



DEPARTMENT OF SCIENCE

COURSE OUTLINE – Winter 2011

GN 2700

FOUNDATIONS OF MOLECULAR GENETICS

INSTRUCTOR: Dr. Shauna Henley, **PHONE:** 539-2439
PhD

OFFICE: C 220 **E-MAIL:** SHenley@gprc.ab.ca

OFFICE HOURS: Tuesdays 10:30-12:00
Wednesdays 12:30-2:00

PREREQUISITE(S)/COREQUISITE: BI 2070

DESCRIPTION: Basic concepts on the organization of genetic material and its expression will be developed from experiments on bacteria and viruses during the course.

COURSE OUTCOME: Students will gain a deeper understanding of bacterial molecular genetics, from a historical to contemporary perspective. Emphasis will be placed on the ability to analyze and interpret primary literature related to molecular genetics.

REQUIRED TEXT/RESOURCE MATERIALS:

Textbook: “Molecular Genetics of Bacteria” by Snyder and Champness, 3rd edition, ASM Press, 2007.

Papers: A set of historical journal articles have been selected for this course and will be available on reserve at the library. The papers will be studied during the seminar sessions and students will be tested on their content.

CREDIT/CONTACT HOURS: 3 Credits (3-1.5-0) UT

DELIVERY MODE(S): Lectures – Mon. 1:00 to 2:20 and Fri. 11:30 – 12:50, Rm J229
Seminars – Tues. 8:30 – 9:50, Rm J229

TRANSFERABILITY: UA, UC*, UL, AU, AF, CU *Check Alberta transfer guide.

GRADING CRITERIA: Midterm Exam – 35%
Seminar – 20%
Final Exam – 45%

The midterm will be held during class on **Monday February 14, 2011**. The final exam will be cumulative and will be held during the exam period. Failure to write quizzes, the midterm or the final exam will result in a grade of zero, unless proper documentation is provided.

GN 2700 Course Outline

Topics	Required Text Readings (pages)
1. Introduction to GN 2700	
2. Bacteria and Phage	Text introduction
3. Genetic concepts	139-144, 167-174
4. DNA structure	13-25
5. DNA replication	29-53
6. Central Dogma	71-105
7. T4 Genetic Analysis	293-296, 320-336
8. Phage DNA replication	306-318
9. Transduction	181-184, 336-339, 359-362
10. Transformation	277-290
11. Plasmids and Conjugation	176-181, 197-201, 243-269
12. Mutation	145-167
13. DNA Repair	26-29, 459-495
14. Recombination	429-453
15. Gene expression	499-519, 547-556
16. Lambda	343-359
17. DNA cloning	55-61, 229-235
18. DNA sequencing, PCR	61-66

GN 2700 Seminar Schedule

Date	Topic/Papers	Quiz
Jan 11	Assign papers/presentations	----
Jan 18	DNA, 1.1	----
Jan 25	T4 phage, 2.1	DNA & T4 phage
Feb 1	Fine structure mapping, 5.1	----
Feb 8	DNA replication, 15.2	mapping & replication
Feb 15	Mutagenesis, 11.1 & 13.1	----
Feb 22	Winter Break	----
Mar 1	Genetic Code/mutation, 11.2 & 12.2	mutagenesis & genetic code
Mar 8	DNA Repair, 13.2	----
Mar 15	Recombination	DNA repair & recombination
Mar 22	The Lac Operon, 23.1 & 24.2	----
Mar 29	Restriction Enzymes, 6.3	the lac operon & rest. enzymes
Apr 5	cloning/sequencing, 8.2 & 9.1	----
Apr 12	----	cloning/sequencing

For the seminar section of this course, you will be assigned one of the topics above. Using the paper(s) assigned, you will prepare a presentation based on this topic and present to your classmates. Everyone will be responsible for reading and understanding each paper **prior** to the date presented. We will have quizzes approximately every other week that will cover the content in these papers.

The marks for the seminars will be assigned as follows:

Quizzes (6 in total)	15%
<u>Presentation</u>	<u>5%</u>
Total	20%

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

STATEMENT ON PLAGIARISM AND CHEATING:

Please refer to pages 49-50 of the College calendar regarding plagiarism, cheating and the resultant penalties. These are serious issues and will be dealt with severely.