DEPARTMENT OF SCIENCE

COURSE OUTLINE – FALL 2013

BI2070 A2 – MOLECULAR GENETICS AND HEREDITY

INSTRUCTOR:	Dr. Shauna Henley, PhD	**PHONE:**	539-2439
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OFFICE HOURS: Wednesday & Friday 9:30 – 11:00

PREREQUISITE(S)/COREQUISITE: BI1070

REQUIRED TEXT/RESOURCE MATERIALS:
"Principles of Genetics" by Snustad & Simmons, 6th edition, John Wiley & Sons Inc., 2012.

University of Alberta, Biology 2070 Laboratory Manual 2013/14. The latest version of the lab manual must be purchased. It will be available in the GPRC bookstore.

CALENDAR DESCRIPTION: The course covers chromosomal and molecular basis for the transmission and function of genes, the construction of genetic and physical maps of genes and genomes and strategies for the isolation of specific genes. Examples of regulatory mechanisms for the expression of the genetic material in both prokaryotes and eukaryotes will be covered.

CREDIT/CONTACT HOURS: 3 Credits (3-1-3) UT, 105 hours

DELIVERY MODE(S):
Lectures – Tues and Thurs, 10:00 – 11:20, Rm J201
Seminars – Wed, 8:30 – 9:20, Rm J204
Labs – Fri, 2:30 – 5:20, Rm J126

COURSE OUTCOME:

Upon completion of the course, students should be able to:

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 through 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, AF, CU, KUC

****** Grade of D or D+ may not be acceptable for transfer to other post-secondary institutions. Students are cautioned that it is their responsibility to contact the receiving institutions to ensure transferability.

GRADING CRITERIA:

GRANDE PRAIRIE REGIONAL COLLEGE			
GRADING CONVERSION CHART			
Alpha Grade	**4-point Equivalent**	**Percentage Guidelines**	**Designation**
A^+	**4.0**	**90 – 100**	**EXCELLENT**
A	**4.0**	**85 – 89**	
A^-	**3.7**	**80 – 84**	**FIRST CLASS STANDING**
B^+	**3.3**	**77 – 79**	
B	**3.0**	**73 – 76**	**GOOD**
B^-	**2.7**	**70 – 72**	
C^+	**2.3**	**67 – 69**	**SATISFACTORY**
C	**2.0**	**63 – 66**	
C^-	**1.7**	**60 – 62**	
D^+	**1.3**	**55 – 59**	**MINIMAL PASS**
D	**1.0**	**50 – 54**	
F	**0.0**	**0 – 49**	**FAIL**
WF	**0.0**	**0**	**FAIL, withdrawal after the deadline**

EVALUATIONS: Midterm Exam – 25%
Laboratory – 30%
Seminar – 10%
Final exam – 35%

The midterm exam will be held in class on **Tuesday October 22**. The final exam will be cumulative and will take place during the exam period. Failure to write the midterm or exam will result in a grade of zero unless appropriate documentation is provided.

STUDENT RESPONSIBILITIES: Students are expected to attend **all** classes, seminars and laboratory sessions. All assignments must be completed in full and handed in by the date specified.

STATEMENT ON PLAGIARISM AND CHEATING:
Refer to the Student Conduct section of the College Admission Guide at http://www.gprc.ab.ca/programs/calendar/ or the College Policy on Student Misconduct: Plagiarism and Cheating at www.gprc.ab.ca/about/administration/policies/

**Note: all Academic and Administrative policies are available on the same page.

COURSE SCHEDULE:

	Topics	**Required Text Readings (pages)**
1.	Introduction to BI 2070	Chap 1 (1 – 15)
2.	DNA and Chromosomes	Chap 9 (192 – 214)
3.	Genes and Proteins	Chap 12 (286 - 292, 310 – 313)
4.	Cellular Reproduction	Chap 2 (18 – 36)
5.	Mendelian Genetics	Chap 3 (40 – 52)
6.	Extensions of Mendelian Genetics	Chap 4 (62 – 77)
7.	Chromosomal basis of Mendelism	Chap 5 (89 – 105)
8.	Pedigree Analysis	Chap 3 (53 – 56), Chap 4 (77)
9.	Variation in Chromosome Number	Chap 6 (110-123)
10.	Variation in Chromosome Structure	Chap 6 (124-129)
11.	Linkage	Chap 7 (135 – 140)
12.	Mapping Genes on Chromosomes	Chap 7 (141 – 153)
13.	Population Genetics	Chap 23 (634 – 641, 644 – 651)
14.	Replication of DNA & Chromosomes	Chap 10 (220 – 227, 231 – 243, 244 – 250)
15.	Mutation	Chap 13 (320 – 339)
16.	Techniques of Molecular Genetics	Chap 14 (366 – 391)
17.	Genomics	Chap 15 (397 – 412, 415 – 424)

18.	Applications of Molecular Genetics	Chap 16 (439 – 464)
19.	Regulation of Prokaryotic Genes	Chap 18 (504 – 523)
20.	Regulation of Eukaryotic Genes	Chap 19 (531 – 550)
21.	Genetics of Cancer	Chap 21 (581 – 603)