

**MBG\*1000**  
**GENETICS AND SOCIETY**  
**Winter 2017**  
**Department of Molecular and Cellular Biology**

No science is more central to contemporary life than genetics. Human health, reproduction and agriculture increasingly rely on an understanding of the hereditary mechanisms shared by all organisms. In **Genetics and Society**, we present the general principles of genetics, show how they operate in humans and other organisms and discuss their implications for individuals and society. Recent advances in the study of genetics and molecular biology have transformed our understanding of human heredity. Advances in genetics knowledge have the potential to solve many problems, but at the same time they present us with new dilemmas. As we consider the principles of this discipline we will also examine some of the ethical and social issues arising from genetic manipulation, reproduction intervention and biotechnology.

**COURSE PERSONNEL**

**Instructor:** Dr. George van der Merwe, SSC 2243, x54298, [gvanderm@uoguelph.ca](mailto:gvanderm@uoguelph.ca). I respond best to e-mail communication.

My office hours can vary week to week but they will always be posted on CourseLink.

**Teaching Assistants:**

The teaching assistants, Warren van Loggerenberg, Olivia Grafinger, Anastasia Smart, and Darian Budarik, are graduate students in the Department of Molecular and Cellular Biology. Because of their heavy academic schedules, we ask that you do not contact them outside of the seminars. Direct your questions to Dr. van der Merwe should you have concerns.

**LEARNING OUTCOMES AND RATIONALE:**

There will be a series of lectures focusing on the genetic material of humans, the flow of genetic information within cells and the inheritance of such material. In addition, alterations of genetic information (mutations; viruses; targeted biotechnological approaches) will be discussed. By the end of the course, successful students should be able to:

1. Describe and understand the flow of genetic information within an eukaryotic cell.
2. Describe and understand the various modes of inheritance of genetic traits.
3. Describe various mechanism(s) of alterations to genetic information.

4. Understand the impact of alterations to genetic material in individuals and society, specifically in the forms of various heritable diseases.
5. Describe and understand the concepts of the eukaryotic cell cycle and mechanism(s) of its control, specifically as it relates to cancer.

Learning outcomes will be assessed in the relevant assignments, midterm and final examinations.

### **COURSE FORMAT**

**Lectures:** Monday, Wednesday and Friday; 11:30 am – 12:20 pm in THRN 1200.

A provisional schedule of lecture topics is attached. Material given in the lectures is the responsibility of the student. Students are expected to attend all lectures and all seminars. If you miss a lecture or seminar, you should get the notes from another student in the course. Electronic recording of classes is expressly forbidden without prior consent of the instructor. When recordings are permitted, they are solely for the use of the authorized MBG\*1000 Winter 2017 student(s) and may not be reproduced or transmitted to others without the written consent of the instructor.

**Seminars:** See schedule below for times and room allocations.

### **Weekly lectures and seminars: Times and locations**

(Please check WebAdvisor for any last minute seminar room changes)

<b>TIME</b>	<b>MONDAY</b>	<b>TUESDAY</b>	<b>WEDNESDAY</b>	<b>THURSDAY</b>	<b>FRIDAY</b>
11:30-12:20	<b>Lecture</b> THRN 1200		<b>Lecture</b> THRN 1200		<b>Lecture</b> THRN 1200
12:30-1:20	<b>Seminars for:</b>  <b>Section 01</b> MCKN 226  <b>Section 02</b> MCKN 224				
2:30-3:20	<b>Seminars for:</b>  <b>Section 03:</b> MCKN 227  <b>Section 04:</b> MCKN 223				

**Note: Seminars begin on Monday, January 16<sup>th</sup>, 2016**

**Lecture schedule: TENTATIVE topics**

LECTURES	DATE	LECTURE TOPIC	SEMINARS
1	Mon Jan 9	Introduction	No seminar
2	Wed Jan 11	The Central Dogma from Genes to Proteins	Seminar: Meet your TA
3	Fri Jan 13		
4	Mon Jan 16		
5	Wed Jan 18	Mutations	
6	Fri Jan 20		
7	Mon Jan 23	Origin of Phenotype: Autosomal recessive traits and their pedigrees	Seminar: Assignment 1 Central Dogma & Mutations
8	Wed Jan 25		
9	Fri Jan 27		
10	Mon Jan 30		Seminar: Assignment 2 Autosomal recessive inheritance
11	Wed Feb 1	Origin of Phenotype: Autosomal dominant traits and their pedigrees	Seminar: Assignment 2 return & help session
12	Fri Feb 3		
13	Mon Feb 6		
<b>14</b>	<b>Wed Feb 8</b>	<b>Midterm 1: In Class</b>	
15	Fri Feb 10	Origin of Phenotype: Sex-linked Inheritance	
16	Mon Feb 13		
17	Wed Feb 15		
<b>18</b>	<b>Fri Feb 17</b>	<b>No class</b>	
	<b>Feb 20 - 24</b>	<b>No Classes - Winter Break</b>	

