GENE – GENETICS

GENE 369
Genetic Analysis of Bacteria
3 Credits Weekly (3-0-1)
This course explores the role of bacteria and bacteriophages in the development of molecular genetics. Major topics include mechanisms of genetic exchange and genome plasticity in bacteria, and the replication processes of bacteriophages. Students propose experimental strategies to solve problems related to these topic areas and analyze data. Seminars develop the ability to critically analyze scientific literature through discussion of current and historical research papers.
Prerequisites: Minimum grades of C- in BIOL 205 and BIOL 207.

GENE 370
Genetic Analysis of Eukaryotes
3 Credits Weekly (3-1-0)
Students explore strategies, involving both genetic approaches and molecular methods, utilized in the dissection of biological processes in eukaryotic model systems. Forward and reverse genetic approaches are evaluated for their contribution to our understanding of the complex relationship between genotype and phenotype. The laboratory provides students the opportunity to develop skills employed in the genetic analysis of eukaryotes.
Prerequisites: Minimum grades of C- in BIOL 205 and BIOL 207.

GENE 400
Genome Organization
3 Credits Weekly (3-3-0)
This course is an introduction to the field of genomics and explores the use of high-throughput approaches to examine the organization and expression of genetic material. Emphasis is placed on techniques employed in genomic analysis and their application to current biological questions.
Prerequisites: Minimum grades of C- in GENE 369 and GENE 370.

GENE 404
Investigations into Gene Regulation
3 Credits Weekly (3-0-1)
Students investigate mechanisms of gene regulation in prokaryotes and eukaryotes through a critical analysis of primary literature. Transcriptional, post-transcriptional, translational, post-translational and epigenetic regulatory mechanisms are explored. Students demonstrate their understanding through oral and written analyses.
Prerequisites: Minimum grades of C- in GENE 369 and GENE 370.

GENE 418
Human Genetics
3 Credits Weekly (3-0-1)
This course examines the principles and methods of genetics as they relate to humans as individuals and in populations. Approaches used in the identification and analysis of Mendelian, complex, and chromosomal disorders are investigated with the contextual emphasis on the relationship between basic science and human disease. The relevance of advances in these areas of human genetics to the diagnosis and treatment of genetic diseases is explored.
Prerequisites: A minimum grade of C- in GENE 370.