

# BIOL M02BH: HONORS: GENERAL BIOLOGY II

**Originator**

jjohnson

**Co-Contributor(s)**
**Name(s)**

Wilcox, Sean (swilcox)

**College**

Moorpark College

**Attach Support Documentation (as needed)**

El Camino College BIOL 102H.pdf

COC BIOSCI 106H.pdf

Irvine VC BIO 80H.pdf

Mt San Jacinto BIOL 115H.pdf

**Discipline (CB01A)**

BIOL - Biology

**Course Number (CB01B)**

M02BH

**Course Title (CB02)**

Honors: General Biology II

**Banner/Short Title**

Honors: General Biology II

**Credit Type**

Credit

**Honors**

Yes

**Start Term**

Fall 2024

**Catalog Course Description**

Surveys the basic biology and diversity of unicellular and multicellular organisms. Emphasizes general biological principles, classification, structure, function and evolutionary adaptations of organisms (including plants, fungi, animals, and unicellular organisms) to their environments. Honors work challenges students to be more analytical and creative through expanded assignments, real-world applications and enrichment opportunities.

Course Credit Limitations: Credit will not be awarded for both the honors and regular versions of a course. Credit will be awarded only for the first course completed with a grade of "C" or better or "P". Moorpark College Honors Program requires a letter grade.

**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**

Will not be required

**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**

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

70

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

70

**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**

122.5

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

122.5

**Outside-of-Class****Internship/Cooperative Work Experience****Paid****Unpaid****Total Outside-of-Class****Total Outside-of-Class****Minimum Outside-of-Class Hours**

140

**Maximum Outside-of-Class Hours**

140

**Total Student Learning****Total Student Learning****Total Minimum Student Learning Hours**

262.5

**Total Maximum Student Learning Hours**

262.5

**Minimum Units (CB07)**

5

**Maximum Units (CB06)**

5

**Prerequisites**

BIOL M02A or BIOL M02AH

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

BIOL M02A or BIOL M02AH

**Prerequisite Course Objectives**

BIOL M02A-demonstrate an understanding and be able to discuss the basic themes of biology that permeate all levels of organization: a. Define the basic vocabulary b. Compare and contrast the interactions between the basic vocabulary words c. Construct mental models for the various systems studied d. Evaluate and appraise the evidence behind the various models discussed e. Given a body of data from a scientific paper, analyze how that evidence affects the scientific models studied.

BIOL M02A-discuss the chemical basis of biological systems including the structure and function of biological molecules and macromolecules: a. Define the basic vocabulary b. Compare and contrast the interactions between the basic vocabulary words

c. Construct mental models for the various systems studied d. Evaluate and appraise the evidence behind the various models discussed e. Given a body of data from a scientific paper, analyze how that evidence affects the scientific models studied.

BIOL M02A-explain the concepts and processes of cellular metabolism including photosynthesis, cellular respiration and the roles of enzymes and adenosine triphosphate in the thermodynamics of living systems: a. Define the basic vocabulary b. Compare and contrast the interactions between the basic vocabulary words c. Construct mental models for the various systems studied d. Evaluate and appraise the evidence behind the various models discussed e. Given a body of data from a scientific paper, analyze how that evidence affects the scientific models studied.

BIOL M02A-identify and describe prokaryotic and eukaryotic cell organization and membranes, relating structure to function; discuss the different modes of cellular transport: a. Define the basic vocabulary b. Compare and contrast the interactions between the basic vocabulary words c. Construct mental models for the various systems studied d. Evaluate and appraise the evidence behind the various models discussed e. Given a body of data from a scientific paper, analyze how that evidence affects the scientific models studied.

BIOL M02A-describe the connections that link cells together and how they facilitate cell communication: a. Define the basic vocabulary b. Compare and contrast the interactions between the basic vocabulary words c. Construct mental models for the various systems studied d. Evaluate and appraise the evidence behind the various models discussed e. Given a body of data from a scientific paper, analyze how that evidence affects the scientific models studied.

BIOL M02A-discuss cellular reproduction and its controls in prokaryotes and eukaryotes including sexual and asexual life cycles: a. Define the basic vocabulary b. Compare and contrast the interactions between the basic vocabulary words c. Construct mental models for the various systems studied d. Evaluate and appraise the evidence behind the various models discussed e. Given a body of data from a scientific paper, analyze how that evidence affects the scientific models studied.

BIOL M02A-apply the principles of classical and molecular genetics to solve problems in genetics and/or biotechnology: a. Define the basic vocabulary b. Compare and contrast the interactions between the basic vocabulary words c. Construct mental models for the various systems studied d. Evaluate and appraise the evidence behind the various models discussed e. Given a body of data from a scientific paper, analyze how that evidence affects the scientific models studied.

