

UNIVERSITY OF HOUSTON - DOWNTOWN

SAFETY AND FIRE ENGINEERING TECHNOLOGY

ENGR 4310

INDUSTRIAL HYGIENE INSTRUMENTATION

FALL 2011

JAN KOEHN, M.S., CIH, INC.

8926 KIRBY DRIVE

HOUSTON, TEXAS

Phone: (713) 664-1597

Fax: (713) 664-6443

mail@jkinc.biz

PURPOSE:

ENGR 4310 is a required basic course leading to a Bachelor of Science Degree in Engineering Technology.

COURSE DESCRIPTION:

A basic overview of the field of industrial hygiene. This course will cover history and development of this discipline, and the basic concepts of recognition of hazards in the occupational environment, evaluation of various hazards, and control measures. Also discussed will be the occupational health and safety profession and applicable government regulations and their impact on this technical field. Both theory as well as application through hands-on labs will be addressed as pertinent. A comprehensive overview of industrial hygiene will be completed to assist in review of areas addressed as part of the professional certification process.

The course meets for up to 2.5 hours of lecture/lab each week on Wednesday evenings from 5:30 to 8:15 p.m. The assigned classroom is Room N703 of the Main Building.

COURSE GOALS AND OBJECTIVES:

1. Review the history and development as an overview of industrial hygiene.
2. Explore briefly the anatomy, physiology, and pathology of the human body as related to the potential for occupational exposures to various site hazards.
3. Study recognition of hazards within workplace environments including chemical, physical, biological, and ergonomic.
4. Investigate methods of evaluation of identified hazards in the work environment involving air sampling techniques.
5. Explain control measures including ventilation and use of respiratory protection.
6. Discuss various occupational health and safety professions.
7. Understand governmental regulations and their impact on this field.
8. Complete review of technical theory as well as practical applications of components.

REQUIREMENTS:

Textbook – Fundamentals of Industrial Hygiene. Fifth Edition, National Safety Council (2002)

Additional supplemental reading assignments and use of other technical materials will also be referenced and provided. A bibliography of other reading material by topics is included in Appendix A of the course textbook.

ASSIGNMENTS, PAPERS, AND PROJECTS:

Homework for each class section will include review of the assigned reading materials for conduct of discussions. Preparation for tests is also anticipated through review and understanding of the class topics and issues.

A research paper on a topic in the technical field of occupational health and safety is required and/or a summary course presentation.

ATTENDANCE AND GRADING POLICY:

Attainment of course goals and objectives by students will be evaluated through the critique of assignments, completion of periodic examinations, preparation of a research paper, and conduct of hands-on lab exercises to be familiar with instrumentation. Course attendance and participation will assist in this effort. The final course grade will be calculated as outlined.

Grading Distribution:

| | | |
|------------------------------|-------|--------------|
| 1. Exams (Midterm and Final) | 50% | |
| (25% for each exam) | | 100 – 90 = A |
| 2. Research Paper | 20% | 90 – 80 = B |
| (Technical topic) | | 80 – 70 = C |
| 3. Class assignments | 20% | 70 – 60 = D |
| 4. Class participation | 10% | Below 60 = F |
| | <hr/> | |
| | 100% | |

INSTRUCTOR:

JK, Inc.
8926 Kirby Drive
Houston, TX 77054
(713) 664-1597 (8:00 am - 5:00 pm + + +)
(713) 664-6443 (fax)
mail@jkinc.biz

I will be honest in all my academic activities and will not tolerate dishonesty.

