

# GEOL M05L: THE WORLD OCEAN LAB

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**Originator**

rputnam

**College**

Moorpark College

**Discipline (CB01A)**

GEOL - Geology

**Course Number (CB01B)**

M05L

**Course Title (CB02)**

The World Ocean Lab

**Banner/Short Title**

The World Ocean Lab

**Credit Type**

Credit

**Honors**

No

**Start Term**

Fall 2023

**Catalog Course Description**

Provides hands-on experience interpreting and gathering oceanographic data. Examines coastal processes, marine geology, sedimentation, properties of seawater, ocean circulation, and plate tectonics.

**Taxonomy of Programs (TOP) Code (CB03)**

1919.00 - Oceanography

**Course Credit Status (CB04)**

D (Credit - Degree Applicable)

**Course Transfer Status (CB05) (select one only)**

A (Transferable to both UC and CSU)

**Course Basic Skills Status (CB08)**

N - The Course is Not a Basic Skills Course

**SAM Priority Code (CB09)**

E - Non-Occupational

**Course Cooperative Work Experience Education Status (CB10)**

N - Is Not Part of a Cooperative Work Experience Education Program

**Course Classification Status (CB11)**

Y - Credit Course

**Educational Assistance Class Instruction (Approved Special Class) (CB13)**

N - The Course is Not an Approved Special Class

**Course Prior to Transfer Level (CB21)**

Y - Not Applicable

**Course Noncredit Category (CB22)**

Y - Credit Course

**Funding Agency Category (CB23)**

Y - Not Applicable (Funding Not Used)

**Course Program Status (CB24)**

2 - Not Program Applicable

**General Education Status (CB25)**

Y - Not Applicable

**Support Course Status (CB26)**

N - Course is not a support course

**Field trips**

May be required

**Faculty notes on field trips; include possible destinations or other pertinent information**

Field trips may be held during class time to a variety of local spots including Silverstrand Beach, Ventura Harbor, Ventura Point, or Long Canyon in Simi Valley.

**Grading method**

(L) Letter Graded

**Does this course require an instructional materials fee?**

No

**Repeatable for Credit**

No

**Is this course part of a family?**

No

**Units and Hours**

**Carnegie Unit Override**

No

**In-Class**

**Lecture**

**Activity**

**Laboratory**

**Minimum Contact/In-Class Laboratory Hours**

52.5

**Maximum Contact/In-Class Laboratory Hours**

52.5

**Total in-Class**

Total in-Class

**Outside-of-Class**

Internship/Cooperative Work Experience

**Paid**

**Unpaid**

**Total Outside-of-Class**

**Total Outside-of-Class**

**Total Student Learning**

**Total Student Learning**

**Total Minimum Student Learning Hours**

52.5

**Total Maximum Student Learning Hours**

52.5

**Minimum Units (CB07)**

1

**Maximum Units (CB06)**

1

**Prerequisites**

GEOL M05 or concurrent enrollment

**Entrance Skills**

**Entrance Skills**

GEOL M05

**Prerequisite Course Objectives**

GEOL M05- describe and give examples of the interactions between the four basic components of Earth as a global ecosystem - the atmosphere, hydrosphere, lithosphere, and biosphere.

GEOL M05- explain the theory of plate tectonics by describing the three types of plate boundaries and the physical features and processes that occur at each type with reference to appropriate examples.

GEOL M05- describe the different types of marine sediments (i.e., hydrogenous, cosmogenous, biogenous, and lithogenous), their distribution, and use as natural resources.

GEOL M05-analyze and explain the relationship that exists between solar energy and global patterns of wind and atmospheric pressure; explain the concept of air masses and fronts and their role in the development of weather disturbances such as storms and tornadoes.

GEOL M05- describe the characteristics, formation, and dynamics of wind-driven waves.

GEOL M05- describe tidal phenomena and relate them to the motions of the Earth, Sun, and Moon.

GEOL M05-identify coastal landforms and explain the processes of erosion and deposition responsible for beaches, barrier islands, rocky shorelines, and other coastal habitats.

GEOL M05- contrast biological productivity in polar, tropical, and temperate regions and explain how limiting factors cause differences in the marine environment.

