



**COURSE OUTLINE : BIOL 122**  
**D Credit – Degree Applicable**  
**COURSE ID 005081**

**Date Approved : 5/22/2019**  
**OFFICIAL**

**COURSE DISCIPLINE :** BIOL  
**COURSE NUMBER :** 122  
**COURSE TITLE (FULL) :** Introduction to Biology  
**COURSE TITLE (SHORT) :** Introduction to Biology  
**CALIFORNIA STATE UNIVERSITY SYSTEM C-ID :**

#### **CATALOG DESCRIPTION**

BIOL 122 is a survey course in the biological sciences designed to meet the laboratory science or life science requirement for most general education programs. BIOL 122 covers the scientific method, molecular and cellular organization and function, genetics, and plant/animal anatomy and physiology. This course also covers evolution, a survey of biodiversity, ecology, and the impact of humans on the environment.

#### **CATALOG NOTES**

Total Lecture Units:3.00

Total Laboratory Units: 1.00

**Total Course Units: 4.00**

Total Lecture Hours:54.00

Total Laboratory Hours: 54.00

Total Laboratory Hours To Be Arranged: 0.00

**Total Contact Hours: 108.00**

#### **Recommended Preparation:**

ENGL - 100 - Writing Workshop

ENGL - 120 - Composition and Reading

ESL - 151 - Reading And Composition V

#### **PRECONDITIONS FOR ENROLLMENT**



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<b>And/Or</b>	<b>Course</b>	<b>Type</b>	<b>Req. Is Being</b>
Or	ENGL - 120 - Composition and Reading	Recommended Preparation	Reviewed
	ENGL - 100 - Writing Workshop	Recommended Preparation	Added
Or	ESL - 151 - Reading And Composition V	Recommended Preparation	Added

**ENTRY STANDARDS**

	<b>Subject</b>	<b>Number</b>	<b>Title</b>	<b>Description</b>	<b>Include</b>
1	ENGL	120	Composition and Reading	Compose thesis-based essays at a first-year college level;	Yes
2	ENGL	120	Composition and Reading	use detailed examples, facts, logical explanations, and other appropriate support for thesis statements;	Yes
3	ENGL	120	Composition and Reading	critically analyze selected prose works dealing with important contemporary issues;	No
4	ENGL	120	Composition and Reading	summarize, analyze, and synthesize information, express and apply standards for judgment, compare and contrast, and evaluate evidence in order to form and state reasoned opinions;	Yes
5	ENGL	120	Composition and Reading	gather and organize information through library research;	No
6	ENGL	120	Composition and Reading	demonstrate a command of grammar, diction, syntax, and mechanics sufficient for college level work: control of standard English at the sentence level, with few major errors in grammar and punctuation.	No
7	ENGL	100	Writing Workshop	read, analyze, and evaluate contemporary articles and stories to identify topic, thesis, support, transitions, conclusion, audience, and tone;	No
8	ENGL	100	Writing Workshop	read, analyze, and evaluate contemporary articles and stories for the comprehension of difficult content and the identification of main ideas and (topic-based) evidence;	Yes
9	ENGL	100	Writing Workshop	read, analyze, and evaluate student compositions for unity, development, use of evidence, interpretation, coherence, and variety of sentence form;	No
10	ENGL	100	Writing Workshop	write a summary of a contemporary article or story with correct citation techniques;	No
11	ENGL	100	Writing Workshop	write an argumentative essay that has an introduction, body paragraphs, and a conclusion, demonstrating a basic understanding of essay organization;	No



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12	ENGL	100	Writing Workshop	write an argumentative essay that addresses the topic, is directed by a thesis statement, uses appropriate textual evidence, develops logical interpretations, and concludes with some compelling observations;	No
13	ENGL	100	Writing Workshop	write an argumentative essay that integrates the ideas of others (i.e., authors) through paraphrasing, summarizing, and quoting with correct citation techniques;	No
14	ENGL	100	Writing Workshop	write an argumentative essay that generates novel ideas (those that add to the conversation rather than repeating the author's ideas) related to the topic and the readings;	No
15	ENGL	100	Writing Workshop	write compositions (e.g., summaries and argumentative essays) that are easy to read and follow, though some errors in grammar, mechanics, spelling, or diction may exist;	Yes
16	ENGL	100	Writing Workshop	proofread and edit essays for content, language, citation, and formatting problems.	No
17	ESL	151	Reading And Composition V	read and critically analyze various academic readings;	Yes
18	ESL	151	Reading And Composition V	summarize readings;	Yes
19	ESL	151	Reading And Composition V	organize fully-developed essays in both expository and argumentative modes;	No
20	ESL	151	Reading And Composition V	compose a 500 to 550-word essay which: summarizes and cites appropriately a reading passage; includes a clear thesis statement; uses evidence to support the thesis; shows clear organization into an introduction, body, and conclusion;	No
21	ESL	151	Reading And Composition V	revise writing to eliminate errors in syntax, and grammatical constructions;	No
22	ESL	151	Reading And Composition V	employ basic library research techniques;	No
23	ESL	151	Reading And Composition V	compose one research paper (1,000 words) or two short research papers (500-700words each) with citations.	No

**EXIT STANDARDS**



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- 1 Describe the structure of atoms, the properties of water and structure and function of biological macromolecules;
- 2 describe the flow of information from DNA to protein;
- 3 describe the mechanisms of evolution including natural selection;
- 4 describe basic ecological principles and the impact of humans on the environment;
- 5 identify the defining characteristics of major groups of organisms;
- 6 compare prokaryotic and eukaryotic cells, and describe the structure and function of eukaryotic organelles;
- 7 describe the principles of inheritance and solve basic Mendelian genetics problems;
- 8 describe basic principles of mammalian physiology.

