

# BIOL R122L: PRINCIPLES OF BIOLOGY II LABORATORY

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**Originator**

snewby

**College**

Oxnard College

**Discipline (CB01A)**

BIOL - Biology

**Course Number (CB01B)**

R122L

**Course Title (CB02)**

Principles of Biology II Laboratory

**Banner/Short Title**

Principles of Biology II Lab

**Credit Type**

Credit

**Start Term**

Fall 2021

**Catalog Course Description**

This course, intended for biology majors, is a survey of the diversity of unicellular and multicellular organisms, their anatomy, functional morphology, physiology, development, and interactions with each other and their environment.

**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)**

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)**

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, and natural history museums.

**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**

52.5

**Total in-Class**

**Total in-Class**

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

52.5

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

52.5

**Outside-of-Class**

**Internship/Cooperative Work Experience**

**Paid****Minimum Paid Internship/Cooperative Work Experience Hours**

0

**Maximum Paid Internship/Cooperative Work Experience Hours**

0

**Unpaid****Minimum Unpaid Internship/Cooperative Work Experience Hours**

0

**Maximum Unpaid Internship/Cooperative Work Experience Hours**

0

**Total Outside-of-Class****Total Outside-of-Class****Minimum Outside-of-Class Hours**

0

**Maximum Outside-of-Class Hours**

0

**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**

BIOL R122 or concurrent

**Entrance Skills****Entrance Skills**

Knowledge of ecology, organisms, and ecological principles

**Prerequisite Course Objectives**

BIOL R122-Explain the essential elements of life, major hypotheses for life's history, and mechanisms for the diversification of life.

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.

**Requisite Justification****Requisite Type**

Prerequisite

**Requisite**

BIOL R122

**Requisite Description**

Course in a sequence

**Level of Scrutiny/Justification**

Closely related lecture/laboratory course

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**Requisite Type**

Concurrent

**Requisite**

BIOL R122

**Requisite Description**

Course in a sequence

**Level of Scrutiny/Justification**

Closely related lecture/laboratory course

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**Student Learning Outcomes (CSLOs)**

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

- |   |  |
|---|--|
| 1 | Students will be able to classify organisms using a dichotomous key.                     |
| 2 | Students will identify anatomical features on living, dissected, or models of organisms. |
| 3 | Students will interpret experimental data and form a conclusion.                         |

**Course Objectives**

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

- |   |  |
|---|--|
| 1 | Classify representative cells, tissues, and organs as belonging of prokaryotes, protists, fungi, plants, or animals  |
| 2 | Identify reproductive cells or tissues and developmental stages of representative organisms  |
| 3 | Describe the function of specific features of representative phyla   |
| 4 | Dissection of representative organisms within the fungi, plant, and animal kingdoms  |
| 5 | 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 |

**Course Content**

**Lecture/Course Content**

1. Microscope use and identification of prokaryote and eukaryote cells
2. Natural selection and the impact of migration
3. Protista
  - a. observation of different protist clade morphology
  - b. identification of protist cellular or gross (i.e. algae) anatomy
  - c. comparison of different methods of movement of protists
  - d. impact of environmental change on protist movement
4. Fungi
  - a. observation of different fungi phyla morphology
  - b. identification of fungi anatomy
  - c. classification and dissection of representative mushrooms
5. Plantae
  - a. plant gross anatomy and flower dissection
  - b. plant histology
  - c. identification of representative plants using dichotomous keys
6. Animalia

- a. invertebrate phylum identification
  - b. invertebrate anatomy and dissection
  - c. vertebrate subphylum and class identification
  - d. vertebrate anatomy and dissection
  - e. developmental stages of invertebrate and vertebrates
  - f. impacts of abiotic factors on animal physiology
7. Ecology
- a. intra- and interspecific growth competition
  - b. field assessment of intertidal populations
  - c. community and/or ecosystem analysis

### Laboratory or Activity Content

1. Microscope use and identification of prokaryote and eukaryote cells
2. Natural selection and the impact of migration
3. Protista
  - a. observation of different protist clade morphology
  - b. identification of protist cellular or gross (i.e. algae) anatomy
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  - b. identification of fungi anatomy
  - c. classification and dissection of representative mushrooms
5. Plantae
  - a. plant gross anatomy and flower dissection
  - b. plant histology
  - c. identification of representative plants using dichotomous keys
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  - c. vertebrate subphylum and class identification
  - d. vertebrate anatomy and dissection
  - e. developmental stages of invertebrate and vertebrates
  - f. impacts of abiotic factors on animal physiology
7. Ecology
  - a. intra- and interspecific growth competition
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  - c. community and/or ecosystem analysis

### 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):**

Computational homework  
 Essays  
 Group projects  
 Individual projects  
 Laboratory activities  
 Laboratory reports  
 Objective exams  
 Projects  
 Problem-Solving Assignments  
 Problem-solving exams  
 Quizzes  
 Reports/papers  
 Research papers

## Skills demonstrations

### Instructional Methodology

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

Audio-visual presentations  
Computer-aided presentations  
Collaborative group work  
Class activities  
Distance Education  
Demonstrations  
Field trips  
Group discussions  
Guest speakers  
Instructor-guided interpretation and analysis  
Instructor-guided use of technology  
Internet research  
Laboratory activities  
Lecture  
Practica  
Small group activities

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

1. Instructor will utilize lecture, video, internet material, models, and demonstrations reviewing key points of laboratory topics and activities. Example: How to identify early developmental stages of sea urchins.
2. Students will participate in laboratory activities done individually and in groups. Example: Using a dichotomous key to identify unknown plants.
3. Instructor will lead field trip to collect data on intertidal community members for analysis by students.

