



Marshall University
College of Information Technology & Engineering
Safety Technology Department

Fall 2007

**ENVIRONMENTAL PROGRAMMING/SAMPLING LAB
SFT 454L**

LOCATION: Communications Building, Room 212 Lab, Huntington Campus

TIME: Wednesdays, 6:30pm-9:00pm

INSTRUCTOR: J. Patrick Conlon, CSP
Safety Technology Department
Communications Bldg., Room 212-I
Huntington Campus
Office Phone – 304.696.3067
Department Fax – 304.696.3070
Email – conlonj@marshall.edu

OFFICE HOURS: Tuesdays – 2:00pm to 6:00pm
Wednesdays – 10:00am to Noon
Thursday – 2:00pm to 4:00pm
Other times by appointment.

DESCRIPTION: This 2 credit course introduces the student to the theory and practice of industrial hygiene sampling techniques used to assess human exposures to chemical, physical, and biological agents in the workplace. The student will become familiar with the legal requirements and management concepts applicable to the performance of exposure monitoring and risk assessment.
Prerequisites – SFT 489, CHM 212, CHM 218, PHY 203 or PHY 212, PHY 204, all with a minimum grade of C
Corequisites – SFT 454

TEXTBOOKS: *Industrial Hygiene Evaluation Methods*, Bisesi, Michael, S., 2nd Edition, Lewis Publishers/CRC Press, 2004, Boca Raton, FL, ISBN: 1-56670-595-9

Fundamentals of Industrial Hygiene
Plog, Barbara, A., and Quinlan, Patricia, J., 5th Edition,
National Safety Council, Itasca, IL, 2002, ISBN-13: 978-0-87912-216-4

OUTCOMES: Successful completion of the course will enable the student to:

- Discuss the scientific and technical principles applicable to personnel and area sample collection and analysis methods used for industrial hygiene exposure monitoring;
- Explain the legal requirements that impact the performance of industrial hygiene exposure monitoring in the U.S.A.;
- Perform calculations relative to industrial hygiene sample collection and analysis; and
- Recognize and evaluate potential occupational health hazards using industrial hygiene exposure monitoring techniques and strategies.

EVALUATION: Exams/150 points each – two per semester, each will include a combination of multiple choice, true/false, essay questions, and problem solving based on the textbook assignments and classroom activities.

Research project/100 points – prepare a technical paper investigating current application of a hazardous exposure monitoring strategy such as: asbestos, benzene, coal dust, hexavalent chrome, hydrogen sulfide, mold, polynuclear aromatic hydrocarbons, ionizing radiation, West Nile Virus, etc. The project will require detailed Internet and library research of the selected topic. Papers will be five pages in length, Times New Roman 12 font, one-inch margins, double-spaced, and include a minimum of ten different referenced sources. Final paper must be submitted electronically in Microsoft Word format.

Class Attendance & Participation/100 points – students are expected to attend all scheduled classes and participate in class discussions and activities.
[1st absence = -5 points, 2nd absence = -5 points, 3rd absence = -10 points, and each subsequent absence = -10 points]

Total Possible Points – Undergraduate Students = 500

Note: Extensions to exam and assignment deadlines must be approved in advance by the instructor.

GRADING:

Grades will be awarded according to the following scale:

- 90% - 100% = A
- 80% - 89% = B
- 70% - 79% = C
- 60% - 69% = D
- 59% or lower = F

ACTIVITIES:

Classroom activities will include:

- Unit Lectures & PowerPoint Presentations
- Laboratory Experiments
- Case Studies
- Special Topic Discussions

TECHNICAL

REQUIREMENTS: Ability to use basic computer software for Internet research, word processing, graphing, and a calculator for mathematical problem solving.

