

CYTOGENETICS - BIOLOGY 414
Fall Quarter 2005 - Dr. Margaret Jefferson
TTH 4:20-6:00 PM - BIOS 246 SCHED. # 15488 - 01

1. COURSE DESCRIPTION:

This course will focus on the investigation of the structure and function of normal and abnormal chromosomes. Cytogenetics is the study of structure, number, function, and movement of chromosomes under normal and abnormal conditions. It examines the numerous variations of the properties as they relate to the evolution, transmission, recombination, and expression of the genes that chromosomes carry. We will cover as many chapters as time permits.

2. LECTURE TOPICS:

CHAPTER NUMBER:

a. Why Study Chromosomes?	1
b. Mitosis, Meiosis and the Cell Cycle	2
c. DNA, the Genetic Code	3
d. Assembly of Chromatin	4
e. The Chromosomes in Interphase	5
f. Structure of Mitotic and Meiotic Chromosomes	6
g. Constitutive Heterochromatin	7
h. Sex Chromosomes and Sex Determination	8
i. Imprinting	9
j. Euchromatin and the Longitudinal Differentiation of Chromosomes	10
k. The Nucleolus and the Nucleolus Organizer Regions	11
l. Centromeres, Kinetochores, and the Segregation of Chromosomes	12
m. Telomeres	13
n. Lampbrush Chromosomes	14
o. Polytene Chromosomes	15
p. Chromosomes, the Karyotype and Evolution	16
q. Chromosomes and Disease	17
r. Genetics of Duplications and Deletions	17
s. Genetics of Inversions	17
t. Genetics of Translocations	17

3. TEXTBOOK: *Chromosomes Organization and Function*, 1st edition, Adrian T. Sumner, 2003; IBSN 0-632-05407-7

4. COURSE PREREQUISITES: Completion of general genetics.

5. OFFICE AND PHONES:

OFFICE HOURS:

Office	B.S. 210
Office Phone #	[323]343-2059
Biology Phone #	[323]343-2050
Fax #	[323]343-6451
e-mail address	mjeffer@calstatela.edu

M	10:00 am – 10:30 am; 2:00 pm – 5:00 pm
TU	10:00 am – 12:00 pm
TH	10:00 am – 12:00 pm
F	10:00 am - 12:00 pm

6. QUIZZES:

Four quizzes will be given throughout the quarter at approximately 2-3 week intervals during part of the lecture period. The exact dates will be announced in advance. Quizzes will consist of a variety of formats and will cover the material presented in lecture prior to the date of the quiz. Each subsequent quiz covers only material after the

7. EXAM FORMAT:

Questions will consist of a variety of formats but primarily short answer. The final exam is comprehensive. Attend lectures, read the text, and learn the terminology. Ask questions, seek help when you encounter difficulties, and keep up with the material. **There are no make-ups if you miss a quiz or exam!**

8. PAPER:

A separate handout will be posted on the course homepage. Please follow instructions to maximize your score on the paper. Go to the course homepage to print a copy.

9. IMPORTANT LECTURE DATES:

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|---------------|--|
| a. Midterm | Thursday, November 3, 2005 |
| b. Final Exam | Tuesday, December 6, 2005 from 4:30 PM – 7:00 PM |
| c. Quizzes | Announced in lecture in advance of each date |

10. GRADE REQUIREMENTS:

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|-------------------------------|-------|
| a. Quizzes (4 @ 25 pts. each) | = 100 |
| b. Midterm | = 50 |
| c. Final Exam | = 100 |
| d. Paper | = 50 |
| e. TOTAL POINTS | = 300 |

11. GRADING FORMAT: *only the following grades will be awarded based solely on total points indicated below*

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|-----------------------------|----------------|
| a. To receive an A : | 270 - 300 pts. |
| b. To receive a B : | 240 - 269 pts. |
| c. To receive a C : | 195 - 239 pts. |
| d. To receive a D : | 150 - 194 pts. |
| e. To receive an F : | 0 - 149 pts. |

12. CHEATING + PLAGIARISM + ACADEMIC HONESTY:

If you submit someone else's work without proper acknowledgement, very grave consequences and sanctions will occur. Read pages 118-120 in the *Fall 2005 Schedule of Classes*. Students are expected to read and abide by the University's Academic Honesty Policy, which can be found at <http://www.calstatela.edu/academic/senate/handbook/ch5a.htm>. Students who violate this policy will be subject to disciplinary action, and may receive a failing grade in the course for a single violation.