



Course Number Course Name	BIOL 202 PRINCIPLES OF GENETICS
Credit Value (Breakdown of theory and lab credits)	3 Theory
Catalog Course Description	You will be exposed to an overview of Mendelian genetics: physical and chemical structure of the hereditary molecules and the role of chromosomes; mitosis, meiosis, and the molecular basis of inheritance; DNA metabolism to include replication, repair, and recombination; genes to proteins; genetic models (viruses and bacteria), eukaryotic genomes, genetic basis of development, and an overview of genomes.
Student Learning Outcomes/Objectives /Competencies of the Course	<ol style="list-style-type: none"> 1. Students will be able to understand rules governing the segregation of genes carried on the same or different chromosomes. 2. Students will be able to explain and analyze human pedigrees. 3. Students will be able to describe the structure of DNA and how its information is transmitted to protein synthesis. 4. Students will be able to interpret scientific data, formulate a scientific hypothesis, and propose an experiment to test a scientific hypothesis. 5. Students will be able to describe molecular mechanisms governing why and how gene expression is regulated 6. Students will understand how de-regulated gene expression contributes to human congenital disease and cancer. 7. Students will be able to understand how high-throughput experiments are carried out and analyzed. 8. Students will be able to explain key principles of genomics to understand the content, organization, and function of genetic information contained in whole genomes. 9. Students will be able to apply genetic and physical mapping techniques to the understanding of structural genomics. 10. Students will be able to use comparative genomics to understand how genomes evolve in (i) genome size, (ii) gene content, (iii) gene functionality, (iv) nucleotide base content, (v) protein diversity, and/or (vi) transposable element proliferation. 11. Students will consider ethical issues related to genomics.
College-Wide Student Learning Outcomes	<ol style="list-style-type: none"> 1. <i>Critical Thought</i> <i>Critical Thought will be assessed by testing of concepts related to Genetics.</i>