BIOL M02A-explain prokaryotic and eukaryotic genome organization, DNA structure, DNA replication, transcription, splicing, structure and biochemistry of proteins, translation, gene expression and the control of gene expression. Relate theoretical models to the practical applications of biotechnology: a. Define the basic vocabulary b. Compare and contrast the interactions between the basic vocabulary words c. Construct mental models for the various systems studied d. Evaluate and appraise the evidence behind the various models discussed e. Given a body of data from a scientific paper, analyze how that evidence affects the scientific models studied.

BIOL M02A-discuss and relate evolutionary processes to the origin and evolution of cells, species and populations: a. Define the basic vocabulary b. Compare and contrast the interactions between the basic vocabulary words c. Construct mental models for the various systems studied d. Evaluate and appraise the evidence behind the various models discussed e. Given a body of data from a scientific paper, analyze how that evidence affects the scientific models studied.

BIOL M02A-explain and apply the scientific method in the study of biological concepts and laboratory exercises: a. Define the basic vocabulary b. Compare and contrast the interactions between the basic vocabulary words c. Construct mental models for the various systems studied d. Evaluate and appraise the evidence behind the various models discussed e. Given a body of data from a scientific paper, analyze how that evidence affects the scientific models studied.

BIOL M02A-acquire, read, evaluate, apply and cite scientific literature.

BIOL M02AH-demonstrate an understanding and be able to discuss the basic themes of biology that permeate all levels of organization: a. Define the basic vocabulary b. Compare and contrast the interactions between the basic vocabulary words c. Construct mental models for the various systems studied d. Evaluate and appraise the evidence behind the various models discussed e. Given a body of data from a scientific paper, analyze how that evidence affects the scientific models studied.

BIOL M02AH-discuss the chemical basis of biological systems including the structure and function of biological molecules and macromolecules: a. Define the basic vocabulary b. Compare and contrast the interactions between the basic vocabulary words c. Construct mental models for the various systems studied d. Evaluate and appraise the evidence behind the various models discussed e. Given a body of data from a scientific paper, analyze how that evidence affects the scientific models studied.

BIOL M02AH-explain the concepts and processes of cellular metabolism including photosynthesis, cellular respiration and the roles of enzymes and adenosine triphosphate in the thermodynamics of living systems: a. Define the basic vocabulary b. Compare and contrast the interactions between the basic vocabulary words c. Construct mental models for the various systems studied d. Evaluate and appraise the evidence behind the various models discussed e. Given a body of data from a scientific paper, analyze how that evidence affects the scientific models studied.

BIOL M02AH-identify and describe prokaryotic and eukaryotic cell structures, relating structure to function; discuss the different modes of cellular transport: a. Define the basic vocabulary b. Compare and contrast the interactions between the basic vocabulary words c. Construct mental models for the various systems studied d. Evaluate and appraise the evidence behind the various models discussed e. Given a body of data from a scientific paper, analyze how that evidence affects the scientific models studied.

BIOL M02AH-describe the connections that link cells together and how they facilitate cell communication: a. Define the basic vocabulary b. Compare and contrast the interactions between the basic vocabulary words c. Construct mental models for the various systems studied d. Evaluate and appraise the evidence behind the various models discussed e. Given a body of data from a scientific paper, analyze how that evidence affects the scientific models studied.

BIOL M02AH-discuss cellular reproduction and its controls in prokaryotes and eukaryotes including sexual and asexual life cycles: a. Define the basic vocabulary b. Compare and contrast the interactions between the basic vocabulary words c. Construct mental models for the various systems studied d. Evaluate and appraise the evidence behind the various models discussed e. Given a body of data from a scientific paper, analyze how that evidence affects the scientific models studied.

BIOL M02AH-apply the principles of classical and molecular genetics to solve problems in genetics and/or biotechnology: a. Define the basic vocabulary b. Compare and contrast the interactions between the basic vocabulary words c. Construct mental models for the various systems studied d. Evaluate and appraise the evidence behind the various models discussed e. Given a body of data from a scientific paper, analyze how that evidence affects the scientific models studied.

BIOL M02AH-explain prokaryotic and eukaryotic genome organization, DNA structure, DNA replication,transcription, splicing, structure and biochemistry of proteins, translation, gene expression and the control of gene expression. Relate theoretical models to the practical applications of biotechnology. a. Define the basic vocabulary b. Compare and contrast the interactions between the basic vocabulary words c. Construct mental models for the various systems studied d. Evaluate and appraise the evidence behind the various models discussed e. Given a body of data from a scientific paper, analyze how that evidence affects the scientific models studied.

BIOL M02AH-discuss and relate evolutionary processes to the origin and evolution of cells, species and populations: a. Define the basic vocabulary b. Compare and contrast the interactions between the basic vocabulary words c. Construct mental models for the various systems studied d. Evaluate and appraise the evidence behind the various models discussed e. Given a body of data from a scientific paper, analyze how that evidence affects the scientific models studied.

