PLNT3140 Introductory Cytogenetics

2023 COURSE INFORMATION

INSTRUCTORS

Dr. Brian Fristensky
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OFFICE HOURS: 2:30 - 4:00 p.m. Tue. & Thur.

COURSE OBJECTIVE

To provide an introduction to the structure of eukaryotic genomes, from the level of the chromosome down to the level of the gene. Basic cytological techniques including the use of the optical microscope will be covered and supported by laboratory exercises. The lecture course will include the application of cytogenetic and molecular techniques in the study of cell division, karyotyping, chromosomal structure, recombination, changes in chromosome number and structure, physical mapping and chromosome evolution. Prerequisites: PLNT 2520 (or 039.252) or BIOL 2500 or the former BOTN 2460 (or 001.246).

TEXTBOOKS AND LECTURE NOTES

All required readings are the course web site unless announced otherwise.

WWW SITE

Most course materials can be obtained at our Web site:
http://home.cc.umanitoba.ca/~frist/PLNT3140

ACADEMIC INTEGRITY

All work is to be completed independently by the student unless otherwise specified. Students are reminded that academic dishonesty including plagiarism, cheating and examination impersonation is subject to severe academic penalties as described the University Policies on Academic Integrity. All work submitted for assignments, lab reports or exams is presumed to be the work of the student. Use of Artificial Intelligence for composing written submissions or as a source of information, unless explicitly requested by the instructor, is considered a violation of academic integrity.

EVALUATION PROCEDURE

Assignments (4 @ 5% each)	20%

Midterm Covers units 1 - 7	25%
Laboratory See Lab Schedule for details	20%
Final Examination Covers units 8 - 13	35%

Grading is according to the Letter Grade System (Undergraduate Calendar section 2) ranging from 0 to 4.5 or F to A+. Roughly speaking, a C corresponds to understanding of a large portion of the material, the B range encompasses mastery of most of the material, and the A range indicates original thinking and creativity. Put another way:

Grade Point	Letter Grade	Meaning	comments
4.5 (90 - 100%)	A+	Exceptional	synthesis, ability to put things together from different parts of the course, original and creative thinking
4.0 (80 - 89%)	A	Excellent	
3.5 (70 - 79%)	B+	Very good	learning concepts or inferring them from the context; working with data eg. Given the results of an experiment, what does it tell you? Given an equation, can you use it correctly?
3.0 (60 - 69%)	B	Good	
2.5 (50 - 59%)	C+	Satisfactory	memorization of facts
2.0 (40 - 49%)	C	Adequate	
1.5 (30 - 39%)	D+	Marginal	
1.0 (20 - 29%)	D	Marginal	

This grading rubric should only be taken as a rough guide for how I construct assignment and exam questions. Not all questions and assignments can be precisely broken down in this fashion. How you answer the question is also important. Answers that use complete sentences with precise terminology and organized into coherent paragraphs, will be awarded more points than answers that do not have an obvious organization or do not express ideas in a clear, precise way. Communication is an important part of the scientific method.

LATE SUBMISSION POLICY

Due dates for assignments will given for each assignment. Grades on assignments handed in late will be decremented by one point per day late, for a maximum of 5 points. No assignments will be accepted after answers are handed out or discussed in class.

FINAL EXAMINATION TIME AND LOCATION SCHEDULED BY THE UNIVERSITY

MISSED EXAMS OR COURSEWORK DUE TO ILLNESS

Students who are unable to meet a course requirement due to medical circumstances are currently not required to submit medical notes. However, students are required to contact their instructor or academic advisor by email to inform of the missed work and to make arrangements for extensions, deferrals, or make-up assignments. Please follow these guidelines if you are unable to meet an academic requirement for your courses.

- Contact your instructor for term work such as a class, quiz, midterm/test, assignment, lab
- Contact an advisor in your faculty/college/school of registration for a missed final exam (scheduled in the final examination period);
- Inform your instructor/advisor as soon as possible. Do not delay. Note for final exams, students must contact the instructor within 48 hours of the date of the final exam; and
- Email your instructor/advisor from a U of M email address, and include your full name, student number, course number, and academic work that was missed.

Be advised that only the Dean's Office – not individual instructors or Departments – is in a position to grant deferred examinations. No student may write a final examination at a time other than that prescribed by the Registrar's Office without the knowledge of the Dean's Office. This is to protect instructors and ensure fairness among all students.

Voluntary Withdrawal - VW Date: Nov. 21, 2023

Students will have their grades for at least two assignments and the midterm exam before the University VW date. When considering a VW, students should be aware that if you withdraw from a course, you may be given a lower priority in registering for that course in subsequent academic terms.

