

Syllabus
Department of Chemical Engineering

Ch E 471

Health Physics

Course Description

Health physics is the profession dedicated to the protection of humans and their environment from the potentially harmful effects of radiation while providing for its beneficial applications, whether in the workplace or every-day life. It is a multidisciplinary activity, including components of

- Engineering
- Physics
- Biology
- Environmental science
- Chemistry

This 4 cr. course covers the fundamentals of ionizing radiation protection.

Prerequisites

University- level introductory courses in mathematics, physics and chemistry.

Textbook

Atoms, Radiation, and Radiation Protection, 3rd edition; James E. Turner, Wiley-VCH, ISBN 978-3-527-40606-7

Course Objective

The primary goal of this course is to establish a basic understanding of the fundamental principles of radiation protection in a variety of circumstances. Secondly, the course will assist students with the development of a comfort zone necessary to successfully work with radiation and radioactivity.

Topics Covered

Units covered in the course will include:

- Characteristics of ionizing particles and radiations
- Interactions of radiation with matter
- Detection of radiation
- Chemical and biological effects of radiation
- Radiation protection mechanisms
- Environmental transport of radiation
- Radiation protection regulations
- Radioactive waste management
- Radiological Hazards Analysis and Control practicum

Class Schedule

1/17/2008 thru 1/31/2008 – 1:10 to 2:25 Tuesdays and Thursdays, Room EC2-110

2/5/2008 thru 4/17/2008 – all materials on NMSU server for use at student's convenience, except

2/21/2008 – Instrumentation Workshop 1:10 to 2:25, NMSU Environmental Health & Safety Building

4/15 and 4/17/2008 – Hazards Analysis and Control Practicum – Place TBD

4/24 – Fieldtrip to Carlsbad, NM, visit to WIPP site, and Carlsbad Environmental Monitoring and Research Center.

4/29 and 5/1/2008 – Student Seminar Presentations, Room EC2-110

Final Exam - TBD

Document Preparation

Prepared by David A. Waite, Ph.D., CHP, on January 17, 2008

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Addendum

Class Participation

Attendance is required for all on-campus lectures, activities and final exam. Completion of the computerized lectures and associated assigned problem sets is recommended to be accomplished within one week of them being placed on the NMSU server. Completion is mandatory by the time of the mid-term exams.

Mid-term exams will be due to the Chemical Engineering Office by 3:00 pm the Friday of the week that they are officially posted on the NMSU server.

Participation in the field-trip is highly recommended.

Grades

Points (1000 total)

Mid term exam #1 – 100

Mid term exam #2 – 100

Final Exam – 400

Paper – 100

Seminar Presentation – 100

Hazards analysis & Control Performance – 200

Grading Scale → A ≥ 90%; B ≥ 80%; C ≥ 70%; D ≥ 60%

Grading Standard

10 points – problem solution completely correct

9 points – logic of solution completely correct, numerical error in solution

7 points – slight error in logic of solution, but solution thought through to end

5 points – moderate logic error in solution

3 points – major logic error in solution

1 point – valid attempt, but incorrect logic

no points – no attempt at solution

Make-up Work

Under no circumstances can mid-term exams be made up. In the case of the final exam, with appropriate medical documentation, a student may be given 3 additional days in which to sit the proctored exam.

Misconduct

Students are expected to follow the highest of ethical and moral standards (as in the Student Code of Conduct in the NMSU Student Handbook). All exams and projects must be strictly your own work. Any student suspected of cheating will receive a zero for that activity and a sealed letter (with a confidential copy to the student) detailing the incident marked “Destroyed on Graduation”, will be placed in the student’s file. The student is referred to the Student Code of Conduct in the NMSU Student Handbook for policy and procedures, which will be strictly followed in the event of any academic misconduct. Though collaboration is encouraged on homework, each student must develop an independent understanding of the material.

Regrades

Re-grades of exams can be requested within one week of the return of the graded material. Re-grades of papers must be requested before the administration of the final exam. A memo indicating why a re-grade is sought must be attached to the front of the request.

Withdrawals

Students will not receive an automatic drop for persistent absences or failure to complete assignments.

Responsibility for withdrawal is completely that of the student.

Office Hours-Room 153 Jet Hall

Monday – 8:30 – 10:00am

Tuesday – 2:30 – 4:00 pm

Wednesday - 8:30 – 10:00am

Thursday - 2:30 – 4:00 pm

Friday - 8:30 – 10:00am