



Marshall University
College of Information Technology & Engineering
Safety Technology Department

Fall 2008

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

LOCATION: Gullickson Hall, Room 5 (Basement Floor), Huntington Campus

TIME: Wednesdays, 6:30pm-8:30pm

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 – 1:30pm to 3:30pm, 6:30pm-8:30pm
Wednesdays – 1:30pm to 3:30pm
Thursday – 1:30pm to 3:30pm
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

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;
- Conduct, evaluate and generate management style reports for environmental surveys using direct reading analytical instruments;
- Conduct, evaluate and generate management style reports for permit required hazardous work scenarios prior to personnel exposures.

EVALUATION: Exams/200 points each – two per semester, each will include a combination of multiple choice, true/false, essay questions, and mathematical problem solving based on the textbook assignments and classroom activities.

Team Projects/50 points each – complete ten industrial hygiene field evaluations in a group setting involving Internet research, problem solving skills, creative thinking skills, mathematical problem solving and effective management style report writing. Each team will present their results or findings during classroom discussions and submit written project reports.

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 = 1,000

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:

Course activities will include:

- Unit Lectures & PowerPoint Presentations
- Laboratory Experiments
- Case Studies
- Field industrial hygiene evaluations

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. 8/27/08:
Introductions & Course Overview
Assignments: Unit 1 – Evaluation of Hazardous Agents & Factors in
Occupational & Non-occupational Environments
Unit 2 – Hazardous Environmental Agents & Factors
2. 9/3/08:
Multimedia: Laboratory Safety
Team Project: Identify Teams and Project Sponsors
Assignment: Unit 3 – Sampling & Analytical Instruments Used to
Evaluate the Environment & Calibration
3. 9/10/08:
Multimedia: SKC – Introduction to Air Sampling Methods
Team Project: Air Sampling Pump Calibration Lab
Assignment: Team Project Research – Procedure Development
4. 9/17/08:
Team Project: Develop a standard procedure for implementation of an
assigned industrial hygiene field evaluation activity
(use Word and Excel software).
Assignment: Unit 6 – Evaluation of Airborne Fibers as Asbestos
Air Sampling Pump/Mixed Cellulose Ester Filter
5. 9/24/08:
Due Date: Unit 6 Lab Report and email Team Project procedure files
Team Project: Review and revise standard procedure for implementation
of an assigned industrial hygiene field evaluation activity
Assignments: Unit 5 – Evaluation of Airborne Respirable Particulate
Dorr-Oliver Cyclone
Unit 19 – Evaluation of Heat Stress
Project SOP – Heat Stress Evaluation

6. 10/1/08:
Due Date: Unit 5 Lab Report
Team Project: Heat Stress Survey
Assignment: Unit 4 – Evaluation of Airborne Total Particulate
Air Sampling Pump/Polyvinyl Chloride Filter
Project SOP – Total Dust Sampling
7. 10/8/08:
Due Date: Unit 4 Lab Report
Team Project: Total Dust Sampling
Assignments: Unit 7 – Evaluation of Airborne Metal Dusts & Fumes
Air Sampling Pump/Mixed Cellulose Ester Filter
Unit 11 – Evaluation of Airborne Combustible & Oxygen
Gases, Multi-Gas Meter
Project SOP – Hot Work Permit
8. 10/15/08:
Due Date: Unit 7 – Lab Report
Multimedia: iTX Multi-Gas Meter, M40 Multi-Gas Monitor
Team Project: Hot Work Permit
Assignment: Unit 9 – Evaluation of Airborne Organic Gases & Vapors
Solid Adsorbent Medium & Project SOP
Project SOP – Benzene and Toluene Sampling
9. 10/22/08:
Due Date: Unit 9 Lab Report
Team Project: Benzene and Toluene Sampling
Assignment: Prepare for Exam #1 (Units 1, 2, 3, 4, 5, 6, 7 & 9)
10. 10/29/08:
Exam #1 (Units 1, 2, 3, 4, 5, 6, 7 & 9)
Assignment: Unit 13 – Evaluation of Airborne Toxic Gases & Vapors
Instantaneous Monitoring
Project SOPs – Line Breaking, Confined Space Entry,
and Excavation Entry Permits
11. 11/5/08:
Due Date: Benzene and Toluene Sampling Report
Team Projects: Line Breaking, Confined Space Entry, and Excavation
Entry Permits
Assignment: Unit 16 – Evaluation of Airborne Sound Levels
Project SOP – Campus Noise Survey

12. 11/12/08:
 - Due Date: Work Permit Reports
 - Multimedia: Noise Monitoring Instruments
 - Team Project: Campus Noise Survey
 - Assignment: Unit 20 – Evaluation of Illumination
Project SOP – Campus Lighting Survey

13. 11/19/08:
 - Due Date: Noise Survey Report
 - Team Project: Campus Lighting Survey
 - Assignment: Unit 25 – Evaluation of Air Pressure, Velocity, and Flow
Project SOP – Laboratory Hood Ventilation Survey

14. 11/26/08:
 - Fall Break – No Class

15. 12/3/08:
 - Due Date: Lighting Survey Report
 - Team Project: Laboratory Hood Ventilation Survey
 - Assignment: Prepare for Exam #2 (Units 11, 13, 16, 19, 20, & 25)

16. 12/10/08:
 - Exam #2 (Units 11, 13, 16, 19, 20, & 25)
 - Due Date: Ventilation Survey Report

**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.