**Requisite Justification**

**Requisite Type**

Prerequisite

**Requisite**

GEOL M05

**Requisite Description**

Course in a sequence

**Level of Scrutiny/Justification**

Closely related lecture/laboratory course

**Student Learning Outcomes (CSLOs)**

**Upon satisfactory completion of the course, students will be able to:**

- |   |   |
|---|---|
| 1 | articulate the ocean's role in the climate system and predict changes that may occur as a result of anthropogenic climate change.                                     |
| 2 | demonstrate an understanding of how the oceans and the ocean basins formed, the topography of the sea floor, and the where sediments found on the seafloor come from. |

**Course Objectives**

**Upon satisfactory completion of the course, students will be able to:**

- |   |  |
|---|--|
| 1 | explain the plate tectonic processes responsible for the ocean's bathymetry.   |
| 2 | describe how ocean currents affect the climate of adjacent land masses.  |
| 3 | identify various types of waves and beach erosional/depositional features.   |
| 4 | predict characteristics in local oceanic conditions based on proximity to regional-scale oceanic circulation patterns. |
| 5 | interpret physical ocean conditions by assessing the properties of coastal or offshore sediments.                      |
| 6 | interpret basic marine charts and understand the basic principles of navigation.                                       |
| 7 | describe the El Niño Southern Oscillation (ENSO) and predict the impacts of future ENSO cycles.                        |
| 8 | assess basic seawater chemistry and relate it to thermohaline circulation.   |

**Course Content****Lecture/Course Content**

N/A

**Laboratory or Activity Content**

- (7%) - Plate tectonics
- (7%) - Marine charts/navigation
- (7%) - Bathymetry
- (7%) - El Niño Southern Oscillation (ENSO)
- (9%) - Marine sediment analysis
- (14%) - Seawater chemistry and thermohaline circulation
- (7%) - Surface currents
- (7%) - Nearshore environments
- (7%) - Coastal Processes
- (7%) - Primary productivity and ecology
- (7%) - Marine pollution
- (14%) - Climate change and seawater pH

**Methods of Evaluation**

**Which of these methods will students use to demonstrate proficiency in the subject matter of this course? (Check all that apply):**

Written expression  
 Problem solving exercises  
 Skills demonstrations

**Methods of Evaluation may include, but are not limited to, the following typical classroom assessment techniques/required assignments (check as many as are deemed appropriate):**

Group projects  
 Individual projects  
 Laboratory activities  
 Objective exams  
 Problem-solving exams  
 Quizzes  
 Skills demonstrations  
 Written analyses

## Instructional Methodology

### Specify the methods of instruction that may be employed in this course

Class activities  
 Collaborative group work  
 Demonstrations  
 Distance Education  
 Field experience/non-internship  
 Field trips  
 Laboratory activities  
 Modeling  
 Observation

### Describe specific examples of the methods the instructor will use:

- Lectures and slideshows illustrating skills to be applied in lab
- Demonstration of skills to be applied in lab

## Representative Course Assignments

### Writing Assignments

- Summaries of field trips to areas of local oceanographic interest.
- Written analyses of ocean conditions mapping exercises.
- Narrative lab reports on topics of oceanography.

### Critical Thinking Assignments

- Assess the tectonic causes of bathymetric features as observed in Google Earth
- Evaluate the properties of coastal and offshore sediments to interpret the characteristics of their environments of deposition.
- Synthesize data from offshore buoys to interpret the movement of surface currents.

### Reading Assignments

- Conduct a literature review on local Oceanography.
- Read about data gathering techniques employed by the National Oceanic and Atmospheric Administration (NOAA) on their website.

### Skills Demonstrations

- Interpret marine charts to describe coastal geomorphic features.
- Download ocean condition data from NOAA's Global Marine Data dashboard and import into a spreadsheet program to conduct a time-series analysis of local conditions.
- Predict ocean characteristics in a region by evaluating surface current patterns, bathymetry, and latitude.

## Outside Assignments

### Articulation

#### Equivalent Courses at 4 year institutions

University	Course ID	Course Title	Units
CSU Northridge	GEOL 123	World Ocean Lab	1
CSU Long Beach	GEOL 160L	Introduction to Oceanography Laboratory	1
CSU Maritime Academy	OCN 210L	Intro to Oceanography Lab	1

#### Comparable Courses within the VCCCD

GEOL R103L - Introduction to Oceanography Laboratory

**Equivalent Courses at other CCCs**

<b>College</b>	<b>Course ID</b>	<b>Course Title</b>	<b>Units</b>
Santa Barbary City College	ERTH 151L	Introductory Physical Oceanography Laboratory	1
Pierce College	OCEANO 010	Physical Oceanography Laboratory	1

**District General Education****A. Natural Sciences****A2. Physical Science**

Proposed

**Effective term:**

Fall 2023

**B. Social and Behavioral Sciences****C. Humanities****D. Language and Rationality****E. Health and Physical Education/Kinesiology****F. Ethnic Studies/Gender Studies****Course is CSU transferable**

Yes

**CSU Baccalaureate List effective term:**

F2023

**CSU GE-Breadth****Area A: English Language Communication and Critical Thinking****Area B: Scientific Inquiry and Quantitative Reasoning****B3 Laboratory Activity**

