

CUYAMACA COLLEGE
COURSE OUTLINE OF RECORD

Environmental Health and Safety Management 226 – Erosion and Sedimentation Concepts

1 hour lecture, 1 unit

Catalog Description

Erosion and Sedimentation Concepts applies to construction, agricultural and other sites with an emphasis on erosion control, Best Management Practice (BMP) selection, and site inspections. The course describes regulations supported by erosion and sedimentation theory and practices/controls and demanding the understanding of the various aspects of erosion and sedimentation theory. Primary topics and applications involve erosion and sedimentation historically in agriculture and the transitional application into construction and watershed management.

Prerequisite

“C” grade or higher or “Pass” in EHSM 220 or equivalent.

Entrance Skills

- 1) General knowledge of stormwater permits (industrial, construction, municipal), the hydrologic cycle, and common water quality pollutants (e.g., metals, nutrients, sediment).
- 2) Understand the purpose of BMPs, be able to reference factsheets, and apply fundamental safety and inspection practices.

Course Content

- 1) History of soil and erosion on the planet
- 2) Desertification and the Dust Bowl
- 3) Historical and present Federal and State agencies
- 4) Concepts of soil: sand, silt, clay, and living soil organisms
- 5) Revised Universal Soil Loss Equation, RUSLE development
- 6) Agriculture and Construction sediment runoff
- 7) Sedimentation
- 8) Raindrop erosion
- 9) Sheet erosion
- 10) Rill and gully erosion

Course Objectives

Students will be able to:

- 1) Apply California and Federal regulations to manage soil in stormwater compliance programs.
- 2) Apply stormwater erosion/sediment BMPs and SWPPP documentation.
- 3) Determine pollutant sediment sources.
- 4) Understand proper/improper BMPs during on-site stormwater inspections.

Method of Evaluation

A grading system will be established by the instructor and implemented uniformly. Grades will be based on demonstrated proficiency in a subject matter determined by multiple measurements for evaluation, one of which must be essay exams, skills demonstration or, where appropriate, the symbol system.

- 1) Quizzes and exams that measure students' ability to identify, describe and apply California and Federal stormwater permits.
- 2) Exercises that measure students' ability to evaluate erosion and sedimentation inspections and calculations and develop/review programs in compliance with California and Federal stormwater and sedimentation regulations and standards.
- 3) Video presentations/projects measuring the student's ability to create, identify, and apply stormwater management for erosion and sedimentation.

Special Materials Required of Student

None

Minimum Instructional Facilities

Smart Classroom

Method of Instruction

- 1) Lecture and discussion
- 2) Field trips, guest lecturers
- 3) Projects, hands-on exercises

Out-of-Class Assignments

- 1) **Reading:** Review and lectures of the Depression, "Dust Bowl" and start of the Soil Conservation Service, lecture notes on erosion with agriculture and construction, evaluate sediment as a pollutants, describing various policies and rules for controlling erosion and sedimentation.
- 2) **Writing:** Report the damage to water resources from erosion and sedimentation, describe damage to aquatic life from sedimentation, discuss Los Penasquitos Lagoon sediment TMDL and other sediment concerns with watershed lakes, streams, and reservoirs.
- 3) **Other:** Observe rills, gullies and other erosion and sedimentation features, in construction and post-construction.

Texts and References

- 1) Required (representative example): California State Water Resources Control Board. (n.d.). *NPDES 2022 Construction Stormwater General Permit*. Retrieved September 24, 2025, from https://www.waterboards.ca.gov/water_issues/programs/stormwater/construction/general_permit_reissuance.html
- 2) Supplemental:
 - a. California Department of Transportation. (2024, March). *Construction site best management practices (BMP) manual* (Report No. CTSW-RT-24-425.11.1). Division of Environmental Analysis, Stormwater Program. Brown and Caldwell. <https://dot.ca.gov/programs/environmental-analysis/stormwater-management-program>
 - b. International Erosion Control Association. (2025, September). IECA Design Standards. <https://connect.ieca.org/resources/design-standards>

Student Learning Outcomes

Upon successful completion of this course, students will be able to:

- 1) Apply California and Federal stormwater standards and guidelines to select and apply a correct erosion and sediment control BMPs.
- 2) Properly evaluate and manage site-specific stormwater compliance programs for erosion and sedimentation.