



Genetics

Course Code	Course Num.	Course Name	Credit Hours	Lec	Lab	Tut	Prerequisites
BIO	231	Genetics	4	3	2	0	BIO113

Objectives

This course discusses the principles of genetics with application to the study of biological function at the level of molecules, cells, and multicellular organisms, including humans. After completing this course, the student will be able:

- To define structure and function of genes, chromosomes and genomes.
- To recognize the biological variation resulting from recombination, mutation, and selection, population genetics.
- To use the genetic methods to analyze protein function, gene regulation and inherited disease

Syllabus:

- Genetics: the science of heredity
- Mendel's laws of inheritance
- Dominance, dominance relations and recessiveness
- The basics of population genetics
- Sex determination in different organisms and sex linked characters.
- The chromosome theory of inheritance
- The structure of DNA and the genetic code
- Replication, and manipulation of DNA, transcription and translation
- Basic and advanced principles of heredity
- The chromosomal basis of heredity
- Gene linkage and genetic mapping
- Human karyotypes and chromosome behavior.
- The genetics of bacteria and viruses
- Molecular mechanisms of prokaryotic gene regulation
- Genetic engineering and genomics
- Mechanisms of mutation
- Cancer

References:

- Griffiths, Anthony J. F., Jeffrey H. Miller, David T. Suzuki, Richard C. Lewontin, and William M. Gelbart. An Introduction to Genetic Analysis. 7th ed. New York: W. H. Freeman, (2000). ISBN: 9780716735205.
- Robert j. Brooker- Genetics : analysis and principles , edition 3,(2008). ISBN 13:9780077229726.
- Hartl, D L. Essential Genetics: A Genomics Perspective. 5th edition. Sudbury, MA: Jones and Bartlett Publishers, 2011. ISBN: 978-0-7637-7364-9 / 0-7637-7364-6.

