

Standard  Institutionally Developed College: N/A

EDGE Compatible: No

**Pre-requisites**

BIOL 1111 - Biology I ( 201003 )

**Co-requisites**

BIOL 1112L - Biology Lab II ( 201203 )

**Course Description**

Provides an introduction to basic evolutionary concepts. Also, the course emphasizes animal and plant diversity, structure and function including reproduction and development, and the dynamics of ecology as it pertains to populations, communities, ecosystems, and biosphere. Topics include principles of evolution, classification and characterizations of organisms, plant structure and function, animal structure and function, principles of ecology, and biosphere.

**Course Length**

	Minutes	Contact Unit
Lecture:	2250	
Lab 2:	0	
Lab 3:	0	
Practicum/Internship:	0	
Clinical:	0	
Total:	2250	3

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Semester Credit Hours: 3

**Competencies**

Order	Description	Lecture	Lab2	Lab3	Practicum/ Internship	Clinical	Total Minutes	Semester Credit Hrs
1	Principles of Evolution	385	0	0	0	0	385	
2	Classification and Characterization of Organisms	495	0	0	0	0	495	
3	Plant Structure and Function	440	0	0	0	0	440	
4	Animal Structure and Function	325	0	0	0	0	325	
5	Principles of Ecology	440	0	0	0	0	440	

Order	Description	Lecture	Lab2	Lab3	Practicum/ Internship	Clinical	Total Minutes	Semester Credit Hrs
6	Biosphere	165	0	0	0	0	165	
	<b>Totals for Course BIOL 1112 - Biology II ( version 201003 ):</b>	<b>2250</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2250</b>	<b>3</b>

## Learning Outcomes

### Principles of Evolution

Order	Description	Learning Domain	Level of Learning
1	Describe the process of microevolution.	Cognitive	Knowledge
2	Explain allele frequencies.	Cognitive	Comprehension
3	Describe directional selection.	Cognitive	Knowledge
4	Explain stabilizing selection.	Cognitive	Comprehension
5	Describe disruptive selection.	Cognitive	Knowledge
6	Characterize sexual selection.	Cognitive	Analysis
7	Explain the concept of gene flow.	Cognitive	Comprehension
8	Describe genetic drift and genetic shift.	Cognitive	Knowledge
9	Describe the process of speciation.	Cognitive	Knowledge
10	Describe allopatric speciation.	Cognitive	Knowledge
11	Describe sympatric speciation.	Cognitive	Knowledge
12	Describe parapatric speciation.	Cognitive	Knowledge
13	Describe various patterns of speciation.	Cognitive	Knowledge
14	Explain the concepts of macroevolution.	Cognitive	Comprehension
15	Explain the presence of fossil records.	Cognitive	Comprehension
16	Describe evidence of biogeography.	Cognitive	Knowledge
17	Explain morphological divergence and convergence in comparative morphology.	Cognitive	Comprehension
18	Describe comparative biochemistry.	Cognitive	Knowledge
19	Explain the use of taxonomy in biology.	Cognitive	Comprehension

### Classification and Characterization of Organisms

Order	Description	Learning Domain	Level of Learning
1	Describe and identify viruses and prions.	Cognitive	Knowledge
2	Compare and Contrast eukaryotic and prokaryotic cell structure.	Cognitive	Evaluation
3	Describe and identify bacteria.	Cognitive	Knowledge
4	Describe and identify protistans.	Cognitive	Knowledge
5	Describe and identify fungi.	Cognitive	Knowledge

Order	Description	Learning Domain	Level of Learning
6	Describe characteristics of nonvascular and vascular plants.	Cognitive	Knowledge
7	Identify and characterize invertebrate animals.	Cognitive	Knowledge
8	Identify and characterize vertebrate animals.	Cognitive	Knowledge

