**Safety Management Spring 2019**

**SAFM 640 – IH Instrumentation for Safety Professionals**

**Instructor:** **Ava C. Winn, PhD**

**Email:** ava.winn@mail.wvu.edu

**Time: Thursdays 5:30-8:20PM**

**Classroom: MRB – Room 113**

**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.

NIOSH Manual of Analytical Methods 5th Edition. (<https://www.cdc.gov/niosh/nmam/chemicals.html>)

**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.

**Objectives of the Course:**

1. Identify agents, factors, and stressors generated by and/or associated with defined sources, unit operations, and/or process.
2. Give students the academic experience necessary for them to apply the basic principles of industrial hygiene (i.e. anticipation, recognition, evaluation, and control methods) to major classes of occupational stressors including gases and vapors, particulates, noise, temperature extremes, ionizing and non-ionizing radiation, ventilation control principles and use and selection of personal protective equipment-to include respiratory protective equipment.
3. Introduce students to basic industrial hygiene sampling equipment, techniques and procedures commonly employed in the practice of industrial hygiene and safety management
4. Give students the opportunity to use and become familiar with basic industrial hygiene exposure assessment instrumentation. Give students the ability to apply industrial hygiene principles; to communicate with peer industrial hygienists; and to critically review industrial hygienist reports that may be provided to their future employers.

**Student Learning Outcomes for the Course:**

* + - 1. Implement an industrial hygiene walkthrough survey and hazard assessment strategy.
      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.
      3. Quantitatively analyze data using scenarios of exposures and to reduce sampling and analytical data to estimate time-weighted average exposures.
      4. Correctly use and handle basic industrial hygiene assessment and analysis instrumentation.
      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.
      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.

**Method of Instruction:**

SAFM 640 includes both a lecture and at least four 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 or 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:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Date** | **Lecture** | **Class Topics** | Plog Chapters |
| 01/10/2019 | Lecture 1 | Course Overview; IH Introduction | 1, 24 |
| 01/17/2019 | Lecture 2 | Lungs, Skin, Ears, Eyes; Toxicology | 2-5, 14 |
| 01/24/2019 | Lecture 3 | Particulate Matter / Gases, Vapors, and Solvents | 7-8, 16-17 |
| 01/31/2019 | Lecture 4 | Air Sampling (Lab Unit 1) |  |
| 02/07/2019 | Lecture 5 | Noise Exposure | 9 |
| 02/14/2019 | Lecture 6 | Noise Sampling (Lab Unit 2) |  |
| 02/21/2019 |  | **Midterm Exam** |  |
| 02/28/2019 | Lecture 7 | Ventilation – Engineering Control | 18-22 |
| 03/07/2019 | Lecture 8 | Ventilation Measurements (Lab Unit 3) |  |
| 03/14/2017 |  | **Spring Break – No Class** |  |
| 03/21/2019 | Lecture 9 | IH Chemistry and Calculations | 15 |
| 03/28/2019 | Lecture 10 | Thermal Stress, Radiation | 10-12 |
| 04/04/2019 | Lecture 11 | Personal Protective Equipment (PPE) | 23 |
| 04/11/2019 | Lecture 12 | OSHA Respiratory Protection Fit Testing (Lab Unit 4) |  |
| 04/18/2019 |  | ***Class Presentations*** |  |
| 04/25/2019 |  | **Final Exam** |  |

**Grade Allocation**

Attendance/ Homework: 10%

Midterm Exam: 40%

Final Exam: 40%

Presentation 10%

**Total: 100%**

**Grade Scale:** 90 – 100 % = A

80 – 89 % = B

70 – 79 % = C

60 – 69 % = D

< 60 % = F

**Academic Honesty**

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. 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 Student Conduct Code at <http://studentlife.wvu.edu/office_of_student_conduct/student_conduct_code> .

**Social Justice Statement**

West Virginia University is committed to social justice. I concur with that commitment and expect to maintain a positive learning environment based upon open communication, mutual respect, and non-discrimination. Our University does not discriminate on the basis of race, sex, age, disability, veteran status, religion, sexual orientation, color or national origin. Any suggestions as to how to further such a positive and open environment in this class will be appreciated and given serious consideration.

If you are a person with a disability and anticipate needing any type of accommodation in order to participate in this class, please advise me and make appropriate arrangements with the Office of Disability Services (304-293-6700).