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Energy Technology (ENER) 1503 Environmental Awareness & Regulatory Compliance
(3 Units) CSU

Advisory: Eligibility for English 1000 and Reading 1005 strongly recommended

Total Hours: 48 hours lecture

Catalog Description: An overview of the physical environment of California's soil, water, air and the flora and fauna found in the region with an emphasis on how industry implements technology and best practices to comply with federal, state, and local environmental regulatory requirements. Case studies involving environmental compliance issues will be reviewed. Students are expected to role play, analyze data, present reports, and complete regulatory documents in the context of the regulatory compliance scenarios presented to the class.

Type of Class/Course: Degree/Credit

Text: Bell, Christopher L., and F. William Brownell. The Environmental Law Handbook, 22nd ed., Bernan Press 2013

Additional Materials: None.

Course Objectives:

By the end of the course a successful student will be able to:

1. understand the environment of the Central California region, public policy issues, and regulatory framework and requirements for industrial operations in this region,
2. access regulatory information, evaluate data, and apply best practices for environmental compliance activities at industrial sites,
3. troubleshoot regulated industrial processes to identify and correct environmental compliance problems using industrial best practices and appropriate technology,
4. implement and improve the form and function of an Environmental Management System, how to implement one, and how to continuously improve environmental compliance processes at industrial sites,
5. utilize the principles of groundwater management and protection,
6. utilize the principles of wastewater treatment and discharge requirements,
7. know how to protect and preserve threatened and endangered species
8. understand the regional air basin and how to comply with air regulations,
9. understand the principles of environmental incident prevention and response.

Course Scope and Content:

UNIT I The Environment and Biological Species of Central California

- A. Geology, Topography, and Tectonics
- B. Watersheds, Rivers, Lakes, and Aquifers
- C. Soil deposition, soil types, and sedimentary basin mechanics



- D. Regional Biological Species
- E. Species of Special Concern
- F. Protecting Biota at Industrial Sites

UNIT II Energy, Environment, Politics and Regulations

- A. The Environment and the Politics of Industrial Activity
- B. Greenhouse Gas and GHG Regulations
- C. Environmental Regulations Applicable to Industry (list provided)
- D. Regulatory History: Timeline, Drivers, and Industry Compliance
- E. Technology and its Application to Environmental Protection

UNIT III Complying with Air Regulations (Clean Air Act CAA, State and Air Pollution Control District APCD Regulations)

- A. The San Joaquin Valley Air Basin Mechanics
- B. New Source Review/Prevention of Significant Deterioration NSR/PSD Permitting Basics
- C. SJVUAPCD
 - 1. Air Permitting (Project: Apply for an Authority to Construct)
 - 2. Compliance Technology and Industry Best Practices
 - 3. Source Testing, Continuous Emissions Monitoring Systems CEMS, and Combustion Data Analysis
 - 4. Flaring
 - 5. Venting
 - 6. Fugitive Emissions Monitoring (Exercise with Organic Vapor Analyzer/Type-Length-value OVA/TLV)
 - 7. Waste Gas
- D. Troubleshooting, Corrective Action

UNIT IV Solid Waste Management (Resource Conservation and Recovery Act RCRA, Cal Title 2 2,8,27, Superfund, Department of Transportation DOT)

- A. Non-Hazardous Waste Management
- B. Federally Regulated Hazardous Waste & Superfund Liability
- C. California Regulated Wastes
 - 1. Hazardous
 - 2. Special
 - 3. Man-Made Mineral Fibers (MMMF)
 - 4. Satellite Hazardous Waste Containers
 - 5. Handling, Manifesting, and Shipping
 - 6. Disposal & Treatment Storage and Disposal (TSD) Facility Requirements
 - a) Recycling
 - b) Incineration
 - c) Plasma Gasification

UNIT V Liquid Waste Management (RCRA and Cal Title 22, 8)

- A. Industrial Laboratory Waste Regulations
- B. Waste Management Analysis and Regulatory Classification
- C. Waste Management Plans (example provided)