LECTURES	DATE	LECTURE TOPIC	SEMINARS
19	Mon Feb 27th	Chromosomes & mitosis	Seminar: Assignment 3 X-linked inheritance
20	Wed Mar 1		
21	Fri Mar 3		
22	Mon Mar 6	Meiosis & reproduction	Seminar Assignment 4 Chromosomes & Mitosis
23	Wed Mar 8		
24	Fri Mar 10		
25	Mon Mar 13		Seminar: Assignment 4 return & help session
<b>26</b>	<b>Wed Mar 15</b>	<b>Midterm 2 in class</b>	
27	Fri Mar 17	Cell cycle & Cancer	St. Patrick's Day
28	Mon Mar 20		Seminar: Assignment 5 Meiosis & reproduction
29	Wed Mar 22		
30	Fri Mar 24		
31	Mon Mar 27		Seminar: Assignment 6 Cancer
32	Wed Mar 29		
33	Fri Mar 31	Viruses & Biotechnology	
34	Mon April 3		Seminar: Assignment 6 return
35	Wed Apr 5		
36	Fri Apr 7		
	<b>Wed Apr 11</b>	<b>Final Exam: 7-9 pm</b>	<b>Room TBA</b>

### Seminar Schedule: TENTATIVE topics

Week	Assignment	Topic	Assignment Due Dates
January 16 <sup>th</sup>	No assignment	Meet your TA. General information about seminars.	
January 23 <sup>rd</sup>	1	Assignment 1: Central dogma and mutations	In your regularly scheduled seminar on January 23 <sup>rd</sup>
January 30 <sup>th</sup>	2	Assignment 2: Autosomal recessive disorders	In your regularly scheduled seminar on January 30 <sup>th</sup>
February 27 <sup>th</sup>	3	Assignment 3: Sex-linked disorders	In your regularly scheduled seminar on February 27 <sup>th</sup>
March 6 <sup>th</sup>	4	Assignment 4: Chromosomes & Mitosis	In your regularly scheduled seminar on March 6 <sup>th</sup>
March 20 <sup>th</sup>	5	Assignment 5: Meiosis & Reproduction	In your regularly scheduled seminar on March 20 <sup>th</sup>
March 27 <sup>th</sup>	6	Assignment 6: Cancer	In your regularly scheduled seminar on March 27 <sup>th</sup>

The benefits of Genetics and Molecular Biology are evident in the analyses and problem solving of everyday scenarios. The seminars in MBG\*1000 are designed to improve problem-solving skills and reinforce concepts and terminology introduced in lectures. Assignment and review questions will provide the framework for the seminar sessions. These questions will be posted on CourseLink. **You are responsible for ALL material covered in seminars; similar questions WILL appear on midterm and final exams.** There are 10 seminar sessions and 6 seminar assignments. The schedule above outlines the assignment topics and due dates. To find the information needed to complete the seminar assignments, you will need to consult your lecture notes, biology/genetics books and/or internet material. There are **two grades** associated with the seminar assignments. The **first grade** is associated with the completion of all of the assignment questions. The **second grade** is associated with the grading of a particular question from each of the 6 assignments. For more information on the seminar assignments, assignment deadlines and the marking rubrics, please go to the course site on CourseLink and read the seminar assignment guidelines.

### COURSE EVALUATION

#### Forms of Assessment

#### Weighting (% final grade)

<b>Midterm 1</b> (in class; Wednesday, February 8 <sup>th</sup> )	<b>17.5%</b>
<b>Midterm 2</b> (in class; Wednesday, March 15 <sup>th</sup> )	<b>17.5%</b>
<b>Seminar Assignments</b> (best 5 of 6; 6% each)	<b>30%</b>
<b>Final Examination</b> (Tuesday, April 11 <sup>th</sup> 7-9 pm)	<b>35%</b>

**There will be NO “make-up/alternate” midterms or assignments.** Students who miss a midterm because of medical or compassionate reasons must provide Dr. van der Merwe (SSC 2243) with appropriate written documentation (from a medical professional or their program counsellor) **before the last day of classes.** If acceptable documentation is received the weighting of the missed midterm will be added to the final exam. For example, if a student misses the second midterm and provides appropriate documentation, the student's final exam will be worth 52.5% of the final grade. In the absence of acceptable documentation, the student will receive zero for the assessment.

If a student misses 2 or more of the 6 seminar assignments, the value of the missed assignment(s) will be transferred to the final exam provided acceptable documentation (from a medical professional or their program counsellor) has been received. For example, if a student submits only 4 of 6 assignments, then 6% will be transferred to the final exam. **Again, acceptable documentation must be received before the last day of classes.** In the absence of acceptable documentation, the student will receive zero for the missed assignment(s).

## **COURSE RESOURCES**

### **Textbook**

There is **NO REQUIRED** textbook for this course. The recommended text, *Genetic Essentials: Concepts and Connections* (Third Edition; by Benjamin Pierce), is available in the Book Store. Lecture notes, supporting reading materials and the assignments will be posted on CourseLink.

