

I. CATALOG INFORMATIONA. Discipline: BIOLOGYB. Subject Code and Number: BIOL M01C. Course Title: Introduction to Biology

D. Credit Course units:

Units: 4Lecture Hours per week: 3Lab Hours per week : 3Variable Units : No

E. Student Learning Hours:

Lecture Hours:

Classroom hours: 52.5 - 52.5

Laboratory/Activity Hours:

Laboratory/Activity Hours 52.5 - 52.5**Total Combined Hours** in a 17.5 week term: 105 - 105

F. Non-Credit Course hours per week _____

G. May be taken a total of: 1 2 3 4 time(s) for creditH. Is the course co-designated (same as) another course: No Yes

If YES, designate course Subject Code & Number: _____

I. Course Description:

Introduces non-majors to science and scientific methodology through a study of the basic principles of biology. Focuses on student understanding of the unity and diversity of life through discussions of topics that include biological chemistry, metabolism, cell biology, molecular biology, genetics, evolution of living systems, and ecology. Examines the implications of the science of biology on human affairs.

J. Entrance Skills

*Prerequisite: No Yes Course(s)

*Corequisite: No Yes Course(s)

Limitation on Enrollment: No Yes

Recommended Preparation: No Yes Course(s)

Other: No Yes

K. Other Catalog Information:

Course Credit Limitation:

MC, CSU and UC - no credit if taken after BIOL M02A or BIOL M02AH.

II. COURSE OBJECTIVES

Upon successful completion of the course, a student will be able to:

		Methods of evaluation will be consistent with, but not limited by, the following types or examples.
1	interpret lay scientific literature utilizing the basic principles and concepts of biology.	Quizzes Problem solving and objective exams Projects Reports Papers Case studies Classroom discussions
2	explain how the scientific method differs from other approaches to problem solving; apply the scientific method in laboratory exercises.	Quizzes Tests Presentations Lab reports
3	utilize the scientific method in reasoning, decision-making, and social involvement.	Quizzes Tests Presentations Lab reports
4	explain the chemical and molecular basis for human nutritional needs and describe the impact of nutrition on metabolism.	Quizzes Problem solving and objective exams Projects Reports Papers Case studies Classroom discussions
5	explain energy flow in the biological world and describe how carbon is cycled.	Quizzes Problem solving and objective exams Projects Reports Papers Case studies Classroom discussions

6	explain the significance of the relationship between structure and function at the molecular, cellular, and organismal levels.	Quizzes Problem solving and objective exams Projects Reports Papers Case studies Classroom discussions
7	describe cell structure and explain how the various components contribute to the functioning of the cell as a unit in its environment.	Quizzes Problem solving and objective exams Projects Reports Papers Case studies Classroom discussions
8	explain inheritance patterns and the cellular mechanisms involved in both sexual and asexual reproduction.	Quizzes Problem solving and objective exams Projects Reports Papers Case studies Classroom discussions
9	relate changes in gene expression to the (mal)functioning of the organism.	Quizzes Problem solving and objective exams Projects Reports Papers Case studies Classroom discussions
10	explain the unifying role of evolution to life on earth and how evolution accounts for diversity of life forms.	Quizzes Problem solving and objective exams Projects Reports Papers Case studies Classroom discussions
11	explain how the theory of natural selection and changes in the gene pool account for the evolution of life forms.	Quizzes Problem solving and objective exams Projects Reports Papers Case studies Classroom discussions

12	describe the structure and function of DNA (deoxyribose nucleic acid), RNA (ribonucleic acid), proteins, and lipids.	Quizzes Problem solving and objective exams Projects Reports Papers Case studies Classroom discussions
13	discuss the significance of and relationships between the various types of organisms that comprise the biological world and assess human's use of recombinant technology and other organisms for our own purposes.	Quizzes Problem solving and objective exams Projects Reports Papers Case studies Classroom discussions
14	evaluate human impact on the ecosystems and the environment.	Quizzes Problem solving and objective exams, Projects Reports Papers Case studies Classroom discussions
15	evaluate arguments regarding the application of biological principles to contemporary human issues.	Quizzes Problem solving and objective exams Projects Reports Papers Case studies Classroom discussions
16	develop fundamental laboratory skills and demonstrate competence with basic laboratory equipment, tools, and techniques.	Lab report Lab worksheets Lab practicals

