

Genetics BIOL 215 Course Outcome Guide (COG)

Course:	BIOL 215 Genetics	Credits:	4	Date Updated	April 2016
Course Description:	Prerequisite: A C or higher in BIOL 150 or instructor approval. Study of the basis of heredity, with emphasis on structure and function of DNA and Mendelian Genetics. Topics include molecular genetics, Mendelian genetics, human genetic diseases, and microbial genetics. Lab experiments and exercises in prokaryotic, eukaryotic, and molecular genetics. 1. Understanding molecular genetics. 2. Understanding and solving problems in Mendelian (classical) inheritance. 3. Have a familiarity with genetic technologies. 4. Understanding population genetics and evolution. 5. Develop an appreciation for the relationship of genetics to other disciplines, e.g., biochemistry, ethics, economics, and medicine. Co-requisite BIOL 215L Genetics Lab				
Concepts and Issues	Process Skills	Assessment Tasks	Intended Outcomes		
			Course	General Education or Program	Institutional
1. Chemistry of Life Including Atoms Molecules Bonding. 2. Cell Biology Structure and Function Eukaryotic Prokaryotic 3. Historical perspectives 4. Cell cycle: Mitosis and Meiosis 5. Molecular Biology-	Study effectively. Use scientific instruments safely and appropriately including microscopes, centrifuges, spectrometers. List dates of importance in history and understand the perspective of how far knowledge has advanced in a short time. Know Atomic structure, bonding, Molecular Structure and how this leads to chemical properties and biological functions. Know the role of biological molecules in living organisms. Know and identify the components of cells and explain	1. Complete assignments of readings and worksheets, problems, lab worksheets (“portfolio”), presentations, study guides, movies and worksheets. 2. Lecture and lab quizzes. 3. Lecture and lab exams with objective and subjective questions. 4. Lab attendance and participation.	1. Demonstrate the safe appropriate use of scientific instruments such as a microscope, centrifuge, micro pipets, electrophoresis, spectrometer and restriction enzymes. 2. Differentiate factual information from opinion and pseudo-science by practicing methods used by biological scientists 3. Practice the application of genetic information to	1. Students will use reasoning skills to analyze and solve problems. 2. Students will apply health-related knowledge to physical and mental well-being.	1. Students will use reasoning skills to analyze and solve problems. 2. Students will apply health-related knowledge to physical and mental well-being.

<p>Transcription, Translation, transpositions .</p>	<p>their functions. Understand the relationship between cell structure and function.</p>		<p>solve problems and in life (personal and professional).</p>		
<p>6. Molecular mechanisms of Cancer</p>	<p>List and describe the steps of Meiosis and Mitosis. Compare and contrast Meiosis and Mitosis.</p>		<p>4. Practice the application of biological information in upper level classes</p>		
<p>7. Molecular and Classical Genetics and evolution.</p>	<p>Solve basic Mendelian and non-Mendelain genetics problems. Gamete formation, probability, pedigree analysis, linkage, mapping, tetrad analysis, chromosome structure, sex determination</p>				
<p>8. Microbial genetics</p>	<p>Describe DNA structure and replication including the enzymes involved. Describe chromosome structure and explain what abnormalities are and how they arise.</p>				
<p>9. Extracellular genetics</p>	<p>Apply transcription and translation in detail to the process of metabolism including gene structure, function, and regulation, RNA processing, biotechnology, gene mutation and repair.</p>				
<p>10. Population and Quantitative genetics</p>	<p>Describe Microbial Genetics and Mechanisms of Gene regulation for both prokaryotes and eukaryotes.</p>				
	<p>Compare and contrast the types</p>				

	<p>of transposable elements including their functions.</p> <p>Discuss enzyme structure, function, regulation, gene and enzyme mutations and metabolic errors.</p> <p>Describe Biotechnology.</p> <p>Describe cancer causes and the molecular mechanisms.</p> <p>Describe The genetics of viruses, bacterial, fungi and Protista</p> <p>Describe extracellular genetics and the diseases it can cause.</p> <p>Describe the role of developmental genetics in organism formation. Describe twinning.</p> <p>Solve population and quantitative genetics problems.</p> <p>Integrate the process of evolution in the development and adaptation of living organisms including the application of molecular clocks..</p>				
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