UNIVERSITY OF HOUSTON - DOWNTOWN
SAFETY AND FIRE ENGINEERING TECHNOLOGY
ENGR 4310 – INDUSTRIAL HYGIENE INSTRUMENTATION
FALL 2011 - CALENDAR

| <u>DATES</u> | <u>WEEK</u> | <u>WEEKLY TOPIC DESCRIPTION</u> |
|--------------|-------------|---|
| 8/24/11 | 1 | Introduction and Class Outline History and Development Government Regulation including Federal OSHA Chapters 1, 28, and 29 |
| 8/31/11 | 2 | Review of Human Physiology For Lungs, Skin, Ears, and Eyes Chapters 2, 3, 4, and 5 |
| 9/07/11 | 3 | Introduction to Hazard Recognition Toxicology Part III, Chapter 6 |
| 9/14/11 | 4 | Hazard Recognition Thermal Stress and Ergonomics Chapters 12 and 13 |
| 9/21/11 | 5 | Hazard Recognition Gases, Vapors, and Solvents; and, Particulates Chapter 7 and 8 |
| 9/28/11 | 6 | Hazard Recognition Biological Agents Chapters 14 Brief Review for Mid-Term Exam |
| 10/05/11 | 7 | Mid-Term Examination |

UNIVERSITY OF HOUSTON - DOWNTOWN
SAFETY AND FIRE ENGINEERING TECHNOLOGY
ENGR 4310 – INDUSTRIAL HYGIENE INSTRUMENTATION
FALL 2011 - CALENDAR

| <u>DATES</u> | <u>WEEK</u> | <u>WEEKLY TOPIC DESCRIPTION</u> |
|--------------|-------------|--|
| 10/12/11 | 8 | Hazard Recognition Industrial Noise Chapter 9 |
| 10/19/11 | 9 | Hazard Recognition Ionizing and Non-Ionizing Radiation Chapters 10 and 11 |
| 10/26/11 | 10 | Hazard Evaluation Workplace Exposure Assessment Chapters 15 and Supplemental Materials |
| 11/02/11 | 11 | Hazard Evaluation Air Sampling and Direct-Reading Instruments Chapters 16 and 17 |
| 11/09/11 | 12 | Hazard Control Methods of Control and PPE Chapters 18 and 22 |
| 11/16/11 | 13 | Hazard Control Ventilation Chapters 19, 20, and 21 |
| 11/23/11 | 14 | Holiday |
| 11/30/11 | 15 | Occupational Safety and Health Professions Chapters 23-27 Review for Course Final |
| 12/07/11 | 16 | Final Course Examination |

UNIVERSITY OF HOUSTON - DOWNTOWN
SAFETY AND FIRE ENGINEERING TECHNOLOGY
ENGR 4310 – INDUSTRIAL HYGIENE INSTRUMENTATION
FALL 2011

CALENDAR OF IMPORTANT DATES

| <u>DATE</u> | <u>WEEK</u> | <u>ACTIVITY</u> |
|-------------|-------------|--|
| 09/28/11 | 6 | Brief Review for Mid-Term Exam; Due Date for Research Paper Outline |
| 10/05/11 | 7 | Mid-Term Examination |
| 11/09/11 | 11 | Due Date for Research Papers |
| 11/30/11 | 15 | Course Final Review |
| 12/07/11 | 16 | Final Course Examination |

UNIVERSITY OF HOUSTON - DOWNTOWN

SAFETY AND FIRE ENGINEERING TECHNOLOGY

ENGR 4310 – INDUSTRIAL HYGIENE INSTRUMENTATION

FALL 2011

Research Paper Criteria:

1. Length of 1500 - 2000 words
2. Contain at least 10 parenthetical references
(in text citations)
3. Reference at least 5 different resources
4. Final copy must be typed with double line spacing.
5. Emphasis should be placed on persuasive techniques, style, and research skills.

Format:

One of the following approaches:

- A. Standard Essay Format
 1. Thesis
 2. Body of Support
 3. Conclusion
- B. Case Study Format
 1. Thesis (Recognition)
 2. Research (Evaluation)
 3. Recommendation (Control)
 4. Summary

The research paper presentation must contain a title page, a formal outline containing the thesis statement of the paper, and a bibliographic reference (or works cited) page.

Timetable:

09/28/11 - Due Date for outline with thesis statement, type of format to be utilized, and proposed references.

11/09/11 - Due Date for final research paper.