

Biology 468 HUMAN GENETICS
Fall 2007
Course Syllabus

COURSE TEXT: *Thompson & Thompson's Genetics in Medicine by Nussbaum, McInnes and Willard. W. B. Saunders; 6th or 7th edition.*

INSTRUCTOR: Rheem D. Medh, Ph.D.
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CLASS SCHEDULE: TR 3:30pm-4:45pm, LO1117 (Science 1, 1st Floor)

OFFICE HOURS: W: 11:00 am -1:00 pm
R: 11:00 am- 1:00 pm
or by appointment

COURSE WEBSITE: <http://webteach.csun.edu>

COURSE OBJECTIVES:

The pace of research in the field of human genetics has increased with the success of the human genome project. Recent progress in gene therapy and cloning has stimulated the search for disease causing genes and for understanding the genetic basis of multifactorial traits. The objective of this course is to provide a stimulating and interactive environment to study the basic concepts of human heredity and the genetic basis of disease.

The following topics will be covered:

- a) Basic concepts of Mendelian inheritance as it applies to humans; non-Mendelian traits.
- b) Genetics disorders of metabolism and the basis of their inheritance vs. defects in structural genes and their pattern of transmission.
- c) Autosomal and X-linked disorders and their patterns of inheritance.
- d) Chromosomal abnormalities and mutations
- e) Population genetics, polymorphisms, variability in penetrance and expressivity.
- f) Gene therapy and implications of recent advances in genomics.
- g) The genetics of cancer

COURSE REQUIREMENTS:

This course is designed for advanced students majoring in Biology, graduate students in genetics or genetic counseling, or students wishing to pursue a career in biomedical genetics. Students are required to attend class regularly, and participate in discussions.

METHOD OF EVALUATION: Various formats will be used to evaluate how well a student has grasped the subject:

Guest Lectures: We will have guest speakers who are professionals in various subfields of Genetics. We are privileged to have them devote their valuable time to talk to us. You are required to hand in a one-page summary of the presentation the week after the lecture. These reports will account for 5% of your final score.

Problem sets: There will be periodic take-home problem set assignments that will be due the following week, and these will account for 20% of the final score.

Quiz: A closed book in-class quiz consisting of multiple choice and short answer questions will be given, and will account for 15% of the final score.

Mid-term exams: There will be two mid-term exams, each accounting for 30% of the score.

Grades will be based on total points earned:

| | | | |
|------------|--------|------------|--------|
| A: | ≥ 95% | C+: | 74-70% |
| A-: | 94-90% | C: | 69-65% |
| B+: | 89-85% | C-: | 64-60% |
| B: | 84-80% | D: | 59-50% |
| B-: | 79-75% | F: | < 50% |

BIOLOGY DEPARTMENT WITHDRAWAL POLICY: Unrestricted withdrawals are permitted only until the end of the third week. Thereafter, requests to drop a class will be honored only when a *verifiable* serious and compelling reason exists and when there is no viable alternative to withdrawal. *Poor performance is NOT an acceptable reason for withdrawal.* During the last three weeks of the semester withdrawals will not be approved except when a student is withdrawing from ALL classes for verifiable medical reasons.

CHEATING AND PLAGIARISM: All forms of cheating and plagiarism (the claiming of the work of others as your own) are expressly forbidden by University rules and will not be tolerated. Any student observed cheating will be subject to disciplinary action by the University and may receive a grade of F in the course.

Fall 2007
BIOL 468 Class Schedule

| | Date | Day | Topic | Reading 6th edition |
|------|-------------|------------|---|--------------------------------|
| Aug | 23 | R | Introduction: Review of Basic Genetic Principles | Chapter 1 & 2 |
| | 28 | T | <i>Problem Solving Session</i> | |
| | 30 | R | Chromosome Structure; Human Genome; Genetic Techniques | Chapter 3 & 4 |
| Sept | 4 | T | Gene Mapping and Linkage Analysis-I | Chapter 8 |
| | 6 | R | Gene Mapping and Linkage Analysis-II | Chapter 8 |
| | 11 | T | Single Gene Inheritance: Mendelian Inheritance | Chapter 5 |
| | 13 | R | Single Gene Inheritance: Atypical Inheritance | Chapter 5 |
| | 18 | T | Mutations and Polymorphisms-I | Chapter 6 |
| | 20 | R | Mutations and Polymorphisms-II | Chapter 6 |
| | 25 | T | <i>Guest Speaker I</i> | |
| | 27 | R | QUIZ | Ch 1-6, 8 |
| Oct. | 2 | T | Biochemical and Molecular Aspects of Genetic Disorders-I | Chapter 12 |
| | 4 | R | Biochemical and Molecular Aspects of Genetic Disorders-II | Chapter 12 |
| | 9 | T | Mitochondrial Inheritance | Chapter 12 |
| | 11 | R | Hemoglobin Structure and Function | Chapter 11 |
| | 16 | T | Hemoglobinopathies | Chapter 11 |
| | 18 | R | Multifactorial Traits | Chapter 15 |
| | 23 | T | <i>Guest Speaker II</i> | Chapter 7 |
| | 25 | R | Genetic Variation in Populations-I | Chapter 7 |
| | 30 | T | Genetic Variation in Populations-II | |
| Nov. | 1 | R | FIRST MID-TERM EXAM | Ch1-8,11,12,15 |
| | 6 | T | Principles of Cytogenetics/Chromosomal Abnormalities-I | Chapter 9 & 10 |
| | 8 | R | Principles of Cytogenetics/Chromosomal Abnormalities-II | Chapter 9 & 10 |
| | 13 | T | Cancer Genetics-I | Chapter 16 |
| | 15 | R | Cancer Genetics-II | Chapter 16 |
| | 20 | T | Thanksgiving Holiday | |
| | 22 | R | Developmental Genetics-I | Chapter 17 |
| | 27 | T | <i>Guest Speaker III</i> | |
| | 29 | R | Developmental Genetics-II | Chapter 17 |
| Dec. | 4 | T | <i>Review for Midterm Exam</i> | |
| | 6 | R | SECOND MID-TERM EXAM | Ch 9,10,13,16-18 |