

OCEAN116 : Oceanography Laboratory

General Information

Author:	<ul style="list-style-type: none">Rachel Ridgway
Course Code (CB01) :	OCEAN116
Course Title (CB02) :	Oceanography Laboratory
Department:	OCEAN
Proposal Start:	Spring 2025
TOP Code (CB03) :	(1919.00) Oceanography
CIP Code:	(40.0607) Oceanography, Chemical and Physical.
SAM Code (CB09) :	Non-Occupational
Distance Education Approved:	No
Will this course be taught asynchronously?:	No
Course Control Number (CB00) :	CCC000302529
Curriculum Committee Approval Date:	09/25/2024
Board of Trustees Approval Date:	11/19/2024
Last Cyclical Review Date:	09/25/2024
Course Description and Course Note:	OCEAN 116 is an introduction to the common laboratory practices and exercises on the physiochemical and geological aspects of oceanography. Laboratory 3 hours per week including 8 hours of supervised observations and data collection aboard an oceanographic research vessel.
Justification:	Mandatory Revision
Academic Career:	<ul style="list-style-type: none">Credit
Mode of Delivery:	No value
Author:	<ul style="list-style-type: none">Rachel Ridgway
Course Family:	No value

Academic Senate Discipline

Primary Discipline:	<ul style="list-style-type: none">Earth Science
Alternate Discipline:	No value
Alternate Discipline:	No value

Course Development

Basic Skill Status (CB08)

Course is not a basic skills course.

 Allow Students to Gain Credit by Exam/Challenge**Course Special Class Status (CB13)**

Course is not a special class.

Pre-Collegiate Level (CB21)

Not applicable.

Grading Basis

- Grade with Pass / No-Pass Option

Course Support Course Status (CB26)

Course is not a support course

General Education and C-ID**General Education Status (CB25)**

Not Applicable

Transferability

Transferable to both UC and CSU

Transferability Status

Approved

IGETC Area

5C-Science Laboratory

Area

Science Laboratory

Status

Approved

Approval Date

08/19/1996

Comparable Course

No Comparable Course defined.

CSU GE-Breadth Area

B3-Laboratory Activity

Area

Laboratory Activity

Status

Approved

Approval Date

08/21/1995

Comparable Course

No Comparable Course defined.

Units and Hours**Summary****Minimum Credit Units (CB07)** 1**Maximum Credit Units (CB06)** 1**Total Course In-Class (Contact Hours)** 54**Total Course Out-of-Class Hours** 0**Total Student Learning Hours** 54**Credit / Non-Credit Options****Course Type (CB04)**

Credit - Degree Applicable

Noncredit Course Category (CB22)

Credit Course.

Noncredit Special Characteristics

No Value

Course Classification Code (CB11)

Credit Course.

Variable Credit Course

Funding Agency Category (CB23)

Not Applicable.

 Cooperative Work Experience Education Status (CB10)



Weekly Student Hours

	In Class	Out of Class
Lecture Hours	0	0
Laboratory Hours	3	0
Studio Hours	0	0

Course Student Hours

Course Duration (Weeks)	18
Hours per unit divisor	54

Course In-Class (Contact) Hours

Lecture	0
Laboratory	54
Studio	0
Total	54

Course Out-of-Class Hours

Lecture	0
Laboratory	0
Studio	0
Total	0

Time Commitment Notes for Students

No value

Units and Hours - Weekly Specialty Hours

Activity Name	Type	In Class	Out of Class
No Value	No Value	No Value	No Value

Pre-requisites, Co-requisites, Anti-requisites and Advisories

Prerequisite

OCEAN115 - Oceanography (in-development)

Objectives

- Understand and appreciate the processes which continue to shape the Earth, especially the oceanic physical environment;
- Analyze global oceanographic problems from a geological perspective.