#### Plant Structure and Function

Order	Description	Learning Domain	Level of Learning
1	Describe and compare vascular and nonvascular plant structure.	Cognitive	Knowledge
2	Describe basic plant structure including shoot and root systems.	Cognitive	Knowledge
3	Describe basic plant tissue systems including ground, vascular and dermal tissues.	Cognitive	Knowledge
4	Compare and Contrast the types and composition of various leaf, stem and root structures.	Cognitive	Evaluation
5	Describe plant nutrition.	Cognitive	Knowledge
6	Explain nutritional requirements for plant growth.	Cognitive	Comprehension
7	Describe the properties of soil and how they meet the nutritional needs of plants.	Cognitive	Knowledge
8	Describe absorption of water and nutrients in root systems.	Cognitive	Knowledge
9	Explain the movement of water in transpiration.	Cognitive	Comprehension
10	Explain water conservation strategies in plant structure.	Cognitive	Comprehension
11	Describe translocation of organic compounds in the plant.	Cognitive	Knowledge
12	Explain plant growth and responses.	Cognitive	Comprehension
13	Describe the process of seed germination.	Cognitive	Knowledge
14	Explain the role of hormones in plant growth.	Cognitive	Comprehension
15	Explain the effect of environmental stresses on plant growth.	Cognitive	Comprehension
16	Describe basic lifecycles and senescence of the plant.	Cognitive	Knowledge
17	Describe , compare and contrast both sexual and asexual methods of plant reproduction.	Cognitive	Knowledge
18	Describe saprophytic and gametophytic plant structures.	Cognitive	Knowledge
19	Describe the reproductive structures of the flower.	Cognitive	Knowledge
20	Describe seed formation, fruit formation and dispersal strategies.	Cognitive	Knowledge

#### Animal Structure and Function

Order	Description	Learning Domain	Level of Learning
1	Describe variations in body plans and how they affect survivability of representative invertebrate and vertebrate animals.	Cognitive	Knowledge
2	Compare and Contrast organ systems of various invertebrate and vertebrate animals.	Cognitive	Evaluation
3	Describe and compare the various mechanisms of invertebrate and vertebrate animal reproduction and development.	Cognitive	Knowledge

#### Principles of Ecology

Order	Description	Learning Domain	Level of Learning
1	Characterize a population.	Cognitive	Analysis
2	Describe population dynamics.	Cognitive	Knowledge
3	Describe factors that influence population size.	Cognitive	Knowledge
4	Relate factors that effect the human populations.	Cognitive	Analysis
5	Describe patterns of instinctive and learned behaviors within the population.	Cognitive	Knowledge
6	Characterize a community.	Cognitive	Analysis
7	Describe patterns of species interaction with various communities.	Cognitive	Knowledge
8	Explain the impact of internal and external forces on the stability of a community.	Cognitive	Comprehension
9	Explain community interactions.	Cognitive	Comprehension
10	Describe patterns of biodiversity.	Cognitive	Knowledge
11	Characterize an ecosystem.	Cognitive	Analysis
12	Describe a food web.	Cognitive	Knowledge
13	Explain and characterize ecological pyramids.	Cognitive	Comprehension
14	Describe the various biogeochemical cycles.	Cognitive	Knowledge

#### Biosphere

Order	Description	Learning Domain	Level of Learning
1	Describe the atmosphere.	Cognitive	Knowledge
2	Describe the lithosphere.	Cognitive	Knowledge
3	Describe the hydrosphere.	Cognitive	Knowledge
4	Characterize major biomes.	Cognitive	Analysis
5	Explain human impact on the biosphere.	Cognitive	Comprehension

#### References

Order	Reference Type	Description
1	Book with Author(s) Listed	Audesirk, G., Audesirk, T. & Byers, B.. (2008). Biology: Life on earth. (8th). San Francisco, CA: Benjamin Cummings.
2	Book with Author(s) Listed	Campbell, N. & Reece, J.. (2008). Biology. (8th). San Francisco, CA: Benjamin Cummings.
3	Book with Author(s) Listed	Mader, S.. (2004). Biology. (8th). New York, NY: McGraw Hill.
4	Book with Author(s) Listed	Starr, C. & Taggart, R.. (2006). Biology: The unity and diversity of life. (11th). Belmont, CA: Centage Delmar.
5	Book with Author(s) Listed	Krogh, David. (2009). Biology: A Guide to the Natural World. (4th). San Francisco, CA: Benjamin Cummings.