Grande Prairie Regional Regional College
Department of Science

Course Outline : BI 2070 Molecular Genetics and Heredity Fall 2006

BI 2070 Molecular Genetics and Heredity 3(3-0-3)

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
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567-2226 (Home)

Prerequisite : BI 1070

Required Text : Fairbanks, D.J. and Andersen, W.R., Genetics: The Continuity of Life, International Thompson Publishing Company, New York, 1999.

Lab Manual : U. of A. 2006-2007 BI 2070 Lab Manual

Lectures : Place: J 227
Time: Tues./Thurs. 10:00 - 11:20

Labs : Place: J 126
Time: Fri. 14:30 - 17:20

Evaluation :

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

Office Hours : Monday - 10:00 - 11:20 am
Wednesday - 10:00 - 11:20 am
Friday -11:30 – 1: 00 pm
Also by appointment

Alpha Grade	Approximate Percentage
A+	90 – 100
A	85 – 89
A-	80 – 84
B+	76 – 79
B	73 – 75
B-	70 –72
C+	67 – 69
C	64 – 66
C-	60 – 63
D+	55 – 59
D	50 – 54
F	0 – 49

Course Outline

Lect.	Date	Topic	Chapter
1	Sept 7	Introduction	
2	Sept 12	Important Experiments	2.1 – 2.3
3	Sept 14	DNA / Chromosome Replication	2.4, 2.5
4	Sept 19	Genes and Proteins	4.9, 6.3
5	Sept. 21	Mutation	5.1 – 5.3
6	Sept. 26	Prokaryotic Genes and Operons	7.2, 8.1, 8.2
7	Sept. 28	Eukaryote Genes and Globin Genes	10.4, 8.5, 8.6,6.1
8	Oct. 3	Genome Organization and Life Cycles	10.3, 11.1, 11.4
9	Oct. 5	Chromosome Behaviour in Meiosis	11.2, 11.3, 12.2
10	Oct. 10	Segregation and Independent Assortment	12.1, 12.3, 12.4, 12.6
11	Oct. 12	Sex Chromosomes and Sex-linkage	14.1 – 14.6
12	Oct. 17	Pedigree Analysis	12.5, 14.4
13	Oct. 19	Gene Interactions	13.1- 13.3
14	Oct. 24	Catch-up/Rewiew	
15	Oct. 26	Midterm I	
16	Oct. 31	Linkage	15.1, 15.2
17	Nov. 2	Mapping Genes on Chromosomes	15.3, 15.4
18	Nov. 7	Mapping the Internal Structure of Genes	16.6
19	Nov. 9	Changes in Chromosome Number and Structure	17.1 – 17.4
20	Nov. 14	Physical Mapping of Genes	15.7, 9.1
21	Nov. 16	Clones and Libraries	9.2 – 9.4
22	Nov. 21	Identifying Genes I	9.4, 9.8
23	Nov. 23	Identifying Genes II	16.5, 15.8
24	Nov. 28	RFLP I	13.4, 26.3
25	Nov. 30	RFLP II	15.8, 26.2
26	Dec. 5	Selected Topic	
27	Dec. 7	Review	

Biology 2070
Lab Schedule Fall 2004
Tuesday and Thursday 10:00 – 12:50

September 7,9	No Lab
September 14,16	Lab 1 Orientation and mitosis, streak *E.coli* for lab 2
September 21, 23	Lab 2 Biochemical pathways, lab 3 Lac operon worksheet, start yeast for lab4
September 28, 30	Finish Lab 4 – complementation, start lab 5 – UV mutation
Oct 5, 7	Finish Lab 5, start lab 6 Meiosis Worksheet (6a)
October 12, 14 worksheet	Lab 3 heat shock flies worksheet, lab 6b *Sordaria*
October 19, 21	Lab7 monohybrid flies
October 26, 28	Lab 8 dihybrid crosses fruit flies
November 2, 4	Lab 9 *Sordaria* tetrad analysis worksheet
November 9, 11	No Labs; College closed November 11
November 16 , 18	Lab 10 start DNA ligation and transformation
November 23, 25	Lab 10 cont. extraction and DNA digestion
Nov. 30, Dec. 1	Finish Lab 10 electrophoresis
Dec 7, 9	Lab Exam

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A+	90 – 100
A	85 – 89
D-	80 – 84
B+	76 – 79
B	73 – 75
E-	70 –72
C+	67 – 69
C	64 – 66
F-	60 – 63
D+	55 – 59
D	50 – 54
F	0 – 49