Proposed

**Date Proposed:**

12/2021

**Area C: Arts and Humanities****Area D: Social Sciences****Area E: Lifelong Learning and Self-Development****Area F: Ethnic Studies****CSU Graduation Requirement in U.S. History, Constitution and American Ideals:****UC TCA**

UC TCA

Proposed

**Date Proposed:**

6/15/2022

**IGETC**

**Area 1: English Communication**

**Area 2A: Mathematical Concepts & Quantitative Reasoning**

**Area 3: Arts and Humanities**

**Area 4: Social and Behavioral Sciences**

**Area 5: Physical and Biological Sciences**

**Area 5C: Laboratory Science**

Proposed

**Date Proposed:**

12/15/2022

**Area 6: Languages Other than English (LOTE)**

**Textbooks and Lab Manuals**

**Resource Type**

Manual

**Description**

Anderson, Franz E. *Introductory Oceanography Laboratory Manual*, edited by Julie Standish, Kendall Hunt, 2011.

**Resource Type**

Manual

**Description**

Chauffe, Karl M. and Mark G. Jeffries. *Invitation to Oceanography Lab Exercises Manual*. 6th ed., Jones & Bartlett, 2013.

**Resource Type**

Other Instructional Materials

**Description**

Current editions of laboratory manuals that are typically developed on-site.

**Library Resources**

**Assignments requiring library resources**

Research using the Library's print and online resources.

**Sufficient Library Resources exist**

Yes

**Example of Assignments Requiring Library Resources**

Utilizing library resources, read journal articles in support of oceanography lab exercises.

## Distance Education Addendum

### Definitions

#### Distance Education Modalities

Hybrid (1%–50% online)

### Faculty Certifications

Faculty assigned to teach Hybrid or Fully Online sections of this course will receive training in how to satisfy the Federal and state regulations governing regular effective/substantive contact for distance education. The training will include common elements in the district-supported learning management system (LMS), online teaching methods, regular effective/substantive contact, and best practices.

Yes

Faculty assigned to teach Hybrid or Fully Online sections of this course will meet with the EAC Alternate Media Specialist to ensure that the course content meets the required Federal and state accessibility standards for access by students with disabilities. Common areas for discussion include accessibility of PDF files, images, captioning of videos, Power Point presentations, math and scientific notation, and ensuring the use of style mark-up in Word documents.

Yes

### Regular Effective/Substantive Contact

#### Hybrid (1%–50% online) Modality:

Method of Instruction	Document typical activities or assignments for each method of instruction
Asynchronous Dialog (e.g., discussion board)	Regular Asynchronous discussion boards will be used to encourage discussion among students where they can compare and contrast/discuss /identify and analyze elements of course outcomes. Other Discussion boards will also be used for Q&A and general class discussion by students and instructor to facilitate student learning outcomes.
E-mail	Email, class announcements and tools such as “Message Students Who” and “Assignment Comments” in Canvas will be used to regularly communicate with all students to clarify class content, remind of upcoming assignments, and provide immediate feedback to students on coursework to facilitate student learning outcomes. Students will be given multiple ways to email instructor through Canvas inbox and faculty provided email account through their own canvas email and school email.
Other DE (e.g., recorded lectures)	Faculty will use a variety of tools and media integrated within the LMS to help students reach SLO such as: <ul style="list-style-type: none"> <li>o Recorded Lectures, Narrated Slides, Screencasts</li> <li>o Instructor created content</li> <li>o MC Online Library Resources</li> <li>o Canvas Peer Review Tool</li> <li>o Canvas Student Groups (Assignments, Discussions)</li> <li>o 3rd Party (Publisher) Tools (Mastering Geography)</li> <li>o Websites and Blogs</li> <li>o Multimedia (YouTube, Films on Demand, 3CMedia, Google Earth, Earth.nullschool, etc.)</li> </ul>
Synchronous Dialog (e.g., online chat)	Scheduled synchronous sessions may be organized at the instructor’s discretion to demonstrate skills, address problems, and review asynchronous lectures. Synchronous sessions may also be used for students to work on problem sets together. The platform for such sessions may include ConferZoom or any other approved medium for synchronous dialog.

### Examinations

#### Hybrid (1%–50% online) Modality

On campus  
Online



**Primary Minimum Qualification**

EARTH SCIENCE

**Review and Approval Dates**

**Department Chair**

11/11/2021

**Dean**

11/12/2021

**Technical Review**

11/18/2021

**Curriculum Committee**

12/07/2021

**DTRW-I**

12/09/2021

**Curriculum Committee**

MM/DD/YYYY

**Board**

01/18/2022

**CCCCO**

MM/DD/YYYY

**DOE/accreditation approval date**

MM/DD/YYYY