III. COURSE CONTENT

Estimated %	Topic	Learning Outcomes
Lecture (must total 100%)		
3.00%	Scientific process	1, 2, 3, 16
4.00%	Organization and characteristics of living things Biodiversity	1, 3, 6, 10, 11, 13, 14

10.00%	Biological chemistry Basic chemistry Significance of water Nutrition Macromolecules	3, 4
8.00%	Cell structure Cell membranes Transport processes and movement of materials	3, 6, 7
4.00%	Cell metabolism Metabolic pathways and enzymes	1, 3, 4
10.00%	Evolution Evidence Darwinian Speciation Macroevolution	1, 2, 3, 10, 11
14.00%	Ecology Community relationships Ecosystems Nutrient cycling Food webs Succession Biomes	1, 3, 13, 14, 15
6.00%	Cell division Asexual Sexual	3, 7, 8, 9, 12
9.00%	Inheritance Mendelian Non-Mendelian	3, 8
12.00%	Molecular biology DNA replication Protein synthesis Gene regulation	3, 6, 9
10.00%	Energy flow and carbon cycling Aerobic respiration Photosynthesis Environmental issues – acid rain, global warming, greenhouse effect	4, 5, 14, 15
5.00%	Human physiology	1, 4, 6, 9
5.00%	DNA technology biotechnology and genetic engineering	1, 3, 6, 9, 12, 13, 15, 16
Lab (must total 100%)		
7.00%	Scientific method Introduce the Scientific Method. Apply the scientific method to determine a factor that affects the rate dissolution of Alka-Seltzer. Design an experiment to determine the toxicity of diluted chemical's effect on seed germination. Evaluate the results.	1, 2, 3, 16
7.00%	Measurement Introduce the Metric System of measurement and the use of scientific notation. Calculate conversions using the metric systems.	3, 16
7.00%	Macromolecules Review the classes of biological macromolecules. Introduce methods	3, 4, 16

	to detect biological molecules and use these techniques to identify macromolecules in various foods.	
7.00%	Microscopy and cell structure Introduce the use and care of the Compound Light Microscope. Demonstrate its use by observing various eukaryotic and prokaryotic cells.	3, 6, 7, 16
7.00%	Enzymes Introduce the function of enzymes. Demonstrate and analyze the activity of several different enzymes.	3, 4, 5, 6, 16
7.00%	Diffusion/Osmosis Review the concepts of osmosis and diffusion and apply these concepts to biological processes. Review the structure of membranes and discuss different types of transport across cellular membranes.	3, 4, 6, 7, 16
7.00%	Photosynthesis Review the process of mitosis and meiosis by identifying the different stages in cells using the compound light microscope.	3, 4, 5, 16
7.00%	Mitosis/Meiosis Review the process of mitosis and meiosis by identifying the different stages in cells using the compound light microscope.	3, 7, 8, 16
7.00%	Genetics Review Mendelian genetics. Solve monohybrid and dihybrid crosses. Analyze pedigrees and determine the mode of inheritance.	3, 10, 11, 12, 16
7.00%	PCR (Polymerase Chain Reaction) Review PCR and isolate DNA. Review gel electrophoresis and analyze results of the PCR and genotype.	3, 12, 13, 16
7.00%	Bacteria, protista, and fungi Review the features of each kingdom by observing microscopic specimens. Finding microbes everywhere by swabbing and culturing surfaces. Microscopically analyze the types of microbes cultured.	3, 10, 13, 16
7.00%	Classification and Taxonomy and the Animal Kingdom. Define taxonomy, classification, systematics, phylogeny, binomial, and species. Demonstrate understanding by using a dichotomous key and constructing a cladogram.	1, 3, 6, 10, 16
8.00%	Plants Review the features of the Plant kingdom. Describe the lifecycle of a flowering plant. Recognize the differences between monocots and dicots. Learn the components of flowers and fruits and their significance to plants and humans.	8, 10, 11, 13, 16
8.00%	Animal Diversity Review the major animal phyla. Define anatomical and morphological terms that distinguish the different phyla. Observe a variety of animal specimens. Determine their phyla by using a dichotomous key. Dissect various animal species to observe their circulatory, digestive, and muscular systems. Compare their anatomical adaptations to their ecological niche.	3, 6, 7, 10, 13, 16

