

Grande Prairie Regional Regional College
Department of Science

Course Outline : BI 2070 Molecular Genetics and Heredity Fall 1996

Description : Biology 2070 is a course dealing with both classical and molecular genetics. The chromosomal and molecular basis for the transmission and function of genes will be covered as well as the construction of genetic and physical maps of genes and genomes. Molecular biology strategies for isolation of specific genes and examples of regulatory mechanisms for the expression of the genetic material in both prokaryotes and eukaryotes will also be discussed.

Instructor : Dr. Sean Irwin
 Office: J223
 Phones: 539-2860 (Office)
 538-1278 (Home)

Prerequisite : BI 1070

Required Text : Griffiths, Miller, Suzuki... An Introduction to Genetic Analysis (6th Edition), W. H. Freeman and Company, New York, 1996.

Lab Manual : U. of A. 1996 BI 2070 Lab Manual

Lectures : Place: J 201
 Time: M, W, F - 13:00-13:50

Labs : Place: J 126
 Time: Wed. 15:00-17:50

Evaluation :	Lab Assignments/Problem Sets	- 25%
	Midterm Exam	- 25%
	Final Lab Exam	- 10%
	Final Exam	- 40%

Office Hours : Monday - 14:00-14:50

Wednesday - Cloning and Coffee -10:00 - 11:00 in the cafeteria

Thursday - 13:30 - 14:30

Course Outline

Lect.	Date	Topic	Chapter
1	Sept 6	Introduction	
2	Sept 9	Genes and proteins	Ch. 12:341-45; 369-73
3	Sept 11	DNA : The genetic material	Ch. 11: 313-24
4	Sept 13	Organization of DNA Replication	Ch. 11:326-36
5	Sept 16	Mutation I	Ch. 18
6	Sept 18	Mutation II	Ch. 7:181-99
7	Sept 20	Genome Organization and Life Cycles	Ch. 8:211-16; Ch.3:56-8
8	Sept 23	Chromosome Behaviour in Meiosis	Ch. 3:58-64
9	Sept 25	The Genetic Implications of Meiosis	Ch. 3:77-8; Ch. 6:159-66
10	Sept 27	Alleles, Dominance and Segregation	Ch. 4:92-95
11	Sept 30	Independent assortment.	Ch. 2:22-32
12	Oct 2	Sex Chromosomes and Sex-linkage.	Ch. 3:64-76
13	Oct 4	Pedigree Analysis.	Ch. 2:32-36
14	Oct 7	Gene Interactions and Epistasis.	Ch. 4:98-109
15	Oct 8	Linkage.	Ch. 5:124-31
16	Oct 11	Mapping Genes on Chromosomes	Ch. 5:126-34
	Oct 14	Thanksgiving Day	
17	Oct 16	Changes in Chromosome Number	Ch. 9
18	Oct 18	Midterm Exam on Lectures 1-16	
19	Oct 21	Chromosome Rearrangements	Ch. 8
20	Oct 23	Mapping the Internal Structure of Genes	Ch. 12:358-69
21	Oct 25	Physical Mapping of Genes	Ch. 14:449-51
22	Oct 28	Cloning DNA and Identifying Genes	Ch. 14:424-30
23	Oct 30	Construction of Gene Libraries	Ch. 14:430-36
24	Nov 1	Isolation of Genes from Libraries I	Ch. 14:437-38
25	Nov 4	Isolation of Genes from Libraries II	Ch. 14:439-40
26	Nov 6	RFLP's	Ch. 15:472-86
27	Nov 8	Using RFLP's to Locate Genes.	Ch. 15:482-86
	Nov 11	Remembrance Day	
28	Nov 13	Regulation of Gene Expression.	Ch. 17:546-62
29	Nov 15	Operons	Ch. 17:547-54
30	Nov 18	The lac Operon.	Ch. 17:554-55
31	Nov 20	Eukaryote Genome Organization.	Ch. 16
32	Nov 22	Structure of eukaryotic genes.	Ch. 13:409-16; Ch. 17:564-79
33	Nov 25	The Formation of Hemoglobins.	Ch. 12:345-50; Ch. 8:224
34	Nov 27	Beta-globin switching.	Ch. 8:224
35	Nov 29	TBA	
36	Dec 2	TBA	
37	Dec 4	Review	