GPRC

DEPARTMENT OF SCIENCE

COURSE OUTLINE – Fall 2012

BI 2070

Molecular Genetics and Heredity

INSTRUCTOR: Dr. Sean Irwin, Ph.D.   **PHONE:** 539-2860 (W); 567-2226 (H)

OFFICE: J 221   **E-MAIL:** sirwin@gprc.ab.ca

OFFICE HOURS: Tues. 13:00 – 14:20 am
  Wed. 10:00 – 11:20 and Fri. 11:30 – 1:00 pm

PREREQUISITES: BI 1070

REQUIRED TEXT/RESOURCE MATERIALS:

Snustad, P.D. and Simmons, M.J., <u>Principles of Genetics</u> (6thed.),
  John Wiley & Sons, Hoboken, NJ, 2012.

U. of A. 2012-2013 BI 2070 Lab Manual
*You must purchase the latest version of this Lab. Manual. It will be
available from G.P.R.C. Bookstore.*

DESCRIPTION: Biology 2070 covers the chromosomal and molecular basis for the transmission and function of genes. The construction of genetic and physical maps of genes and genomes. Strategies for the isolation of specific genes. Examples of regulatory mechanisms for the expression of the genetic material in both prokaryotes and eukaryotes.

CREDIT/CONTACT HOURS: 3 Credits (3-0-3) UT

DELIVERY MODE(S):   Lectures – Tues. and Thur. 10 – 11:20, Rm. J 201
  Labs - Fri. 2:30 – 5:20, Rm. J126

OBJECTIVES: 1. Apply knowledge of the structure of molecules and cells to explain how genetic information is passed between generations.
2. Demonstrate an understanding of molecular biology to the study of genetic analysis.
3. Apply knowledge of laboratory skills and techniques to generate data and conduct analyses of that data.

TRANSFERABILITY: UA, UC, UL, AU, CU, KUC

EVALUATION:

Midterm Exam	- 25%
Assignments	- 10%
Laboratory	- 30%
Final Exam	- 35%

STUDENT RESPONSIBILITIES: Attend all lectures and labs.

STATEMENT ON PLAGIARISM AND CHEATING:

Please refer to pages 48-49 of the College calendar regarding plagiarism, cheating and the resulting penalties.

GRADING CRITERIA:

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

2012 Course Outline

Lect.	Date	Topic	Reading
1	Sept 6	Introduction	Ch. 1
2	Sept 11	DNA and Chromosomes	Ch. 9
3	Sept 13	Genes and Proteins; Cellular Reproduction I	Ch. 12 pg. 286-291; Ch. 2
4	Sept 18	Cellular Reproduction II	Ch. 2
5	Sept 20	Mendelian Genetics I	Ch. 3 pg. 40 - 48
6	Sept 25	Mendelian Genetics II	Ch. 3 pg. 40 - 48
7	Sept. 27	Extensions of Mendelian Genetics I	Ch.4 pg. 62 - 76
8	Oct. 2	Extensions of Mendelian Genetics II	Ch.4; Ch. 22 pg. 608-10
9	Oct. 4	Sex Linkage	Ch. 5
10	Oct. 9	Pedigree Analysis	Ch. 3 pg.53 – 56, Ch.4 pg. 77
11	Oct. 11	Variation in Chromosome Number	Ch. 6
12	Oct. 16	Variation in Chromosome Structure	Ch. 6
13	Oct. 18	Linkage	Ch. 7
14	Oct. 23	Midterm	
15	Oct. 25	Mapping Genes on Chromosomes	Ch. 7
16	Oct. 30	Population Genetics	Ch. 22
17	Nov. 1	Replication of DNA and Chromosomes	Ch. 10
18	Nov. 6	Mutation I	Ch. 13
19	Nov. 8	Mutation II	Ch. 13
20	Nov. 13	Techniques of Molecular Genetics I	Ch. 14
21	Nov. 15	Techniques of Molecular Genetics I	Ch. 14
22	Nov. 20	Genomics	Ch. 15
23	Nov. 22	Applications of Molecular Genetics I	Ch. 16
24	Nov. 27	Applications of Molecular Genetics II	Ch. 16
25	Nov. 29	Regulation of Prokaryote Genes	Ch. 18
26	Dec. 4	Regulation of Eukaryote Genes	Ch. 19
27	Dec. 6	Genetics of Cancer	Ch. 21
28	Dec. 11	Review	