OR

Co-Requisite

OCEAN115 - Oceanography (in-development)

(OCEAN 115 may be taken concurrently)

Entry Standards

Entry Standards

Description

No value

No value

Course Limitations

Cross Listed or Equivalent Course

Description

No value

No value

Specifications

Methods of Instruction

Methods of Instruction

Laboratory

Methods of Instruction

Discussion

Methods of Instruction

Multimedia

Methods of Instruction

Demonstrations

Methods of Instruction

Collaborative Learning

Methods of Instruction

Field Activities (Trips)

Methods of Instruction

Presentations

Out of Class Assignments

- Field activities and reports (e.g. a written analytical report summarizing findings from our oceanographic voyage.)

- Graph dataset, perform calculations, and make interpretations (e.g. plot and analyze data from a tide table or tide chart)

Methods of Evaluation

Report
Project/Portfolio
Report
Exam/Quiz/Test

Rationale

Laboratory reports
Student projects/presentation
Field reports and/or cruise logs
Practical lab examinations

Textbook Rationale

There are no oceanographic lab manuals more recent than the one listed below. Faculty have adapted lab exercises from these texts and other OER sources.

Textbooks

Author	Title	Publisher	Date	ISBN
Pipkin, B. W.	Laboratory Exercises in Oceanography, 3rd ed.	Macmillan Learning	2000	978-0716737421
Karl Chauffe and Mark Jefferies	Invitation to Oceanography Lab Exercises Manual	Jones & Bartlett Learning; 6th edition	August 27, 2012	1449698603

Other Instructional Materials (i.e. OER, handouts)

Description	Lab exercises written by instructor
Author	No value
Citation	No value
Online Resource(s)	No value

Materials Fee

A material/lab fee may be required for this course.

Learning Outcomes and Objectives

Course Objectives

Use basic methods and techniques of data collection and analysis in physical oceanography.

Evaluate the results of a calculation from a data set and discuss its accuracy.

Read and interpret various types of nautical and bathymetric charts.

Locate position on a map or globe using latitude/longitude coordinates.

Draw and describe features of ocean basins and relate to plate tectonic theory.

Describe the types and distribution of rocks and sediments in the world ocean.

Discuss the factors that affect coastal habitat.

Demonstrate and discuss the differences between heat and temperature.

Apply physiochemical concepts to explain atmospheric and oceanic circulation patterns and their control on global climate.

Demonstrate an ability to communicate complex course concepts effectively in writing and diagrams.

SLOs

Demonstrate familiarity with the basic methods and techniques of data collection and analyses in physical oceanography.

Expected Outcome Performance: 70.0

<i>ILOs</i> Core ILOs	Analyze and solve problems using critical, logical, and creative thinking; ask questions, pursue a line of inquiry, and derive conclusions; cultivate creativity that leads to innovative ideas.
<i>GEOL</i> Physical Science: Earth Science A.S. Degree	Apply scientific method of thinking to analyze and critically evaluate relevant literature and information, and the use of evidence for support Recognize the interdisciplinary nature of science and enjoy the process of learning science Solve quantitative problems, analyze results from data and measurements, form hypotheses from data, test hypotheses
<i>Physical Sciences</i> Physical Science A.A. Degree	Explain the difference between evidence and theory in science and cite an example in their explanation. Use instruments and computers to accurately measure, graph, and analyze physical properties (these instruments will include calipers, micrometers, mass balances, spectrometers, interferometers, and digital oscilloscopes depending upon which courses the student had taken).
<i>OCEAN</i> Earth Science	apply scientific method of thinking to analyze and critically evaluate relevant literature and information, and the use of evidence for support recognize the interdisciplinary nature of science and enjoy the process of learning science solve quantitative problems, analyze results from data and measurements, form hypotheses from data, test hypotheses

ILOs
General Education

examine causality or associations between or among variables of the natural world

Discuss the ocean as a major influence on weather and climate.

Expected Outcome Performance: 70.0

GEOL
Physical Science: Earth
Science A.S. Degree

Apply scientific method of thinking to analyze and critically evaluate relevant literature and information, and the use of evidence for support

Communicate effectively in a variety of ways, such as scientific writing, visualization of data and ideas, or through oral communication

Recognize the interdisciplinary nature of science and enjoy the process of learning science

Solve quantitative problems, analyze results from data and measurements, form hypotheses from data, test hypotheses

ILOs
Core ILOs

Communicate clearly, ethically, and creatively; listen actively and engage respectfully with others; consider situational, cultural, and personal contexts within or across multiple modes of communication.

Physical Sciences
Physical Science A.A. Degree

Explain the difference between evidence and theory in science and cite an example in their explanation.

ILOs
General Education

apply reasoning to evaluate hypotheses and theories

examine causality or associations between or among variables of the natural world

OCEAN
Earth Science

apply scientific method of thinking to analyze and critically evaluate relevant literature and information, and the use of evidence for support

communicate effectively in a variety of ways, such as scientific writing, visualization of data and ideas, or through oral communication

recognize the interdisciplinary nature of science and enjoy the process of learning science

solve quantitative problems, analyze results from data and measurements, form hypotheses from data, test hypotheses

Describe the features and physiography of the ocean basin and relate to the processes that shaped them.

Expected Outcome Performance: 70.0

GEOL
Physical Science: Earth
Science A.S. Degree

Apply scientific method of thinking to analyze and critically evaluate relevant literature and information, and the use of evidence for support

Communicate effectively in a variety of ways, such as scientific writing, visualization of data and ideas, or through oral communication

Recognize the interdisciplinary nature of science and enjoy the process of learning science

Solve quantitative problems, analyze results from data and measurements, form hypotheses from data, test hypotheses

ILOs
Core ILOs

Communicate clearly, ethically, and creatively; listen actively and engage respectfully with others; consider situational, cultural, and personal contexts within or across multiple modes of communication.

Physical Sciences
Physical Science A.A. Degree

Explain the difference between evidence and theory in science and cite an example in their explanation.

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General Education

apply reasoning to evaluate hypotheses and theories

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OCEAN
Earth Science

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recognize the interdisciplinary nature of science and enjoy the process of learning science

solve quantitative problems, analyze results from data and measurements, form hypotheses from data, test hypotheses

Additional SLO Information

Does this proposal include revisions that might improve student attainment of course learning outcomes?

No

Is this proposal submitted in response to learning outcomes assessment data?

No

If yes was selected in either of the above questions for learning outcomes, explain and attach evidence of discussions about learning outcomes.

No Value

SLO Evidence

No Value

Course Content

Lecture Content

No value

Laboratory/Studio Content

Laboratory Exercises (46 hours)

- Ocean charts, navigation, time-zones
- Ocean floor bathymetry and sonar and/or seismoacoustic profiles
- Sea floor spreading, ocean age, and plate tectonic
- Minerals, rocks, ocean bottom and beach sediments/materials
- Physiochemical properties of seawater
- Current, wave and tidal data analyses
- Analyses of surface and deep water temperature, salinity and density data and the concepts of thermocline, halocline and pycnocline, temperature -salinity diagrams
- Oceanic biological productivity, living environments and systems, energy and mineral resources

Aboard the research vessel (8 hours)

- Familiarization with simple oceanographic operations, including:
 - Using the GPS locator
 - Sonar depth charts
 - Nansen bottle
 - Secci disk
 - Bathythermography
- Collection of these data and their interpretation off the Southern California coast
- Familiarization with common marine life forms here

Total Hours: 54

Additional Information

Is this course proposed for GCC Major or General Education Graduation requirement? If yes, indicate which requirement in the two areas provided below.

Yes

GCC Major Requirements

No Value

GCC General Education Graduation Requirements

Natural Sciences

Repeatability

Not Repeatable

Justification (if repeatable was chosen above)

No Value

Resources

Did you contact your departmental library liaison?

No

If yes, who is your departmental library liaison?

Caroline Hallam (Mathematics, Physical Science)

Did you contact the DEIA liaison?

No

Were there any DEIA changes made to this outline?

No Value

If yes, in what areas were these changes made:

No Value

Will any additional resources be needed for this course? (Click all that apply)

- Travel

If additional resources are needed, add a brief description and cost in the box provided.

Funding for students to participate in day-trip aboard an oceanic research vessel.