### Representative Course Assignments

#### Writing Assignments

1. Laboratory reports detailing objective, methodology, data, analysis of data and results, conclusion, and discussion.
2. Short answer questions related to lab activities. Example: Identify three ways the reproductive system of the frog differed from that of a rat.

#### Critical Thinking Assignments

1. Students will conduct an experiment looking at plant height and mass when grown alone, with members of the same species, and with members of a different species. Students will collect and analyze data and will use the data to determine the role of inter- and intraspecific competition on plant growth.
2. Students will find primary literature to support their conclusions based on their analysis of collected data.

#### Reading Assignments

1. Students will review laboratory materials before arriving at class.
2. Students will read articles in professional journals about fungi, plants and animals that relate to laboratory activities.

#### Skills Demonstrations

1. Students will demonstrate ability to safely use laboratory equipment such as microscopes including the making of wet mount slides.
2. Students will dissect representative organisms and identify anatomical features. Examples: Mushroom, flower, annelid worm, grasshopper, crab, squid, bivalve, sea star, shark, perch, frog, and rat.

#### Other assignments (if applicable)

1. Field activities. Example: Intertidal data collection using transect lines and quadrats, identification of trees on campus using dichotomous keys based on anatomical features of tree and leaf.
2. Conducting of experiments. Example: Buffering abilities of plant sap, response of yeast respiration to increased temperature, competition between plants, or impact of light on seed germination.

## Outside Assignments

### Representative Outside Assignments

1. Students may be required to complete additional advanced preparation in the form of reading or short videos for laboratory activities. Example: view a video demonstrating how to conduct intertidal sampling along a transect line.
2. Nominal formalization of lab work may be completed outside of lab, including preparation of tables, graphs, and data summaries, as well as written summaries of protocols related to recently-completed laboratory exercises.

## District General Education

### A. Natural Sciences

#### A1. Biological Science

Approved

### 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

#### B3 Laboratory Activity

Approved

### 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 5C: Laboratory Science

Approved

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

### Textbooks and Lab Manuals

#### Resource Type

Textbook

#### Description

Urry, L.A., M.L. Cain, S.A. Wasserman, P. V. Minorsky, J.B. Reece, J.G. Morgan, & M.E. Brown Carter. (2017). *Investigating Biology Lab Manual* (9th). Pearson / Benjamin Cummings. San Francisco, CA.

### Library Resources

#### Assignments requiring library resources

Discussion of analysis of data in lab reports

#### Sufficient Library Resources exist

Yes

#### Example of Assignments Requiring Library Resources

Provide supporting primary literature for your conclusion

### 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)	Discussions focusing on lab subject for which students will make an original post and then thoughtfully respond to other student postings; may also allow instructor and students to address miscellaneous questions and related subjects.
Other DE (e.g., recorded lectures)	Use of recorded lectures of laboratory topics such as correct use of microscope and dissection techniques.



Video Conferencing  
Video meetings to allow the instructor to highlight important information and facilitate immediate student interaction (such as problem-solving/question/answer session). Video sessions will be recorded and posted for asynchronous viewing.

E-mail  
Email will be available for student to instructor communications.

**Hybrid (51%–99% online) Modality:**

Method of Instruction	Document typical activities or assignments for each method of instruction
Asynchronous Dialog (e.g., discussion board)	Discussions focusing on lab subject for which students will make an original post and then thoughtfully respond to other student postings; may also allow instructor and students to address miscellaneous questions and related subjects.
Other DE (e.g., recorded lectures)	Use of recorded lectures of laboratory topics such as correct use of microscope and dissection techniques.
Video Conferencing	Video meetings to allow the instructor to highlight important information and facilitate immediate student interaction (such as problem-solving/question/answer session). Video sessions will be recorded and posted for asynchronous viewing.
E-mail	Email will be available for student to instructor communications.

**100% online Modality:**

Method of Instruction	Document typical activities or assignments for each method of instruction
Asynchronous Dialog (e.g., discussion board)	Discussions focusing on lab subject for which students will make an original post and then thoughtfully respond to other student postings; may also allow instructor and students to address miscellaneous questions and related subjects.
Other DE (e.g., recorded lectures)	Use of recorded lectures of laboratory topics such as correct use of microscope and dissection techniques.
Video Conferencing	Video meetings to allow the instructor to highlight important information and facilitate immediate student interaction (such as problem-solving/question/answer session). Video sessions will be recorded and posted for asynchronous viewing.
E-mail	Email will be available for student to instructor communications.

**Examinations**

**Hybrid (1%–50% online) Modality**

Online  
On campus

**Hybrid (51%–99% online) Modality**

Online  
On campus

**Primary Minimum Qualification**

BIOLOGICAL SCIENCES

**Review and Approval Dates**

**Department Chair**

09/15/2020

**Dean**

09/16/2020

**Technical Review**

10/14/2020

**Curriculum Committee**

10/14/2020

**DTRW-I**

MM/DD/YYYY

**Curriculum Committee**

12/09/2020

**Board**

MM/DD/YYYY

**CCCCO**

MM/DD/YYYY

**Control Number**

CCC000258319

**DOE/accreditation approval date**

MM/DD/YYYY