GENETICS - COURSE OVERVIEW

1st NINE WEEKS

I. Introduction to Genetics
II. Mitosis and Meiosis
- A. Embryology Lab – zebra fish
- B. Time for Mitosis Lab – onion root
- C. Cell cycle regulation – cancer

BENCHMARK I

III. Mendelian Genetics
- A. Monohybrid cross
- B. Pedigree charts
- C. Dihybrid cross
- D. Fast Plant Lab
- E. Polygenetic traits
- F. Multiple alleles
- G. Incomplete dominance
- H. Codominance
- I. Sex-linked traits
- J. Virtual Fruit Fly Lab– X inactivation
- K. Sex influenced traits
- L. Chi Square
- M. Genetic Corn Lab

BENCHMARK II

IV. Karyotypes
- A. Human Karyotype
- B. Dye/Chromosome spread
- C. Sex Determination and Sex Chromosomes
- D. Chromosome Mutations
- E. Genetic Diseases
- F. Research Paper

BENCHMARK III

2nd NINE WEEKS

V. Chromosome Mapping
- A. Gene Linkage
- B. Crossing Over

VI. Genetic Code – DNA Structure
- A. DNA Isolation
- B. Replication
- C. Gel electrophoresis
- D. Transcription
- E. Translation
- F. Bacterial Transformation Lab
- G. Cloning

BENCHMARK IV
- G. Gene Mutation
- H. Gene Regulation
- I. Field Trip: PCR @ FSU

VII. Human Genome Project – Internet
- A. Presentation: Genetic Disorder Research Paper
- B. Ethics of Genetic Technology

VIII. Population Genetics
- A. Hardy Weinberg Law

Sickle Cell Anemia Case Study

BENCHMARK V