IV. TYPICAL ASSIGNMENTS

A. Writing assignments

Writing assignments are required. Possible assignments may include, but are not limited to:	
1	written evaluations of assigned readings, such as relating evolutionary processes to the origin and evolution of cells, species, and populations.
2	completion of lab reports, and applying the scientific method in the study of biological

	concepts in the laboratory exercises.
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B. Appropriate outside assignments

Appropriate outside assignments are required. Possible assignments may include, but are not limited to:	
1	reading and then critically analyzing scientific literature, such as the role climate change in affecting natural systems and biodiversity.
2	cooperative group planning for oral presentations, such as the relationship between genetics and a particular disease.

C. Critical thinking assignments

Critical thinking assignments are required. Possible assignments may include, but are not limited to:	
1	review lay scientific literature on the topic of evolution.
2	analyze Internet assignments related to ecological issues and the environment.
3	compare and contrast mendelian and non-mendelian inheritance mechanisms through the use of problem sets.

V. METHODS OF INSTRUCTION

Methods of instruction may include, but are not limited to:

- Distance Education – When any portion of class contact hours is replaced by distance education delivery mode (Complete DE Addendum, Section XV)
- Lecture/Discussion
- Laboratory/Activity
- Other (Specify) Debates
Group presentations
Audio-visual
Think-pair-share
Concept maps
- Optional Field Trips
- Required Field Trips

VI. METHODS OF EVALUATION

Methods of evaluation may include, but are not limited to:

- | | | |
|--|---|---|
| <input checked="" type="checkbox"/> Essay Exam | <input checked="" type="checkbox"/> Classroom Discussion | <input type="checkbox"/> Skill Demonstration |
| <input checked="" type="checkbox"/> Problem Solving Exam | <input checked="" type="checkbox"/> Reports/Papers/Journals | <input checked="" type="checkbox"/> Participation |
| <input checked="" type="checkbox"/> Objective Exams | <input checked="" type="checkbox"/> Projects | <input checked="" type="checkbox"/> Other (specify) |

Rubric evaluation of written report on biological topic

Correct interpretation of laboratory dataLab practical**VII. REPRESENTATIVE TEXTS AND OTHER COURSE MATERIALS**

Starr, Cecie, et al. Biology: Concepts and Applications. 10th ed. Cengage, 2018.

Audesirk, Gerald, et al. Biology: Life on Earth. 11th ed. Pearson, 2017.

Simon, Eric, et al. Campbell Essential Biology. 7th ed. Pearson, 2019.

Houtman, Anne, et al. Biology Now. 2nd ed. Norton, 2018.

Pendarvis, Murray, and John Crawley. Exploring Biology in the Laboratory. 3rd ed. Morton, 2018.

VIII. STUDENT MATERIALS FEES

No Yes

IX. PARALLEL COURSES

College	Course Number	Course Title	Units
CSU, Northridge	BIOL 100 and 100L	Introductory Biology	3/1
CSU, Channel Islands	BIOL 100	Exploring the Living World	4
UC Los Angeles	LS 15	Life: Concepts and Issues	5
Cal Poly San Luis Obispo	BIO 111	General Biology	4
UC Santa Barbara	MCDB 20	Concepts of Biology	4

X. MINIMUM QUALIFICATIONS**Courses Requiring a Masters Degree:**

Master's degree in any biological science OR bachelor's degree in any biological science AND master's degree in biochemistry, biophysics, or marine science OR the equivalent.