BIOL M02AH-explain and apply the scientific method in the study of biological concepts and laboratory exercises: a. Define the basic vocabulary b. Compare and contrast the interactions between the basic vocabulary words c. Construct mental models for the various systems studied d. Evaluate and appraise the evidence behind the various models discussed e. Given a body of data from a scientific paper, analyze how that evidence affects the scientific models studied.

BIOL M02AH-acquire, read, evaluate, apply and cite scientific literature.

## Requisite Justification

### Requisite Type

Prerequisite

### Requisite

BIOL M02A or BIOL M02AH

### Requisite Description

Course in a sequence

### Level of Scrutiny/Justification

Required by 4 year institution

## Student Learning Outcomes (CSLOs)

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

- |   |   |
|---|---|
| 1 | describe the domains and kingdoms of organisms, their life cycles, natural history and evolutionary trends using natural selection as the unifying concept. |
|---|---|

## Course Objectives

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

- |   |   |
|---|---|
| 1 | explain the essential elements of life, major hypotheses for life's history, and mechanisms for the diversification of life.  |
| 2 | compare and contrast the development, life cycles, anatomical and physiological characteristics of major taxa of organisms.   |
| 3 | evaluate the relationships of organisms to each other and their environments.   |
| 4 | describe, identify key characteristics, and classify representative specimens down to representative phyla.   |
| 5 | apply the processes of scientific inquiry, phylogenetic analysis, and experimental design to the diversity of organisms.  |
| 6 | HONORS: critically read, analyze and summarize original scientific data and research.   |
| 7 | HONORS: report on seminars, conferences or presentations within the academic setting or community.  |
| 8 | HONORS: identify, discuss and provide scientific significance and explanations for current biological issues impacting society. a. Define the basic vocabulary b. Compare and contrast the interactions between the basic vocabulary words c. Construct mental models for the various systems studied d. Evaluate and appraise the evidence behind the various models discussed e. Given a body of data from a scientific paper, analyze how that evidence affects the scientific models studied. |

## Course Content

### Lecture/Course Content

25% Evolutionary theory, including mechanisms of diversification of life and evidence for evolution

25% Phylogeny of life on earth (including plants, fungi, animals, and unicellular organisms)

25% Anatomy, physiology, organismal life cycles and development of living organisms (including plants, fungi, animals and unicellular organisms)

25% Interaction of organisms with the environment (including plants, fungi, animals, and unicellular organisms)

### **Laboratory or Activity Content**

32% Microscopic, gross comparative anatomy, and dissection of organisms from representative phyla

32% Observations of the physiology of representative organisms

4% Study of developmental stages of representative organisms

32% Observations of the functional morphology of representative phyla

### **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):**

Essay exams

Laboratory activities

Laboratory reports

Objective exams

Problem-solving exams

Skills demonstrations

### **Instructional Methodology**

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

Audio-visual presentations

Laboratory activities

Lecture

Other (specify)

**Specify other method of instruction**

Dissection

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

In addition to lectures and discussions, the instructor will use online presentations (PowerPoint, Google Slides, etc.), video presentations (films, documentaries, instructional), group activities, and classroom demonstrations to explain course content.

### **Representative Course Assignments**

#### **Writing Assignments**

Projects and papers on organisms and their role in the environment.

Laboratory reports and lab practicals.

Honors: Reviews of scientific journal articles, such as on population/community ecology of biodiversity hotspots or topics in comparative anatomy & physiology.

Honors: Summaries of seminars attended.

Honors: Research paper on a topic pertinent to the field of Biology. For example, a research paper on trophic cascades in local ecological communities.

#### **Critical Thinking Assignments**

Compare morphology and physiology of specific animal species.

Critique evidence for evolution.

Honors: Compare various phylogenies of animals to analyze the type of selection that produced them.

Honors: Read and analyze scientific research articles.

Honors: Think critically about various adaptations in animal/plant anatomy and physiology. For example: compare and contrast foregut fermentation & hindgut fermentation in herbivores

### Reading Assignments

Read sections of the textbook based on assignments.

Read and analyze scientific papers on topics from the COR.

Honors: Read a current peer reviewed paper on an ecological issue (acidification of the ocean) and analyze the possible impact of that on adaptations in bivalves.

Honors: Find a popular publication article (newspaper, magazine, social media) regarding conservation, compare to peer reviewed literature for accuracy.

### Skills Demonstrations

Develop microscopy skills by examining various protists for their defining characteristics.

Dissect various taxonomical groups to increase understanding of basic anatomy and physiology.

Keep a lab notebook with detailed observations in your own words.

