

Las Positas College  
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**Course Outline for RADS 40C**  
**SAFETY CONTROLS AND REGULATION**  
**Effective: Fall 2018**

**I. CATALOG DESCRIPTION:**

RADS 40C — SAFETY CONTROLS AND REGULATION — 1.00 units

A course designed to provide further understanding of radiological controls, regulations, environmental impacts, and waste management.

1.00 Units Lecture

**Prerequisite**

RADS 40A - Radiation Safety  
with a minimum grade of C  
or Instructor Approval

**Grading Methods:**

Letter or P/NP

**Discipline:**

- Industrial Safety

|   | <b>MIN</b> |
|---|------------|
| <b>Lecture Hours:</b>                       | 18.00      |
| <b>Expected Outside<br/>of Class Hours:</b> | 36.00      |
| <b>Total Hours:</b>                         | 54.00      |

**II. NUMBER OF TIMES COURSE MAY BE TAKEN FOR CREDIT: 1**

**III. PREREQUISITE AND/OR ADVISORY SKILLS:**

**Before entering the course a student should be able to:**

**A. RADS40A**

1. Identify the basic principles of atomic energy, radioactivity, and decay
2. Assess hazards associated with the use of ionizing radiation
3. Determine biological effects and risks from radiation exposure
4. Define monitoring for the workplace
5. Identify sources of radiation, including artificial and natural sources

**IV. MEASURABLE OBJECTIVES:**

**Upon completion of this course, the student should be able to:**

- A. Explain current regulations and how they are revised
- B. Identify appropriate waste disposal processes
- C. Explain differences between types of controls
- D. Describe requirements for safe transportation of radiological materials
- E. Determine pathways for radiological transport in the environment and sampling strategies

**V. CONTENT:**

- A. Types of controls
  1. Engineering
    - a. Interlocks
    - b. Ventilation
    - c. Shielding
  2. Administrative
    - a. Training
    - b. Postings/signs
    - c. Procedures
    - d. Alarms/warning lights
  3. PPE
    - a. Coveralls
    - b. Gloves
    - c. Shoe covers

- d. Respirator
- B. Transportation
  - 1. Packaging
  - 2. Labeling
  - 3. Shipping
    - a. Air
    - b. Truck
    - c. Ship
    - d. Rail
- C. Waste management
  - 1. Types of waste
  - 2. Disposal methods
  - 3. Disposal facilities
- D. Regulations
  - 1. Environmental
  - 2. Workplace
  - 3. Licensing
  - 4. Disposal
- E. Environmental
  - 1. Pathways
  - 2. Monitoring methods
  - 3. Public dose assessment
  - 4. Remediation

#### VI. METHODS OF INSTRUCTION:

- A. **Lecture** -
- B. **Demonstration** - (classroom)
- C. Practical exercises, e.g., using equipment and personal protection equipment
- D. peer interaction
- E. **Audio-visual Activity** - Video and overhead presentation
- F. **Discussion** - (group)

#### VII. TYPICAL ASSIGNMENTS:

- A. Knowledge check
  - 1. List 3 types of "water" samples that may be collected as part of an ongoing Environmental sampling program.
- B. Writing
  - 1. Describe the tests performed on truck and rail casks used for transporting spent fuel.
  - 2. Describe the current dilemma regarding disposal of spent fuel.

#### VIII. EVALUATION:

- A. **Methods**
  - 1. Exams/Tests
  - 2. Quizzes
  - 3. Papers
  - 4. Class Participation
  - 5. Home Work
- B. **Frequency**
  - 1. One two hour final exam
  - 2. Weekly quizzes
  - 3. One 2-4 page paper
  - 4. Daily class participation
  - 5. Weekly homework

#### IX. TYPICAL TEXTS:

- 1. Johnson, Thomas. *Introduction to Health Physics*. 5th ed., McGraw-Hill Education/Medical, 2017.
- 2. Domenech, Haydee. *Radiation Safety: Management and Programs*. 1st ed., Springer International Publishing, 2016.

#### X. OTHER MATERIALS REQUIRED OF STUDENTS: