

MST R199: DIRECTED STUDIES IN MARINE-RELATED TOPICS

Originator

snewby

College

Oxnard College

Discipline (CB01A)

MST - Marine Studies

Course Number (CB01B)

R199

Course Title (CB02)

Directed Studies in Marine-Related Topics

Banner/Short Title

Dir Studies in Marine-Related

Credit Type

Credit

Start Term

Fall 2021

Catalog Course Description

This course is designed to prepare students with existing background knowledge of marine systems for further studies in Marine Sciences. Students will have the opportunity to conduct a research project on an ocean related topic including its habitats, resources, or interactions with terrestrial and atmospheric systems. Project findings will be presented in scientific poster format, video, protocol or research publication.

Taxonomy of Programs (TOP) Code (CB03)

0401.00 - Biology, General

Course Credit Status (CB04)

D (Credit - Degree Applicable)

Course Transfer Status (CB05) (select one only)

B (Transferable to CSU only)

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)

1 - 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

Local parks, beaches, harbors, islands, or natural history museums or aquaria.

Grading method

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

157.5

Total in-Class**Total in-Class****Total Minimum Contact/In-Class Hours**

52.5

Total Maximum Contact/In-Class Hours

157.5

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

157.5

Minimum Units (CB07)

1

Maximum Units (CB06)

3

Prerequisites

BIOL R100 and BIOL R100L; or, BIOL R101 or BIOL R101H and BIOL R101L; or, BIOL R120 and BIOL R120L; or, BIOL R122 and BIOL R122L; or ESRM R100 and ESRM R100L; or GEOL R103 and GEOL R103L; or, MICR R100 and MICR R100L; or, MST R100 and MST R100L; or, MST R103 and MST R103L

Entrance Skills**Entrance Skills**

Familiarity with the scientific method and marine organisms or physical properties of the ocean or ecological principles.

Prerequisite Course Objectives

BIOL R100-Identify major groups of marine organisms

BIOL R100-Describe marine organism adaptations

BIOL R100-Outline the physical, chemical, and geological aspects of the marine environments examined

BIOL R100-Describe the range of ocean habitats and the organisms within each habitat

BIOL R100-Explain how organisms, including humans, within and among ocean habitats interact

BIOL R100-Predict the effects of certain types of disturbance on the marine ecosystem and individual inhabitants and explain how to test that prediction with the scientific method

Entrance Skills

Familiarity with laboratory techniques

Prerequisite Course Objectives

BIOL R100L-Measure the physical, chemical, and geological aspects of the marine environments examined with appropriate laboratory equipment

Entrance Skills

Familiarity with the scientific method and marine organisms or physical properties of the ocean or ecological principles.

Prerequisite Course Objectives

BIOL R101-Describe the scientific method of inquiry as it relates to biological organisms.

BIOL R101-Explain energy flow through the biological world with reference to photosynthesis, cellular respiration, and ecological cycles.

BIOL R101-Describe relationships among and between the biotic and abiotic components of populations, communities, ecosystems, and biomes.

Entrance Skills

Familiarity with the scientific method and marine organisms or physical properties of the ocean or ecological principles.

Prerequisite Course Objectives

BIOL R101H- Describe the scientific method of inquiry as it relates to biological organisms.

BIOL R101H-Explain energy flow through the biological world with reference to photosynthesis, cellular respiration, and ecological cycles.

BIOL R101H-Describe relationships among and between the biotic and abiotic components of populations, communities, ecosystems, and biomes.

Entrance Skills

Familiarity with laboratory techniques

Prerequisite Course Objectives

BIOL R101L-Recognize appropriate units of measurement in the metric system.

BIOL R101L-Use basic laboratory equipment including a light microscope, a spectrophotometer, and different tools for measuring volume such as a beaker or graduated cylinder

Entrance Skills

Familiarity with the scientific method and marine organisms or physical properties of the ocean or ecological principles.

Prerequisite Course Objectives

BIOL R120-Explain the chemical and molecular aspects of living systems

BIOL R120-Identify subcellular structures and describe their functions

BIOL R120-Explain the components of cellular metabolism

BIOL R120-Describe the current hypotheses for the origin of life and biological change

Entrance Skills

Familiarity with laboratory techniques

Prerequisite Course Objectives

BIOL R120L-Perform skills in the observation, collection and evaluation of data including the proper use of a control reaction or sample in each hypothesis driven experiment.

BIOL R120L-Apply standard lab protocols in a safe and conscientious manner while working cooperatively with other students.

BIOL R120L-Exhibit an ability to utilize the light, phase contrast and fluorescence microscope.

BIOL R120L-Operate a centrifuge properly with balanced samples.

BIOL R120L-Compute optical densities with a spectrophotometer using a control and test samples.

BIOL R120L-Measure weights and volumes using electronic scales, micropipetors, pipettes and graduated cylinders.

BIOL R120L-Operate DNA and/or protein electrophoresis equipment to determine molecular weight.

BIOL R120L-Amplify DNA and synthesize proteins in vitro (PCR) or in vivo (transfection/transformation expression).

BIOL R120L-Analyze routine DNA sequencing data from sources including lab experiments, simulations, and published research.

Entrance Skills

Familiarity with the scientific method and marine organisms or physical properties of the ocean or ecological principles.

Prerequisite Course Objectives

BIOL R122-Compare and contrast the development, life cycles, anatomical and physiological characteristics of major taxa of organisms.

BIOL R122-Evaluate the relationships of organisms to each other and their environments.

BIOL R122-Describe, identify key characteristics, and classify representative specimens down to representative phyla.

BIOL R122-Apply the process of scientific inquiry, phylogenetic analysis, and experimental design to the diversity of organisms.

BIOL R122-Evaluate the ecological relationships of organisms at the population, community, and ecosystem level.

BIOL R122-Describe the flow of energy within an ecosystem and the role of nutrient cycling in maintaining ecosystem integrity.

Entrance Skills

Familiarity with laboratory techniques

Prerequisite Course Objectives

BIOL R122L-Dissection of representative organisms within the fungi, plant, and animal kingdoms

BIOL R122L-Apply the scientific method in laboratory projects on organismal biological topics such as competition of plants, physiology of fungi, or response of protists to different environmental conditions

Entrance Skills

Familiarity with the scientific method and marine organisms or physical properties of the ocean or ecological principles.

Prerequisite Course Objectives

ESRM R100-Identify and describe major global, regional, and local environmental issues and their interdisciplinary nature

ESRM R100-Use scientific methodologies and explain how the scientific method is used to better understand the natural world and environmental issues

ESRM R100-Recognize different types of species interactions and biogeochemical cycles and explain how they are interconnected

Entrance Skills

Familiarity with laboratory techniques and marine organisms

Prerequisite Course Objectives

ESRM R100L-Demonstrate correct data collection techniques, graphing of collected data, and ability to interpret graphs.

ESRM R100L-Demonstrate use of various scientific instruments, perform simple chemical tests, ecosystem population counts, and use other field sampling methods for water, air and soils.

ESRM R100L-Identify ecosystems and their function for wetlands/uplands and coastal/marine; and the names of common plants and animals for each.

Entrance Skills

Familiarity with the scientific method and marine organisms or physical properties of the ocean or ecological principles.

Prerequisite Course Objectives

MICR R100-Analyze the fluid nature of bacterial taxonomy.

MICR R100-Summarize the diversity of forms in the microbial world.

Entrance Skills

Familiarity with laboratory techniques

Prerequisite Course Objectives

MICR R100L-Operate a light microscope

MICR R100L-Perform standard bacteriological staining procedures

MICR R100L-Cultivate, transfer and maintain pure microbial cultures

MICR R100L-Perform modern recombinant DNA technology methods

Entrance Skills

Familiarity with the scientific method and marine organisms or physical properties of the ocean or ecological principles.

Prerequisite Course Objectives

MST R100-Identify major groups of marine organisms

MST R100-Describe marine organism adaptations

MST R100-Outline the physical, chemical, and geological aspects of the marine environments examined

MST R100-Describe the range of ocean habitats and the organisms within each habitat

MST R100-Explain how organisms, including humans, within and among ocean habitats interact

MST R100-Predict the effects of certain types of disturbance on the marine ecosystem and individual inhabitants and explain how to test that prediction with the scientific method

Entrance Skills

Familiarity with laboratory techniques

Prerequisite Course Objectives

MST R100L-Measure the physical, chemical, and geological aspects of the marine environments examined with appropriate laboratory equipment

Entrance Skills

Familiarity with the scientific method and marine organisms or physical properties of the ocean or ecological principles.

Prerequisite Course Objectives

MST R103-Explain the fundamental physical and chemical processes that operate in the oceans

MST R103-Describe the common methods of marine exploration
MST R103-Describe the major features of the local coastline
MST R103-Explain the scientific method

Entrance Skills

Familiarity with the scientific method and marine organisms or physical properties of the ocean or ecological principles.

Prerequisite Course Objectives

GEOL R103-Explain the fundamental physical and chemical processes that operate in the oceans
GEOL R103-Describe the common methods of marine exploration
GEOL R103-Describe the major features of the local coastline
GEOL R103-Explain the scientific method

Entrance Skills

Familiarity with laboratory techniques

Prerequisite Course Objectives

MST R103L-Identify the major characteristics of water masses found in the oceans.
MST R103L-Identify the major characteristics of ocean sediments.
MST R103L-Apply the basic techniques of field studies within the discipline of oceanography.

Entrance Skills

Familiarity with laboratory techniques

Prerequisite Course Objectives

GEOL R103L-Identify the major characteristics of water masses found in the oceans.
GEOL R103L-Identify the major characteristics of ocean sediments.
GEOL R103L-Apply the basic techniques of field studies within the discipline of oceanography.

Requisite Justification

Requisite Type

Prerequisite

Requisite

BIOL R100

Requisite Description

Course not in a sequence

Level of Scrutiny/Justification

Content review

Requisite Type

Prerequisite

Requisite

BIOL R100L

Requisite Description

Course not in a sequence

Level of Scrutiny/Justification

Content review

Requisite Type

Prerequisite

Requisite

BIOL R101

Requisite Description

Course not in a sequence

Level of Scrutiny/Justification

Content review

Requisite Type

Prerequisite

Requisite

BIOL R101H

Requisite Description

Course not in a sequence

Level of Scrutiny/Justification

Content review

Requisite Type

Prerequisite

Requisite

BIOL R101L

Requisite Description

Course not in a sequence

Level of Scrutiny/Justification

Content review

Requisite Type

Prerequisite

Requisite

BIOL R120

Requisite Description

Course not in a sequence

Level of Scrutiny/Justification

Content review

Requisite Type

Prerequisite

Requisite

BIOL R120L

Requisite Description

Course not in a sequence

Level of Scrutiny/Justification

Content review

Requisite Type

Prerequisite

Requisite

BIOL R122

Requisite Description

Course not in a sequence

Level of Scrutiny/Justification

Content review

Requisite Type

Prerequisite

Requisite

BIOL R122L

Requisite Description

Course not in a sequence

Level of Scrutiny/Justification

Content review

Requisite Type

Prerequisite

Requisite

ESRM R100

Requisite Description

Course not in a sequence

Level of Scrutiny/Justification

Content review

Requisite Type

Prerequisite

Requisite

ESRM R100L

Requisite Description

Course not in a sequence

Level of Scrutiny/Justification

Content review

Requisite Type

Prerequisite

Requisite

MICRO R100

Requisite Description

Course not in a sequence

Level of Scrutiny/Justification

Content review

Requisite Type

Prerequisite

Requisite

MICRO R100L

Requisite Description

Course not in a sequence

Level of Scrutiny/Justification

Content review

Requisite Type

Prerequisite

Requisite

MST R100

Requisite Description

Course in a sequence

Level of Scrutiny/Justification

Content review

Requisite Type

Prerequisite

Requisite

MST R100L

Requisite Description

Course in a sequence

Level of Scrutiny/Justification

Content review

Requisite Type

Prerequisite

Requisite

MST R103

Requisite Description

Course in a sequence

Level of Scrutiny/Justification

Content review

Requisite Type

Prerequisite

Requisite

GEOL R103

Requisite Description

Course not in a sequence

Level of Scrutiny/Justification

Content review

Requisite Type

Prerequisite

Requisite

MST R103L

Requisite Description

Course in a sequence

Level of Scrutiny/Justification

Content review

Requisite Type

Prerequisite

Requisite

GEOL R103L

Requisite Description

Course not in a sequence

Level of Scrutiny/Justification

Content review

Student Learning Outcomes (CSLOs)**Upon satisfactory completion of the course, students will be able to:**

- | | |
|---|--|
| 1 | Develop a testable hypothesis in the marine studies field of interest |
| 2 | Create a repeatable set of directions for how the research was conducted |
| 3 | Demonstrate proper use of scientific equipment to collect data |