XI. ARTICULATION INFORMATION**A. Title V Course Classification:**

1. This course is designed to be taken either:

- Pass/No Pass only (no letter grade possible); or
 Letter grade (P/NP possible at student option)

2. Degree status:

Either Associate Degree Applicable; or Non-associate Degree Applicable

B. Moorpark College General Education:

1. Do you recommend this course for inclusion on the Associate Degree General Education list?

Yes: No: If YES, what section(s)?

- A1 - Natural Sciences - Biological Science
 A2 - Natural Sciences - Physical Science

- B1 - Social and Behavioral Sciences - American History/Institutions
- B2 - Social and Behavioral Sciences - Other Social Behavioral Science
- C1 - Humanities - Fine or Performing Arts
- C2 - Humanities - Other Humanities
- D1 - Language and Rationality - English Composition
- D2 - Language and Rationality - Communication and Analytical Thinking
- E1 - Health/Physical Education
- E2 - PE or Dance
- F - Ethnic/Gender Studies

C. California State University(CSU) Articulation:

1. Do you recommend this course for transfer credit to CSU? Yes: No:

2. If YES do you recommend this course for inclusion on the CSU General Education list?

Yes: No: If YES, which area(s)?

- | | | | | | | |
|-----------------------------|-----------------------------|-----------------------------|-----------------------------|--|--|-----------------------------|
| A1 <input type="checkbox"/> | A2 <input type="checkbox"/> | A3 <input type="checkbox"/> | B1 <input type="checkbox"/> | B2 <input checked="" type="checkbox"/> | B3 <input checked="" type="checkbox"/> | B4 <input type="checkbox"/> |
| C1 <input type="checkbox"/> | C2 <input type="checkbox"/> | D1 <input type="checkbox"/> | D2 <input type="checkbox"/> | D3 <input type="checkbox"/> | D4 <input type="checkbox"/> | D5 <input type="checkbox"/> |
| <input type="checkbox"/> | | | | | | |
| D6 <input type="checkbox"/> | D7 <input type="checkbox"/> | D8 <input type="checkbox"/> | D9 <input type="checkbox"/> | D10 <input type="checkbox"/> | E <input type="checkbox"/> | |

D. University of California (UC) Articulation:

1. Do you recommend this course for transfer to the UC? Yes: No:

2. If YES do you recommend this course for the Intersegmental General Education Transfer Curriculum (IGETC)? Yes: No:

IGETC Area 1: English Communication

- English Composition
- Critical Thinking-English Composition
- Oral Communication

IGETC Area 2: Mathematical Concepts and Quantitative Reasoning

- Mathematical Concepts

IGETC Area 3: Arts and Humanities

- Arts
- Humanities

IGETC Area 4: Social and Behavioral Sciences

- Anthropology and Archaeology
- Economics
-

- Ethnic Studies
- Gender Studies
- Geography
- History
- Interdisciplinary, Social & Behavioral Sciences
- Political Science, Government & Legal Institutions
- Psychology
- Sociology & Criminology

IGETC Area 5: Physical and Biological Sciences (mark all that apply)

- Physical Science Lab or Physical Science Lab only (non-sequence)
- Physical Science Lecture only (non-sequence)
- Biological Science
- Physical Science Courses
- Physical Science Lab or Biological Science Lab Only (non-sequence)
- Biological Science Courses
- Biological Science Lab course
- First Science course in a Special sequence
- Second Science course in a Special Sequence
- Laboratory Activity
- Physical Sciences

IGETC Area 6: Language other than English

- Languages other than English (UC Requirement Only)
- U.S. History, Constitution, and American Ideals (CSU Requirement ONLY)
- U.S. History, Constitution, and American Ideals (CSU Requirement ONLY)

XII. REVIEW OF LIBRARY RESOURCES

- A. What planned assignment(s) will require library resources and use?