Honors: Use microscopy skills to identify unknown protists in pond water. Support your identification with drawing them and comparing to identification keys.

Honors: Dissect various taxonomical groups to analyze convergent evolution vs homologous structures.

Honors: Keep a lab notebook tying lab observations to outside the lab phenomena.

Honors: Analyze data from sun and shade leaf experiment.

## Outside Assignments

### Representative Outside Assignments

Utilization of keys to identify representative phyla.

Utilization and reading of Internet resources to prepare for paper on diversification of species.

Honors: Evaluation of scientific research as presented in the popular media.

Honors: Attendance at seminars, conference or scientific presentations.

## Articulation

### C-ID Descriptor Number

BIOL 140

### Status

Aligned

### Equivalent Courses at 4 year institutions

University	Course ID	Course Title	Units
CSU Northridge	BIOL 106/106L	Biological Principles I and Biology Lab I	3/1
UC Riverside	BIOL 005B	Introduction to Organismal Biology	4
UC Davis	BIOLSCI 2C	Introduction Biology: Biodiversity & the Tree of Life	5
CSU Los Angeles	BIOL 1200	Principles of Biology II	5

### Comparable Courses within the VCCCD

BIOL R122 - Principles of Biology II

BIOL V03 - Evolution, Ecology, and Organismal Biology

BIOL R122L - Principles of Biology II Laboratory

### Equivalent Courses at other CCCs

College	Course ID	Course Title	Units
College of the Canyons	BIOSCI 106H	Organismal & Environmental Biology - Honors	4
Irvine Valley	BIO 80H	Integrated Biology: Organisms to Ecosystems - Honors	4
Mt. San Jacinto	BIOL 115H	Honors General Biology II	4
El Camino College	BIOL 102H	Honors Principles of Biology II	5

## **District General Education**

### **A. Natural Sciences**

#### **A1. Biological Science**

Proposed

**Date Proposed:**

11/2022

**Effective term:**

Fall 2024

### **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:

F2024

## **CSU GE-Breadth**

### **Area A: English Language Communication and Critical Thinking**

### **Area B: Scientific Inquiry and Quantitative Reasoning**

#### **B2 Life Science**

Proposed

**Date Proposed:**

12/15/2023

#### **B3 Laboratory Activity**

Proposed

**Date Proposed:**

12/15/2023

### **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:**

6/15/2023

**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 5B: Biological Science**

Proposed

**Date Proposed:**

12/15/2023

**Area 5C: Laboratory Science**

Proposed

**Date Proposed:**

12/15/2023

**Area 6: Languages Other than English (LOTE)****Textbooks and Lab Manuals****Resource Type**

Textbook

**Description**Urry, Lisa A., et al. *Campbell Biology*. 12th ed., Pearson, 2020.**Resource Type**

Textbook

**Description**Morris, James, et al. *Biology: How Life Works*. 4th ed., MacMillan Learning, 2023.**Resource Type**

Manual

**Description**

Biology Laboratory Manual. 12th ed., McGraw Hill, 2019.

**Resource Type**

Manual

**Description**

Investigating Biology Laboratory Manual. 9th ed., Pearson, 2017.

**Resource Type**

Other Resource Type

### Description

Pearson Custom Labs: <https://console.pearsoned.com/enrollment/as1unl>. ([https://d9yj07t7.r.us-east-1.amazonaws.com/L0/https:%2F%2Fconsole.pearsoned.com%2Fenrollment%2Fas1unl/1/010001827eedc6ef-fe616f6d-be20-459a-8105-eef4df2a3026-000000/QD\\_rf\\_kqSezYTbPTBNElvSft9hM=281/](https://d9yj07t7.r.us-east-1.amazonaws.com/L0/https:%2F%2Fconsole.pearsoned.com%2Fenrollment%2Fas1unl/1/010001827eedc6ef-fe616f6d-be20-459a-8105-eef4df2a3026-000000/QD_rf_kqSezYTbPTBNElvSft9hM=281/))

## Library Resources

### Assignments requiring library resources

Utilize the Library's print and online resources in preparation for writing research papers on such topics as biology kingdom, physiology, and ecology.

### Sufficient Library Resources exist

Yes

### Example of Assignments Requiring Library Resources

Utilize library resources to locate reviews of scientific journal articles, such as on population/community ecology of biodiversity hotspots or topics in comparative anatomy & physiology.

### Primary Minimum Qualification

BIOLOGICAL SCIENCES

## Review and Approval Dates

### Department Chair

11/07/2022

### Dean

11/21/2022

### Technical Review

12/01/2022

### Curriculum Committee

12/6/2022

### DTRW-I

01/12/2022

### Curriculum Committee

MM/DD/YYYY

### Board

02/14/2022

### CCCCO

MM/DD/YYYY

### DOE/accreditation approval date

MM/DD/YYYY