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

- | | |
|---|---|
| 1 | Investigate and describe an area of interest in marine studies. |
| 2 | Demonstrate an ability to conduct independent research, through application of the scientific method, on a topic of interest in marine studies. |
| 3 | Generate new ideas, express themselves creatively or solve complex problems in an original way. |
| 4 | Apply logic, critical thinking, quantitative and/or qualitative reasoning to marine studies data and be able to distinguish amongst scientific laws, principles, hypotheses and theories. |

Course Content**Lecture/Course Content**

1. Introduction
 - a. Orientation to Directed Studies
 - b. Tentative project agreement between instructor, student(s)
2. Identification of project
 - a. Initial research/selections
 - b. Review with instructor
 - c. Approval of project by instructor
3. Undertaking of project
 - a. Library research
 - b. Laboratory research
 - c. Field work (if appropriate)
 - d. Consultations with instructor on regular basis

4. Completion of project
 - a. Preliminary review of project with instructor
 - b. Final version of project submitted or presented
 - c. Final review of project with instructor
 - d. Grade/credit assigned on basis of project evaluation

Laboratory or Activity Content

1. Introduction
 - a. Orientation to Directed Studies
 - b. Tentative project agreement between instructor, student(s)
2. Identification of project
 - a. Initial research/selections
 - b. Review with instructor
 - c. Approval of project by instructor
3. Undertaking of project
 - a. Library research
 - b. Laboratory research
 - c. Field work (if appropriate)
 - d. Consultations with instructor on regular basis
4. Completion of project
 - a. Preliminary review of project with instructor
 - b. Final version of project submitted or presented
 - c. Final review of project with instructor
 - d. Grade/credit assigned on basis of project evaluation

Methods of Evaluation

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

Problem solving exercises
 Skills demonstrations
 Written expression

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):

Essays
 Group projects
 Individual projects
 Laboratory activities
 Laboratory reports
 Oral analysis/critiques
 Oral presentations
 Projects
 Problem-Solving Assignments
 Reports/papers
 Research papers

Instructional Methodology

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

Collaborative group work
 Class activities
 Class discussions
 Distance Education
 Demonstrations
 Field experience/internship
 Field trips
 Group discussions
 Guest speakers
 Internet research
 Laboratory activities
 Small group activities

Describe specific examples of the methods the instructor will use:

1. Methods of instruction will be determined for the specific course offered.

Representative Course Assignments

Writing Assignments

1. Students will create a scientific poster or article for publication presenting their research and findings. The poster or article will include sections detailing the reason for the study, the materials and methods used to conduct the study, data and analysis, and what to do next.
2. Other writing assignments will be specific to each project.

Critical Thinking Assignments

1. Student will develop a testable prediction.
2. Student will develop and implement experimental design to test their prediction.
3. Student will analyze data collected during course of experiment.

Reading Assignments

1. Reading assignments will be specific to each project but may include textbooks, primary literature, and reference texts.

Skills Demonstrations

1. Student will demonstrate competency with laboratory equipment and techniques appropriate to the individual project.

Other assignments (if applicable)

1. Other assignments will be specific to the individual project.

Outside Assignments

Representative Outside Assignments

Laboratory course

District General Education**A. Natural Sciences****B. Social and Behavioral Sciences****C. Humanities****D. Language and Rationality****E. Health and Physical Education/Kinesiology****F. Ethnic Studies/Gender Studies****CSU GE-Breadth****Area A: English Language Communication and Critical Thinking****Area B: Scientific Inquiry and Quantitative Reasoning****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:****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 6: Languages Other than English (LOTE)****Textbooks and Lab Manuals****Resource Type**

Other Resource Type

Description

Primary scientific literature in the field of interest, such as "Limnology and Oceanography".

Resource Type

Other Resource Type

Description

Other instructional materials may be required based on the specific project..

Resource Type

Other Resource Type

Description

Interviews with experts in the field of study..

Resource Type

Other Resource Type

Description

Content specific to class or student project from sources other than primary literature..

Resource Type

Textbook

Classic Textbook

No

Description

Knisely, K. 2021 . *A Student Handbook for Writing in Biology 6th edition*. Macmillan Learning. London, England.

Library Resources**Assignments requiring library resources**

Development of research project

Sufficient Library Resources exist

Yes

Example of Assignments Requiring Library Resources

Finding background information for development of prediction from primary literature.
Researching possible techniques for experimental design from primary literature.