The following assignments require library resources:

Research, using the Library's print and online resources, for written and oral reports on topics such as the role of climate change in affecting natural biodiversity.

- B. Are the currently held library resources sufficient to support the course assignment?

YES: NO:

If NO, please list additional library resources needed to support this course.

XIII. PREREQUISITE AND/OR COREQUISITE JUSTIFICATION

BIOL M01: Not Applicable

XIV. WORKPLACE PREPARATION

BIOL M01: Not Applicable

XV. DISTANCE LEARNING COURSE OUTLINE ADDENDUM

1. Mode of Delivery

- Online (course will be delivered 100% online)
- Online with onsite examinations (100% of the instruction will occur online, but examinations and an orientation will be scheduled onsite)
- Online/Hybrid (a percentage of instruction will be held online and the remaining percentage of instruction will be held onsite)
- Lab activities will be conducted onsite
- Televideo (Examinations and an orientation will be held onsite)
- Teleconference
- Other

2. Need/Justification

Improve general student access.

3. Describe how instructors teaching this course will ensure regular, effective contact with and among students.

On-site Orientation, On-site testing, email, chat rooms/discussion boards.

4. Describe how instructors teaching this course will involve students in active learning.

Instructors may include using discussion boards and peer evaluations of posted student work. They could also include reading based quizzes, lecture based low-stakes writing assignments, orientation assignment ensuring the student knows/can access all the DE components, research papers, hands-on home experiment(s) with actual manipulation/data and virtual labs, and optional field trips.

5. Explain how instructors teaching this course will provide multiple methods of content representation.

Instructors may include options that include live interactive and/or asynchronous online lectures, videos, notes assigned readings, assigned research, and posted powerpoints.

6. Describe how instructors teaching this course will evaluate student performance.

Instructors can evaluate students through different options such as papers, quizzes, lab reports, low-stakes writing, project(s), and any typical assignments an instructor may choose to require.

XVI. GENERAL EDUCATION COURSE OUTLINE ADDENDUM

General Education Division of Learning [check all applicable boxes]:

- Natural Sciences
 - Biological Science
 - Physical Science
- Social and Behavioral Sciences
 - American History/Institutions
 - Other Social Science
- Humanities
 - Fine or Performing Arts
 - Other Humanities
- Language and Rationality
 - English Composition
 - Communication and Analytical Thinking
- Health/Physical Education
- Ethnic/Women's Studies

Check either Option 1 or Option 2

- OPTION #1:** Moorpark College has already received approval from the CSU and/or UC systems for this course to fulfill a GE requirement. Note: This option applies only to technical revisions and updated courses.
- OPTION #2:** Moorpark College has not received approval from the CSU and/or UC systems for this course to fulfill a GE requirement. This option applies to all new and substantively revised courses.

XVII. STUDENT MATERIALS FEE ADDENDUM

BIOL M01: Not Applicable

XVIII. REPEATABILITY JUSTIFICATION TITLE 5, SECTION 55041

BIOL M01: Not Applicable

XIX. CURRICULUM APPROVAL

Course Information:

Discipline: BIOLOGY

Discipline Code and Number: BIOL M01

Course Revision Category: Outline Update

Course Proposed By:

Originating Faculty Audrey Chen 09/10/2018

Faculty Peer: Melia Tabbakhian 09/10/2018

Curriculum Rep: Beth Miller 09/12/2018

Department Chair: Audrey Chen 09/10/2018

Division Dean: Carol Higashida 09/10/2018

Approved By:

Curriculum Chair: Jerry Mansfield 02/08/2019

Executive Vice President: _____

Articulation Officer: Letrisha Mai 02/07/2019

Librarian: Mary LaBarge 02/02/2019

Implementation Term and Year: Fall 2019

Approval Dates:

Approved by Moorpark College Curriculum Committee: 03/05/2019

Approved by Board of Trustees (if applicable): _____

Approved by State (if applicable): 03/08/2019