### **CourseLink**

The CourseLink site is a critical resource for this course. All lecture notes/slides and assignments will be posted on CourseLink. In addition, general course information, special announcements (e.g. office hours) and exam information will be posted here. Please ensure you consult this site frequently.

### **Exam Procedure**

Always bring your student card (photo ID) to exams for us to confirm your identity. ALL exams are multiple choice; be sure to bring a pencil and eraser. Leave your **phone** in your backpack/hand bag and make sure it is **turned off**. Phones that ring during exams will be put outside of the examination room.

## **COURSE AND UNIVERSITY POLICIES**

### **When You Cannot Meet a Course Requirement**

When you find yourself unable to meet an in-course requirement because of illness or compassionate reasons, please advise the course instructor in writing with your name, id#, and e-mail contact indicated. Also, be prepared to provide supporting documentation. See the undergraduate calendar for information on regulations and procedures for Academic Consideration: [Undergraduate Calendar- Academic Consideration](#)

## Accessibility

The University of Guelph is committed to creating a barrier-free environment. Providing services for students is a shared responsibility among students, faculty and administrators. This relationship is based on respect of individual rights, the dignity of the individual and the University community's shared commitment to an open and supportive learning environment. Students requiring service or accommodation, whether due to an identified, ongoing disability or a short-term disability should contact Student Accessibility Services (formerly the Centre for Students with Disabilities) as soon as possible.

For more information, contact [Student Accessibility Services](#) at 519-824-4120 ext. 56208 or email [csd@uoguelph.ca](mailto:csd@uoguelph.ca).

## Academic Misconduct

The University of Guelph is committed to upholding the highest standards of academic integrity and it is the responsibility of all members of the University community – faculty, staff, and students – to be aware of what constitutes academic misconduct and to do as much as possible to prevent academic offences from occurring. University of Guelph students have the responsibility of abiding by the University's policy on academic misconduct regardless of their location of study; faculty, staff and students have the responsibility of supporting an environment that discourages misconduct. Students need to remain aware that instructors have access to and the right to use electronic and other means of detection.

Please note: Whether or not a student intended to commit academic misconduct is not relevant for a finding of guilt. Hurried or careless submission of assignments does not excuse students from responsibility for verifying the academic integrity of their work before submitting it. Students who are in any doubt as to whether an action on their part could be construed as an academic offence should consult with a faculty member or faculty advisor.

The Academic Misconduct Policy is detailed in the Undergraduate Calendar: [Undergraduate Calendar - Academic Misconduct](#)

## E-mail Communication

As per university regulations, all students are required to check their <mail.uoguelph.ca> e-mail account regularly: e-mail is the official route of communication between the University and its students. E-mails from other accounts will NOT be answered. **Also please note, email questions that can be easily answered by looking at the MBG\*1000 course outline information or material posted on MBG\*1000 CourseLink site, will not be answered.**

## Drop Date

The last date to drop one-semester courses, without academic penalty, is the **40th class day - Friday March 10<sup>th</sup>, 2017**. To confirm the actual date please see the schedule of dates in the Undergraduate Calendar. For regulations and procedures for Dropping Courses, see the Undergraduate Calendar: [Undergraduate Calendar - Dropping Courses](#)

### Copies of out-of-class assignments

Keep paper and/or other reliable back-up copies of all out-of-class assignments: you may be asked to resubmit work at any time.

### Recording lectures/presentations

Presentations made in relation to course work—including lectures—cannot be recorded or copied without the permission of the presenter, whether the instructor, a classmate or guest lecturer. Material recorded with permission is restricted to use for that course unless further permission is granted.

### **Campus Resources**

The Academic Calendar is the source of information about the University of Guelph's procedures, policies and regulations which apply to undergraduate, graduate and diploma programs: [Academic Calendars](#)

#### If you are concerned about any aspect of your academic program:

Make an appointment with a program counsellor in your degree program. [B.Sc. Academic Advising](#) or [Program Counsellors](#)

#### If you are struggling to succeed academically:

There are numerous academic resources offered by the Learning Commons including, Supported Learning Groups for a variety of courses, workshops related to time management, taking multiple choice exams, and general study skills. You can also set up individualized appointments with a learning specialist. [The Learning Commons](#)

#### If you are struggling with personal or health issues:

Counselling services offers individualized appointments to help students work through personal struggles that may be impacting their academic performance. [Counselling Services](#)

Student Health Services is located on campus and is available to provide medical attention. [Student Health Services](#)

For support related to stress and anxiety, besides Health Services and Counselling Services, Kathy Somers runs training workshops and one-on-one sessions related to stress management and high performance situations. [Stress Management and High Performance Clinic](#)

#### If you have a documented disability or think you may have a disability:

[Student Accessibility Services](#) (SAS) formerly Centre for Students with Disabilities can provide services and support for students with a documented learning or physical disability. They can also provide information about how to be tested for a learning disability.