

**BIOL 371 Principles of Genetics**

**Credit Hours:** 4

**Scheduled hours per week**

Lecture: 3

Lab: 3

Other: 0

**Catalog Course Description:** Introduction to genetic principles including common terms used in genetics, basic concepts (DNA structure and function, Mendelian genetics, genetics of eukaryotes and prokaryotes, recombinant DNA technology), and practical experience in techniques used in genetic research.

**Pre-requisites:** BIOL 101/103; BIOL 102/104; CHEM 115

**Co-requisites:** None

**Course Learning Outcomes:**

- Describe Mendel’s rules on inheritance, and the notable exceptions to Mendelian inheritance.
- Define and use terminology used in genetics.
- Solve problems of inheritance.
- Describe the structure, function and replication of DNA, and the enzymes involved.
- Describe the processes of transcription and translation and their regulation.
- Describe the nature of mutations and their role in cancer development.
- Perform lab techniques used in modern genetics research.

**Topics to be studied:**

- Mendelian inheritance
- Exceptions to Mendelian inheritance.
- Prokaryotic and eukaryotic gene mapping
- DNA structure, function and replication
- Sex determination in animal model systems
- Gene expression
- Gene expression regulation
- Biotechnology
- DNA sequencing
- Genomics
- Population genetics

**Relationship of Course to Program or Discipline Learning Outcomes:**

<b>Relationship of Course to Science Learning Outcomes:</b>	
Students will learn the process and reasoning behind the Scientific Method and be able to conduct experiments that meet the requirements of the model.	X
Students exhibit the basic safety-related rules and regulations of working in the lab.	X
Students be able to recount the basic safety tenants associated with a specific scientific discipline.	X
Students will become proficient at Science Writing.	X

Students will recognize and identify the applications of their specific discipline in the 'real world.'	X
Students will accurately recount important milestones in the history of scientific inquiry in their discipline.	
5/3/2016	

<b>Relationship of Course to General Education Learning Outcomes:</b>	
<b>Composition and Rhetoric</b> Students illustrate a fundamental understanding of the best practices of communicating in English and meet the writing standards of their college or program-based communication requirements.	
<b>Science &amp; Technology</b> Students successfully apply systematic methods of analysis to the natural and physical world, understand scientific knowledge as empirical, and refer to data as a basis for conclusions.	X
<b>Mathematics &amp; Quantitative Skills</b> Students effectively use quantitative techniques and the practical application of numerical, symbolic, or spatial concepts.	X
<b>Society, Diversity, &amp; Connections</b> Students demonstrate understanding of and a logical ability to successfully analyze human behavior, societal and political organization, or communication.	
<b>Human Inquiry &amp; the Past</b> Students interpret historical events or philosophical perspectives by identifying patterns, applying analytical reasoning, employing methods of critical inquiry, or expanding problem-solving skills.	
<b>The Arts &amp; Creativity</b> Students successfully articulate and apply methods and principles of critical and creative inquiry to the production or analysis of works of art.	
5/3/2016	

**Special requirements of the course:**

None

**Additional information:**

None

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