# Course Syllabus IH&S 525 Aerosols Science for Industrial Hygienists

## Course Introduction

* Credit Hours: 3
* Prerequisite Courses: Graduate standing/consent
* Method of Instruction: Lecture
* Instructor: Steven Guffey, PhD
* Class Meets: tba
* Course Description:

This course explores exposure hazards due to airborne aerosols, which present toxicological, flammable and explosive hazards. Evaluating and remediating exposures also covered. No other course covers these topics.

## Learner Support

* Instructor Office Location: ESB 317
* Office Hours: M, T, W, Th, F: 10 am to 1 PM
* Instructor Email: seguffey@mail.wvu.edu
* Phone: 3046851298
* Method of Making Appointment: email
* ITS contact: seguffey@mail.wvu.edu
* Other:

## Instructional Materials

* Required Instructional Materials:

**Aerosol Technology: Properties, Behavior, and Measurement of Airborne Particles**. Wiley 2nd Edition. By Hinds, William C.

* Optional Instructional Materials:

**Aerosols Measurement: Principles, Techniques and Applications**

Edited by Pramod Kulkarni, Paul Baron and Klaus Willeke

## Course Learning Objectives

* Course Learning Objectives:
  1. Compare aerosols with respect to size distribution and optical properties
  2. Assess values related to the movement of aerosols
  3. Investigate health effects of aerosols exposures.
  4. Apprise sampling and analyses of common aerosols
  5. Consider properties affecting the explosiveness of aerosols
  6. Relate aerosols properties affecting visibility
  7. Compare health effects of biologically active aerosols
  8. Recommend methods of removing aerosols from air

## Course Activities

* Major Learning Activities:

Lectures

Laboratory exercise

* Expected Timeline:

Whole semester

## Assessment

* Major Assignments/Assessments:

Midterm exam

Final exam

Laboratory

* Grading Criteria:

Exams will be multiple choice questions, each with one correct answer, as well as fill in the blank questions.

All questions are weighted equally

* Weight of Course Points:

Midterm exam - 45%

Final exam- 45%

Laboratory and homework- 10%

* Expected Timeline:

Midterm given around the middle of the semester

Final given at the time scheduled by the university

* Response Time and Feedback Plan:
* Final Grading Scale: A: > 90%, B: > 80%, C: > 70%, D: > 60%, F: < 60%

## Course and Institutional Policies (see https://tlcommons.wvu.edu/syllabus-policies-and-statements)

Institutional Policies: Students are responsible for reviewing [policies](https://tlcommons.wvu.edu/qualitymatters/syllabus-policies-and-statements) on inclusivity, academic integrity, incompletes, sale of course materials, sexual misconduct, adverse weather, as well as student evaluation of instruction, and days of special concern/religious holiday statements.

Additional details are listed below:

* **Attendance Policy:**

Class attendance will not be taken nor included in course grading.

* **Participation Policy**:

Participation is encouraged but not graded.

* **Late Assignment and Missed Exam Policy**:

Late assignments will have a 10% reduction per class day late. Missed exams without prior approval will result in a grade of 0% except in clear extenuating circumstances (e.g., serious illness, death of close relative)

## Approximate Weekly Schedule

|  |  |  |
| --- | --- | --- |
| **Week No.** | **Course Section** | **Topic** |
| 1 | 1 | Aerosol characterization |
| 2 | 2 | Single particle transport |
| 3 | 3 | Physical and chemical processes in aerosols systems |
| 4 | 4 | Size distribution characteristics |
| 5 | 5 | Aerosols measurements |
| 6 | 6 | Transport in sampling lines |
| 7 | 7 | Sampling and analysis using filters |
| 8 | 8 | Sampling and measurement using inertial, gravitational and thermal techniques |
| 10 | 12 | Semi-continuous mass measurements |
| 11 | 13 | Optical measurement techniques |
| 12 | 14 | Aerodynamic size measurements |
| 13 | 15 | Electrical mobility methods for submicrometer partic characterization |
| 14 | 16 | Instruments and samplers based on diffusional separation |
| 15 | 24 | Biological particle separation |