BIOL 2117 - Introductory Microbiology (version 201003)

Posted: 02/09/2010

☑ Standard ☐ Institutionally Developed College: N/A

EDGE Compatible: No

Pre-requisites

BIOL 2113 - Anatomy and Physiology I (201003)

Co-requisites

BIOL 2117L - Introductory Microbiology Lab (201203)

Course Description

Provides students with a foundation in basic microbiology with emphasis on infectious disease. Topics include microbial diversity, microbial cell biology, microbial genetics, interactions and impact of microorganisms and humans, microorganisms and human disease.

Course Length

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

Competencies

Order	Description	Lecture	Lab2	Lab3	Practicum/ Internship	Clinical	Total Minutes	Semester Credit Hrs
1	Microbial Diversity	395	0	0	0	0	395	0
2	Microbial Cell Biology	280	0	0	0	0	280	0
3	Microbial Genetics	280	0	0	0	0	280	0
4	Interactions and Impact of Microorganisms and Humans	450	0	0	0	0	450	0
5	Microorganisms and Human Disease	845	0	0	0	0	845	1
	Totals for Course BIOL 2117 - Introductory Microbiology (version 201003):	**2250**	**0**	**0**	**0**	**0**	**2250**	**3**

Learning Outcomes

Microbial Diversity

Order	Description	Learning Domain	Level of Learning
1	Explain characterization of organisms, including viruses, bacteria, prions, fungi, and protozoa.	Cognitive	Comprehension
2	Classify organisms.	Cognitive	Comprehension
3	Use staining techniques to classify specific organisms.	Cognitive	Application

Microbial Cell Biology

Order	Description	Learning Domain	Level of Learning
1	Summarize the morphology of bacteria	Cognitive	Comprehension
2	Explain the fine structure of bacteria.	Cognitive	Comprehension
3	Identify common gram negative and gram positive bacteria.	Cognitive	Knowledge
4	Describe bacteria with unusual properties and complex morphology.	Cognitive	Knowledge
5	Execute various staining techniques in order to study the morphology of microorganisms.	Cognitive	Knowledge
6	Describe bacterial growth.	Cognitive	Knowledge
7	Explain the replication of bacteria.	Cognitive	Comprehension
8	Explain the replication of viruses.	Cognitive	Comprehension
9	Estimate the number of microbes in a culture medium by both direct and indirect methods.	Cognitive	Comprehension
10	Use appropriate microbiological media and test systems.	Cognitive	Application
11	Cultivate specific microorganisms in various media.	Cognitive	Application
12	Describe the various types of energy production.	Cognitive	Knowledge
13	Understand the metabolic diversity of microbes.	Cognitive	Comprehension

Microbial Genetics

Order	Description	Learning Domain	Level of Learning
1	Describe the cause, consequences and uses of mutations.	Cognitive	Knowledge
2	Explain genetic transfer and recombination.	Cognitive	Comprehension
3	Identify applications of biotechnology.	Cognitive	Knowledge

Interactions and Impact of Microorganisms and Humans

Order	Description	Learning Domain	Level of Learning
1	Describe factors that affect the ability of the host to resist infection.	Cognitive	Knowledge
2	Describe host innate or natural defense mechanisms.	Cognitive	Knowledge
3	Discuss innate host defenses that offer resistance to microorganism establishment.	Cognitive	Comprehension
4	Discuss adaptive host defenses that offer resistance to microorganism establishment, including antibody formation, active and passive immunity, and natural and acquired immunity	Cognitive	Comprehension

Order	Description	Learning Domain	Level of Learning
5	Differentiate between innate and acquired immunity.	Cognitive	Analysis
6	Discuss the disorders of the immune system.	Cognitive	Comprehension
7	Discuss principles of epidemiology.	Cognitive	Comprehension
8	Explain portals of entry for pathogenic agents.	Cognitive	Comprehension
9	Describe the evasion mechanisms of the pathogen.	Cognitive	Knowledge
10	Describe indirect and direct disease transmission methods.	Cognitive	Knowledge
11	Discuss the effects of immunosuppressive drug therapy, concurrent disease, and aging on the host-parasite relationship.	Cognitive	Comprehension
12	Discuss the methods by which various antibiotics and chemotherapeutic agents affect microorganisms.	Cognitive	Comprehension
13	Discuss practical applications of various disinfection and sterilization procedures.	Cognitive	Comprehension
14	Determine antibiotic sensitivity.	Cognitive	Application
15	Determine the impact of various disinfectants and antiseptics on microorganisms.	Cognitive	Application
16	Evaluate sterility testing procedures.	Cognitive	Evaluation
17	Properly use aseptic techniques.	Cognitive	Knowledge

Microorganisms and Human Disease

Order	Description	Learning Domain	Level of Learning
1	Identify the causative agents for the major microbial diseases for each of the following body systems: respiratory, digestive, genitourinary, integumentary, cardiovascular, nervous, and lymphatic.	Cognitive	Knowledge
2	Describe the symptoms and treatment for the major microbial diseases for each of the body	Cognitive	Knowledge
3	Perform tests for detecting microbial infections.	Cognitive	Synthesis
4	Discuss methods of control and prevention of disease.	Cognitive	Comprehension
5	Discuss and describe emerging infectious diseases and their ramifications on human health.	Cognitive	Comprehension

References

Order	Reference Type	Description
1	Book with Author(s) Listed	Bauman, R.. (2006). Microbiology. (2nd). San Francisco, CA: Benjamin Cummings.
2	Book with Author(s) Listed	Kindt, T. & et al.. (2006). Kuby's immunology. (6th). ?: W.H. Freeman.
3	Book with Author(s) Listed	Nester, E.. (2005). Microbiology: A human perspective. (5th). New York, NY: McGraw Hill.
4	Book with Author(s) Listed	Pommerville, J.. (2006). Alcamo's fundamentals of microbiology. (8th). ?: Jones & Barlett.

Order	Reference Type	Description
5	Book with Author(s) Listed	Talaro, K.. (2006). Foundations in microbiology. (6th). New York, NY: McGraw Hill.
6	Book with Author(s) Listed	Tortora, G. & et al.. (2006). Microbiology: An introduction. (9th). San Francisco, CA: Benjamin Cummings.