**STUDENT LEARNING OUTCOMES**

- 1 explain the basic principles of population and community ecology and describe the effects of human activities on the biosphere
- 2 explain the major mechanisms of evolution and identify the defining characteristics of major groups of organisms
- 3 define a gene, demonstrate the flow of information from DNA to protein, and solve basic Mendelian genetics problems;
- 4 describe eukaryotic cell structure and cell division (mitosis and meiosis).

**COURSE CONTENT WITH INSTRUCTIONAL HOURS**

	Description	Lecture	Lab	Total Hours
1	Scientific Method <ul style="list-style-type: none"> <li>• Metric system</li> <li>• Hypothesis and theory</li> <li>• Biological organization</li> </ul>	3	3	6
2	Basic Chemistry <ul style="list-style-type: none"> <li>• Atoms and bonding</li> <li>• Properties of water</li> <li>• Macromolecules</li> <li>• Carbohydrates</li> <li>• Lipids</li> <li>• Proteins</li> <li>• Nucleic acids</li> </ul>	9	3	12



3	<p>Cell Structure and Function</p> <ul style="list-style-type: none"> <li>• Prokaryote vs. eukaryote</li> <li>• Plant vs. animal</li> <li>• Cellular organelles</li> <li>• Diffusion and osmosis</li> </ul>	3	7	10
4	<p>Energy</p> <ul style="list-style-type: none"> <li>• Kinetic vs. potential</li> <li>• Photosynthesis</li> <li>• Cellular respiration</li> </ul>	3	3	6
5	<p>Cell Division</p> <ul style="list-style-type: none"> <li>• DNA replication</li> <li>• Mitosis</li> <li>• Meiosis</li> <li>• Cancer</li> <li>• Non-disjunction</li> </ul>	4	3	7
6	<p>Mendelian Genetics</p> <ul style="list-style-type: none"> <li>• Mendel's pea plants</li> <li>• Incomplete and co-dominance</li> <li>• Sex-linked traits</li> <li>• Dihybrid cross and linked genes</li> </ul>	5	3	8
7	<p>DNA and Biotechnology</p> <ul style="list-style-type: none"> <li>• Transcription</li> <li>• Translation</li> <li>• Biotechnology</li> <li>• Gene therapy</li> <li>• Genetically modified crops</li> <li>• Forensic applications</li> </ul>	4	3	7
8	<p>Evolution</p> <ul style="list-style-type: none"> <li>• Historical perspective</li> <li>• Mechanisms</li> <li>• Natural selection</li> <li>• Genetic drift</li> <li>• Gene flow</li> <li>• Mutation</li> <li>• Non-random mating</li> <li>• Evidence</li> <li>• Fossil record</li> <li>• Biogeography</li> <li>• Long-term experiments</li> </ul>	10	3	13



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9	Origin of Life <ul style="list-style-type: none"> <li>• Big bang and early earth</li> <li>• RNA world and first cells</li> <li>• Origin of eukaryotes and Cambrian explosion</li> <li>• Speciation</li> <li>• Vertebrate origins</li> </ul>	5	0	5
10	Ecology <ul style="list-style-type: none"> <li>• Populations</li> <li>• Communities</li> <li>• Ecosystems</li> <li>• Human impact on the biosphere</li> </ul>	5	8	13
11	Biodiversity survey <ul style="list-style-type: none"> <li>• Microorganisms</li> <li>• Plants</li> <li>• Animals</li> <li>• Focus on mammals (LA zoo)</li> </ul>	0	12	12
12	Mammalian physiology <ul style="list-style-type: none"> <li>• Sensory physiology</li> <li>• Digestive system</li> <li>• Circulatory and respiratory systems</li> <li>• Reproductive system</li> </ul>	3	6	9
				<b>108</b>

**OUT OF CLASS ASSIGNMENTS**

- 1 reading quizzes;
- 2 completion of laboratory reports;
- 3 homework (e.g., practice Mendelian genetics problems).

**METHODS OF EVALUATION**

- 1 laboratory quizzes;
- 2 lecture exams.

**METHODS OF INSTRUCTION**

- Lecture
- Laboratory
- Studio



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- Discussion
- Multimedia
- Tutorial
- Independent Study
- Collaboratory Learning
- Demonstration
- Field Activities (Trips)
- Guest Speakers
- Presentations

**TEXTBOOKS**

<b>Title</b>	<b>Type</b>	<b>Publisher</b>	<b>Edition</b>	<b>Medium</b>	<b>Author</b>	<b>IBSN</b>	<b>Date</b>
What is Life? A Guide to Biology	Required	New York, NY: W.H. Freeman	4	Print	Phelan, J.	978- 131906545 4	2018
Essential Biology	Required	San Francisco, CA: Benjamin- Cummings	6	Print	Simon, E.	978- 013391778 9	2016