UNIT VI Surface Water Protection (SWPP Act, Clean Water Act)

- A. Storm water Permitting and Compliance (Example Plan Provided)
- B. National Pollutant Discharge Elimination System (NPDES) Permitting Process and Discharge Requirements
- C. Spill Prevention Control and Countermeasure Plans (Example Provided)

UNIT VII Groundwater Protection (Clean Water Act, RWQCB Title 40 CFR)

- A. Overview of Soil and Aquifer types and mechanical properties



- B. Groundwater Protection Technologies
 - a. Pits and Sumps
 - b. Mechanical Integrity Programs
 - c. Corrosion Monitoring – Pipelines, Tanks, Processing
- C. Groundwater Monitoring Technology
- D. Groundwater Remediation Technology
- E. Groundwater Monitoring and Sampling Plan (example provided)
- F. Troubleshooting, Corrective Action

UNIT VIII Waste Water Treating (Clean Water Act (CWA), RWQCB)

- A. Regulatory Requirements – Regional Water Quality Control Board.
- B. Produced Water Treating Technology
- C. Sewage and Sludge Treating Technologies
- D. Reuse/Recycle of Water

UNIT IX Managing Biodiversity (Threatened and Endangered (T&E) Species Act)

- A. Threatened and Endangered Species – Who, Where, What they Need
- B. Techniques for Fostering Biodiversity in Industrial Locations
- C. Preventing Takes and Making a Take Report

UNIT X Spill Prevention Control and Countermeasure (SPCC, Oil Pollution Act of 1990, OPA-9)

- A. SPCC, OPA, and Office of Spill Prevention and Response OSPR Plans (examples provided)
- B. Spill Response and Incident Command Case Studies
- C. Spill Site Restoration and Remediation with Case Studies
- D. Incident Command System (ICS) – Process Study
- E. Troubleshooting, Corrective Action

UNIT XI California Environmental Quality Act (CEQA)

- A. International Energy Projects and the Environmental Impact Report/Environmental Impact Statement (EIR/EIS) Process (Case Study)
- B. The California EIR Process
- C. The EIR Process as it applies to Industrial Projects
- D. The County EIR Process and Energy Projects
- E. Process Description and Requirements
- F. Land Ownership and Land Use Issues
 - a. Working Well with Landowners (Case Studies)

UNIT XII Environmental Management Systems (Industry Examples provided)

- A. Environmental Processes and Procedure Documentation
- B. Handling Regulatory Inspections and Audits
- C. Compliance Records and Regulatory Reporting
- D. Rights and Responsibilities of Corporate Officials
- E. Environmental Compliance in International Operating Environments

Learning Activities Required Outside of Class:

Students will spend a minimum of 6 hours per week outside of regular class time doing the following:

1. Completing assignments including waste manifests, air permit applications, analyzing and summarizing data from monitoring and analytical results.
2. Reading applicable industry regulations, industry technical publications and best practices.
3. Visiting museums, government, and/or industry locations to do research.
4. Preparing reports, presentations, permits, and data sheets regarding environmental



compliance technology and best practices.

Methods of Instruction:

1. Lecture
2. Group Work
3. Class Discussions
4. Guest Presentations
5. Practical Exercises
6. Field Trips

Methods of Evaluation:

1. Exams
2. Quizzes
3. Presentations
4. Observations

Supplemental Data:

TOP Code:	095430: Petroleum Technology
SAM Priority Code:	C: Clearly Occupational
Distance Education:	Not Applicable
Funding Agency:	Y: Not Applicable (funds not used)
Program Status:	1: Program Applicable
Noncredit Category:	Y: Not Applicable, Credit Course
Special Class Status:	N: Course is not a special class
Basic Skills Status:	N: Course is not a basic skills course
Prior to College Level:	Y: Not applicable
Cooperative Work Experience:	Y: Is part of a cooperative work experience education program
Eligible for Credit by Exam:	YES
Eligible for Pass/No Pass:	NO
Taft College General Education:	NONE