Distance Education Addendum**Definitions****Distance Education Modalities**

Hybrid (51%–99% online)

Hybrid (1%–50% online)

100% 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)	Students will post on discussion board topics relevant to the specific course offered such as the outline for their experimental design and provide constructive criticism with suggestions on the planned experiments of their classmates.
E-mail	Faculty will communicate with students via email regarding course information and concerns.
Video Conferencing	Faculty may utilize online live meetings with students to provide direction and have discussions on topics related to the course content. Content will be recorded and posted for asynchronous viewing.
Other DE (e.g., recorded lectures)	Faculty may record video lectures on the course content for asynchronous viewing.

Hybrid (51%–99% online) Modality:

Method of Instruction	Document typical activities or assignments for each method of instruction
Asynchronous Dialog (e.g., discussion board)	Students will post on discussion board topics relevant to the specific course offered such as the outline for their experimental design and provide constructive criticism with suggestions on the planned experiments of their classmates.
E-mail	Faculty will communicate with students via email regarding course information and concerns.
Video Conferencing	Faculty may utilize online live meetings with students to provide direction and have discussions on topics related to the course content. Content will be recorded and posted for asynchronous viewing.
Other DE (e.g., recorded lectures)	Faculty may record video lectures on the course content for asynchronous viewing.

100% online Modality:

Method of Instruction	Document typical activities or assignments for each method of instruction
Asynchronous Dialog (e.g., discussion board)	Regular use of asynchronous discussion boards encourages various types of interaction and critical thinking skills among all course participants. Questions and topics posed will allow students to discuss, compare and contrast, identify, and analyze elements of the course outcomes. Students will be required to respond to one another with substantive comments with the intent of creating a dialog. Other discussion boards may be used for Q&A and general class discussion by students and instructor to facilitate student success and strengthen student learning outcomes.
E-mail	E-mail, class announcements and various learning management system tools such as "Message Students Who" and "Assignment Comments", will be used to regularly communicate with all students on matters such as clarification of class content, reminders of upcoming assignments and/or course responsibilities, to provide prompt feedback to students on coursework to facilitate student learning outcomes, or to increase the role of an individual educator in the academic lives of a student. Students will be given multiple ways to email instructor through both the learning management system inbox and faculty provided email accounts.
Face to Face (by student request; cannot be required)	The instructor will hold weekly, scheduled office hours either in person or via-web conferencing, for students to be able to meet and discuss course materials or individual progress. Students can request additional in-person or web conferencing meetings with faculty member as needed. Faculty may encourage online students to form "study groups" in person or online.

Other DE (e.g., recorded lectures)	Faculty will use a variety of ADA compliant tools and media integrated within the learning management system to help students reach SLO competency. Tools may include: • Recorded Lectures, Narrated Slides, Screencasts • Instructor created content • OC Online Library Resources • Canvas Peer Review Tool • Canvas Student Groups (Assignments, Discussions) • 3rd Party (Publisher) Tools (MyOpenMath) • Websites and Blogs o Multimedia (YouTube, Films on Demand, 3CMedia, Khan Academy, etc.)
Synchronous Dialog (e.g., online chat)	Instructor will provide a set time each week where they will be available for synchronous chat and be available in the discussion board and can answer questions in live time.
Video Conferencing	Video tools such as ConferZoom can be used to provide live synchronous or asynchronous sessions with students. ADA compliance will be upheld with Closed Captioning during the session or of the recorded session. Recordings of all live sessions will be made available within the LMS. Video Conferences will be used to facilitate SLOs and student-to-student group meetings will also be encouraged.
Telephone	Students can request for instructor to call or vice versa in order to answer one-on-one questions about course material or student progress.

Examinations

Hybrid (1%–50% online) Modality

Online
On campus

Hybrid (51%–99% online) Modality

Online
On campus

Primary Minimum Qualification

BIOLOGICAL SCIENCES

Additional Minimum Qualifications

Minimum Qualifications

Ecology

Physical Sciences

Geography

Chemistry

Physics/Astronomy

Earth Science

Review and Approval Dates

Department Chair

09/16/2020

Dean

09/16/2020

Technical Review

10/14/2020

Curriculum Committee

10/14/2020

Curriculum Committee

12/09/2020

CCCCO

MM/DD/YYYY

Control Number

CCC000611499

DOE/accreditation approval date

MM/DD/YYYY