Grade Appeals

If you have questions about your grades, talk to your instructor. There is a process for term work and final grade appeals. Note that you have the right to access your final examination scripts. See the Registrar's Office (https://umanitoba.ca/registrar/grades/appeal-grade) for more information including appeal deadline dates and the appeal form.

Student Accessibility Services

If you are a student with a disability, please contact SAS for academic accommodation supports and services such as note-taking, interpreting, assistive technology and exam accommodations. Students who have, or think

they may have, a disability (e.g. mental illness, learning, medical, hearing, injury-related, visual) are invited to contact SAS to arrange a confidential consultation.

Student Accessibility Services
http://umanitoba.ca/student-supports/accessibility/
520 University Centre
204 474 7423
Student_accessibility@umanitoba.ca

Policy and Resource Document (Schedule A)

Students should familiarize themselves with University policies regarding academic integrity, student discipline, and respectful learning environment, for example, and on academic and student supports that are available, including a statement regarding mental health with referral information to the Student Counselling Centre and University Health Services. A summary of this information can be found at

Schedule "A": Policies and Resources

Contingency Plan in the Event of Instructor Illness

The Department of Plant Science in consultation with the Faculty of Agricultural and Food Sciences has devised a plan so that there is minimal impact on the delivery and content of the course, should the instructor fall sick and is unable to continue lectures in-person. Please be assured that the alternative plan outlining any deviation from the normal mode of instruction will be communicated to you as quickly as possible if/when the need arises.

Respectful Work and Learning Environment

The University is committed to a respectful work and learning environment. You have the right to be treated with respect and you are expected to conduct yourself in an appropriate and respectful manner. Policies governing UM community behaviour include:

- Respectful Work and Learning Environment (https://umanitoba.ca/about-um/respectful-work-and-learning-environment-policy)
- Student Discipline (https://umanitoba.ca/governance/governing-documents-students#student-discipline)
- Violent or Threatening Behaviour (https://umanitoba.ca/governance/governing-documents-students#violent-or-threatening-behaviour)

The UM website, Engaging in Respectful Conduct (https://umanitoba.ca/student-supports/respectful-conduct), includes more details about expectations for

behaviours related to university activities.

Sexual Violence Policies

The UM has several policies and procedures that deal with the rights and responsibilities of the University community with regards to all forms of sexual violence. For a comprehensive list of policies and associated resources, visit the Sexual Violence Resource Centre's information page (https://umanitoba.ca/student-supports/sexual-violence-support-and-education/sexual-violence-get-informed). Please note that there are many supports available in addition to these policy documents (see UM Learner Supports).

Recording Class Lectures

No audio or video recording of lectures or presentations is allowed in any format, openly or surreptitiously, in whole or in part without permission of the Instructor. Course materials (both paper and digital) are for the participant's private study and research.

Copyright

Course Technology

It is the general University of Manitoba policy that all technology resources are to be used in a responsible, efficient, ethical and legal manner. The student can use all technology in classroom setting only for educational purposes approved by instructor and/or the University of Manitoba Student Accessibility Services. Student should not participate in personal direct electronic messaging / posting activities (e-mail, texting, video or voice chat, wikis, blogs, social networking (e.g. Facebook) online and offline "gaming" during scheduled class time. If student is on call (emergency) the student should switch his/her cell phone on vibrate mode and leave the classroom before using it. (©S Kondrashov. Used with permission)

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Lectures 2023

Unit/Dates	Topics
1 Sept. 7	Setting the Eukaryotic Context Introduction to the Microscope
2 Sept. 12, 14	Making Sense of the Cell Cycle Making Sense of Meiosis
3 Sept. 19	Cytogenetic Techniques Cytogenetic Techniques II
4 Sept. 21, 26	Recombinant DNA I Recombinant DNA II
5 Sept. 28	Chromatin
6 Oct. 3,5	Chromosomal Structure I Chromosomal Structure II
7 Oct. 10,12	Intrinsic Features of Chromosomes
Oct. 17	**Midterm Exam - (Units 1 - 7)**
8 Oct. 19,24	Kinetic Classes of Genomic DNA Mapping Genes to Chromosomes
9 Oct 26, 31	Molecular Mapping Building Genomic Maps
11 Nov. 2, 7	Ways of Identifying Chromosomes
11 (cond.) Nov. 9, 21	Changes in Chromosome Structure I: Changes in Chromosome Structure II:
	Fall Break - Nov. 13 - 17
12 Nov. 23, 28	Changes in Chromosome Number I: Polyploidy Changes in Chromosome Number II: Haploidy
13 Nov. 30, Dec. 5	Genome Evolution
	Final Exam - TBA