



Grande Prairie Regional College
Department of Science

Molecular Genetics and Heredity
Biology 2070 3* (3-0-3)
Course Outline, Fall 2008

Instructor: Dr. David Dansereau
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Office hours: You are welcome to drop in to my office (J 221) at any time. Times that I will be out of the office for a lecture or lab (or lunch) will be posted on my office door. If you prefer to have an appointment, please email and we can choose a time that is convenient to both of us.

Course description: We will cover the chromosomal and molecular basis for the transmission and function of genes, the construction and use of genetic maps, and molecular strategies for the isolation of specific genes. We will discuss specific examples of how gene expression is regulated in both prokaryotes and eukaryotes. **Pre-requisite:** Biology 1070

University Transfer: This course is transferable to: Athabasca U (BIOL 3xx), Concordia UC (BIO 2xx), King's UC (BIOL 320), U of C (BIOL 311), U of A (BIOL 207), and U of L (BIOL 2000). See <http://www.acat.gov.ab.ca/> for details.

Textbooks: *An introduction to genetic analysis* — 9th ed. (required)
Anthony Griffiths ... [et al.]

Biology 207 lab manual — 2008-2009 ed. (required BEFORE the first lab)

i>Clicker (required)

Your textbook was bundled with an iClicker, part of a radio frequency classroom response system that we will use in lectures and labs, so you should bring it with you every time we meet.

Each clicker has a serial number that you will use to register your clicker on the following site: <http://www.iclicker.com/registration/>

The cartoon guide to genetics (optional, but useful)

Larry Gonick and Mark Wheelis

Online resources: GPRC Blackboard
<http://blackboard/webapps/login/>
Textbook website
<http://bcs.whfreeman.com/iqa9e/>

Lectures: Tuesday and Thursday, 10:00 – 11:20, Room J 204

Labs: Friday, 14:30 – 17:20, Room J 126
Labs begin on Friday Sept 12th

Requirements: This course includes 3 hours of lecture and 3 hours of lab each week.

Participation in all of the lectures and laboratories is essential.

The lab section is worth 40% of your final grade. Topics covered in the lab section are detailed and extensive, and the lab includes its own quizzes, assignments and final exam. All assignments must be completed and handed in by the date specified; no late assignments can be accepted.

Plagiarism: The College expects intellectual honesty from its students. Penalties for plagiarism and cheating are severe, beginning with a grade of zero being assigned to the assignment or exam in question. If you are not sure whether a particular course of action might constitute plagiarism, you are advised to consult with an instructor.

Evaluation:	Quizzes & clickers	5%
	Lab assignments & Quizzes	25%
	Final lab exam	15%
	Midterm exam	20%
	Final exam (cumulative)	35%

Exam style: Exams will include multiple choice, fill-in the blank, true-false, and paragraph answer questions.

Final Grade: At the end of this course you will be assigned a letter grade that the Registrar's office will convert to four-point equivalence as follows:

Grade	4-point Equivalence	Descriptor
A+	4.0	Excellent
A		
A-	3.7	First class standing
B+	3.3	
B	3.0	Good
B-	2.7	
C+	2.3	Satisfactory
C	2.0	
C-	1.7	
D+	1.3	Minimal Pass
D	1.0	
F	0.0	Fail

This course is transferrable to the University of Alberta as Biology 207 with a grade of C- or above.

How to be successful in BI2070

- Attend all lectures
- Do the practice problems
- Do the assigned readings
- Prepare for the lab before you arrive
- Take advantage of classroom time and office hours to ask questions

Outline of Lecture Topics

Biology 2070

Section	Topic
I	Introduction to Genetics
	Basic principles of heredity
	Chromosomes, mitosis and meiosis
	Sex determination and sex-linked characteristics
	Linkage and recombination
	Genes, proteins, pathways and complementation
	Gene mapping
	Genetic interactions
II	DNA as the genetic material
	DNA structure and replication
	Transcription
	RNA molecules and RNA processing
	The genetic code and translation
	Causes and consequences of gene mutation
III	Chromosome structure in prokaryotes and eukaryotes
	Control of gene expression in prokaryotes (Lac operon)
	Control of gene expression in eukaryotes (β -Globin)
IV	Molecular genetics and biotechnology
	Identification and isolation of genes
	PCR and DNA sequencing
	Detecting DNA, RNA and protein
V	Cancer genetics