MRSC A185: COASTAL OCEANOGRAPHY

Item	Value
Curriculum Committee Approval Date	11/13/2024
Top Code	040100 - Biology, General
Units	3 Total Units
Hours	54 Total Hours (Lecture Hours 54)
Total Outside of Class Hours	0
Course Credit Status	Credit: Degree Applicable (D)
Material Fee	No
Basic Skills	Not Basic Skills (N)
Repeatable	No
Open Entry/Open Exit	No
Grading Policy	Standard Letter (S), • Pass/No Pass (B)
Associate Arts Local General Education (GE)	• Area 5 Physical and Biological Sciences, Scientific Inquiry, Life Science (OB)
Associate Science Local General Education (GE)	• Area 5 Physical and Biological Sciences, Scientific Inquiry, Life (OSB)
California General Education Transfer Curriculum (Cal-GETC)	• Cal-GETC 5A Physical Science (5A)
Intersegmental General Education Transfer Curriculum (IGETC)	• IGETC 5A Physical Science (5A)
California State University General Education Breadth (CSU GE-Breadth)	• CSU B1 Physical Science (B1)

Course Description

Study of the physical, chemical, geological, and biological oceanography of the coastal ocean of southern California and northeast Pacific Ocean. PREREQUISITE: MRSC A100 or MRSC A100H. Transfer Credit: CSU; UC.

Course Level Student Learning Outcome(s)

1. Describe the geological history and formation of the southern California coastline as well as its characteristic features.
2. Identify the processes that shape the coast and discuss the role they play in coastal dynamics
3. Describe how coastal waters are different from open ocean waters in terms of physical characteristics, waves, and currents.
4. Describe how the ocean influences coastal weather patterns and characteristics.
5. Identify ways that humans impact the coast and describe common coastal zone management measures.

Course Objectives

- 1. 1.Describe the physical, chemical, and geological oceanographic characteristics of southern California coastal ocean and adjacent waters.
- 2. 2.Identify the major tectonic forces currently and historically influencing the Pacific Coastline
- 3. 3.Describe how wave energy influences the shape and dynamics of the coast.
- 4. 4.Explain the prevailing wave characteristics of southern California.
- 5. Describe the tidal pattern and currents of southern California.
- 6. Identify coastal armoring methods and describe how they influence coastal dynamics.
- 7. Describe oceanographic problems related to coastal management in the United States.

Lecture Content

Introduction to the California CoastlineReview of Plate Tectonics General Coastal GeologyCalifornia Coastal GeologyBathymetry the Southern California BightProcesses That Shape the Coast: Longer Time ScalesProcesses That Shape the Coast: Shorter Time ScalesRocky ShoresEstuaries, Salt Marshes Tidal FlatsBeach Formation DynamicsBeaches of the World; California Beaches SedimentsHow to Read a Beach; Patterns Along the CoastlineCoastal EcosystemsCoastal Weather ClimateEl Nino/La Nina the Pacific Decadal OscillationCalifornia s CurrentsWaves Local Surf BreaksCoastal Water Quality Water Column ProfilesCoastal ResourcesCoastal Urbanization Engineering: Threats BenefitsLand Reclamation: Opportunities ChallengesCoastal Zone Management

Method(s) of Instruction

- Lecture (02)
- DE Live Online Lecture (02S)
- DE Online Lecture (02X)

Instructional Techniques

Weekly lectures Interest based assignments Textbook reading assignments Viewing of videos Individual guest speakers Weekly reading assignments Field Trips

Reading Assignments

Read assigned chapters from textbooks. 68 hours

Writing Assignments

Two or more essay questions included in exams and final. Semester library based research project report. - 10 hours

Out-of-class Assignments

Semester library based research project report - 30 hours

Demonstration of Critical Thinking

Examinations objective and essay, research project, current event assignments, participation in classroom discussions.

Required Writing, Problem Solving, Skills Demonstration

Two or more essay questions included in exams and final. Semester library based research project report Oral presentation of research

Eligible Disciplines

Biological sciences: Master's degree in any biological science OR bachelor's degree in any biological science AND master's degree in biochemistry, biophysics, or marine science OR the equivalent. Master's degree required. Earth science: Master's degree in geology,

geophysics, earth sciences, meteorology, oceanography, or paleontology OR bachelor's degree in geology AND master's degree in geography, physics, or geochemistry OR the equivalent. Master's degree required.

Textbooks Resources

1. Required Pilkey et al.. The Worlds Beaches: A Global Guide to the Science of the Shoreline, 1st ed. OER: University of California Press, 2011 Rationale: This text book is not OER 2. Required Heyer-Meldahl, K.. Surf Sand Stone, 1 ed. OER, 2019

Other Resources

1. The Coastal Sea of Southern California Oceanography of the Southern Bight, Dennis Kelly. In house.