**SCHEDULE OF ASSIGNMENTS
& ACTIVITIES:**

1. 8/22/07:
Introductions & Course Overview
Multimedia: Laboratory Safety
2. 8/29/07:
Unit 1: Evaluation of Hazardous Agents & Factors in
Occupational & Non-occupational Environments
3. 9/5/07:
Unit 2: Hazardous Environmental Agents & Factors
Special Topic: Principles & Instrumentation for Calibrating
Air Sampling Equipment
4. 9/12/07:
Unit 3: Sampling & Analytical Instruments Used to Evaluate the
Occupational Environment
Special Topic: Sampling & Sizing of Airborne Particles
5. 9/19/07:
Unit 4: Evaluation of Airborne Total Particulate
- Air Sampling Pump/Polyvinyl Chloride Filter
Multimedia: SKC – Introduction to Air Sampling Methods
Team Project: Case Study #1

6. 9/26/07:
Unit 5: Evaluation of Airborne Respirable Particulate
- Dorr-Oliver Cyclone
Team Project: Case Study #2
Research Paper Outline due
7. 10/3/07:
Unit 6: Evaluation of Airborne Fibers as Asbestos
- Air Sampling Pump/Mixed Cellulose Ester Filter
Team Project: Case Study #3
8. 10/10/07: Exam #1 (Units 1, 2, 3, 4, 5, & 6)
9. 10/17/07:
Review Exam #1
Unit 7: Evaluation of Airborne Metal Dusts & Fumes
- Air Sampling Pump/Mixed Cellulose Ester Filter
Team Project: Case Study #4
10. 10/24/07:
Unit 8: Evaluation of Airborne Particulate
- Instantaneous/Direct Reading
Special Topic: Quality Control for Sampling and Laboratory Analysis
11. 10/31/07:
Unit 9: Evaluation of Airborne Organic Gases & Vapors
- Solid Adsorbent Medium
Team Project: Case Study #5
12. 11/7/07:
Unit 11: Evaluation of Airborne Combustible & Oxygen Gases
- Multi-Gas Meter
Multimedia: iTX Multi-Gas Meter
Team Project: Case Study #6
Research Paper Draft due
13. 11/14/07:
Unit 12: Evaluation of Airborne Inorganic & Organic Gases & Vapors
- Instantaneous Monitoring
Multimedia: M40 Multi-Gas Monitor
Team Project: Case Study #7
Special Topic: Noise Monitoring Instruments
14. 11/21/07:
Fall Break – No Class

15. 11/28/07:
Unit 13: Evaluation of Airborne Toxic Gases & Vapors
- Instantaneous Monitoring
Team Project: Case Study #8
Special Topic: Radiation Monitoring Instruments
Research Paper due
16. 12/5/07: Exam #2 (Units 7, 8, 9, 11, 12, & 13)

**ADDITIONAL
NOTICES:**

Plagiarism/Academic Honesty/Academic Integrity – cheating, fabrication/falsification, plagiarism, etc., shall be subject to University policy as described in the current Undergraduate and Graduate catalogs.

Student Disabilities – students entitled to academic accommodations during the course are encouraged to contact Disabled Student Services (304.696.2288/Prichard Hall Room 117) as soon as possible to ensure that reasonable accommodations can be provided.

Academic Support Services – students interested in academic support services (advising, tutoring, and writing) are encouraged to contact the University College's Academic Advising Center for free programs and services to help them succeed in college courses (located in the Community and Technical College Building, lower level, 304-696-3169).

Weather-Related and/or Emergency Closings and Delays – students must adhere to the University policies for these events/conditions. Please contact the instructor by phone prior to class if you will miss class due to your local weather conditions if the University is still open. For information concerning the University status during inclement weather or emergencies will be available on local radio and television channels or call (304) 696-3170 or (304) 696-HELP.

Attendance – students are expected to attend all scheduled classes following the University policy for excused absence and weather related class cancellation as applicable. Students should notify the instructor of an absence prior to the class by voice mail or email. In the event of an excused absence class work can be made up within one week with scheduling and approval of the instructor.

