WVU Catalog contains the full [Incomplete Policy](#).

Sale of Course Material Statement

All course materials, including lectures, class notes, quizzes, exams, handouts, presentations, and other course materials provided to students for their courses are protected intellectual property. As such, the unauthorized purchase or sale of these materials may result in disciplinary sanctions under the [Student Conduct Code](https://studentconduct.wvu.edu/policies-and-procedures). (https://studentconduct.wvu.edu/policies-and-procedures) [adopted 5-11-2015]

Sexual Misconduct Statement

West Virginia University does not tolerate sexual misconduct, including harassment, stalking, sexual assault, sexual exploitation, or relationship violence [[BOG Rule 1.6](#)]. It is important for you to know that there are resources available if you or someone you know needs assistance. You may speak to a member of university administration, faculty, or staff; keep in mind that they have an obligation to report the incident to the [Title IX Coordinator](https://titleix.wvu.edu/staff). (https://titleix.wvu.edu/staff)

If you want to speak to someone who is permitted to keep your disclosure confidential, please seek assistance from the [Carruth Center](#), 304-293-9355 or 304-293-4431 (24-hour hotline), and locally within the community at the [Rape and Domestic Violence Information Center](#) (RDVIC), 304- 292-5100 or 304-292-4431 (24-hour hotline).

For students at WVU-Beckley, contact the [Women's Resource Center](#) at 304-255-1585 (toll free at 1-888-825-7836) or [REACH](#) at 304-340-3676. For students at WVU-Keyser, contact the WVU-Keyser [Psychological Services Office](#) at 304-788-6976, and locally in Keyser, the [Family Crisis Center](#), 304-788-6061 or 1-800-698-1240 (24-hour hotline).

For more information, please consult [WVU's Title IX Office](https://titleix.wvu.edu/confidential-resources) (<https://titleix.wvu.edu/confidential-resources>).

Student Evaluation of Instruction Statement

Effective teaching is a primary mission of West Virginia University. Student evaluation of instruction provides the university and the instructor with feedback about your experiences in the course for review and course improvement. Your participation in the evaluation of course instruction is both strongly encouraged and highly valued. Results are strictly confidential, anonymous, and not available to the instructor until after final grades are released by Admissions and Records. Information about how you can complete this evaluation will be provided by your instructor. [adopted 4-14-2008]