Course Name: Cell and Molecular Biology
BIOL number/ section: 2013

Instructor: **Dr. Russell Easy**
Hear my name
Office: **Biology 432**
Office hours: **T, Th 11:00am-2:00pm**
E-mail: **russell.easy@acadiau.ca**

Lecture: M/W/F KC Irving Centre 9:30-10:20am
Lab: BIOL 2013

Evaluation	Percentage	Date
30s Summary	5%	TBD
Assignment	10%	April 5
Midterm Exam	25%	February 24
Final Exam	30%	TBD

Part 1: Course Information

Course Description

This course is an introduction to the principles of cell biology with an emphasis on the organization of cells and the structure and function of cellular constituents. Students receive an overview of cellular metabolism, cell communication, cell specialization and the cell cycle. We will also explore, in detail the Central Dogma of Molecular Biology.

Prerequisite(s): BIOL 1113/1123 or BIOL 1813 and Chem 1023**.**

Course Materials & Requirements

Biology: Brooker, Eric P Widmaier, Linda Graham, Peter Stirling, 6th edition

Course Structure

Lecture time will be used for activities, discussion, and instruction. In-person attendance is strongly encouraged.

Student Learning Outcomes

How to Meet the Learning Outcomes:

At the end of the course students will be able to:
Possess a vocabulary within the context of classical and modern genetics.
Describe the connection between genotype, phenotype, and environment and the effects of changes through evolution by natural selection.

- Better understanding of modern analytical methods for genetic studies
- Understand the details of gene transmission and function and genome structure, function, expression and analysis.
- Understand how genetic analyses are necessary for a better understanding of human health and wellness.
- Understand the role of genetic analyses in forensics
- Understand the essential nature of genetic counselling and its role in providing a better understanding of health issues for the general public.

You will meet the objectives listed above through a combination of the following activities in this course:

- Attend lectures on a regular basis, take notes, and ask for clarification when something is unclear

Part 2: Course Plan

The instructor reserves the right to amend the course plan with reasonable notice, and in consultation with the class.

All Lecture Presentations will be available on ACORN.

Course content: The following is a rough outline of the topics to be covered in the term. The dates and topics may change throughout the term.

Date	Content
Jan. 6	Introduction
Jan. 8	General Cell Principles
Jan. 10	"
Jan. 13	"
Jan. 15	Systems biology: Introduction
Jan. 17	Systems biology: Immune response
Jan. 20	Systems biology: The MHC (TT1)
Jan. 22	Evolution of the MHC (TT2)
Jan. 24	Function of the MHC (TT3)
Jan. 27	Cell systems and membranes "
Jan. 29	"
Jan. 31	"
Feb. 3	"
Feb. 5	The Mitochondria (TT4)
Feb. 7	Evolution of the Mitochondria (TT5)
Feb. 10	Plastids (TT6)
Feb. 12	Metabolism
Feb. 14	Review
Feb. 17-21	Winter break
Feb. 24	Midterm
Feb. 26	Extracellular matrix and cell junctions
Feb. 28	"
March 3	"
March 5	"
March 7	"
March 10	Cell communication: Signal transduction (TT7)
March 12	Cell communication: Hormones (TT8)
March 14	Cell communication: Morphogens (TT9)
March 17	Molecular Biology of the Cell
March 19	"
March 21	"
March 24	"
March 26	"
March 28	"
March 31	"
April 2	Review
April 4	Last day of classes

Laboratory Exercises – Please note that Dr. Dharini Bharadwaj will conduct the laboratory exercises

- Labs will be in person in the Biology Building in room BIO 250.
- Lab tutorials will be in different locations every week. Please see the announcements on Moodle/ACORN page for updated locations and topics to be discussed during the tutorials and workshops.
- Labs will begin the week of Jan 21, 2025, and tutorials/workshops will start on Jan 14, 2025.
- Materials for the scheduled labs will be posted on the lab ACORN page by Friday of the week before the lab is scheduled. Printed copies of lab handouts will be provided for you on your lab day.
- A paper copy of your flowchart is due at the beginning of your lab. Please bring it to the front bench as you come in.

Lab:
Please check your schedule on Self-Service or ACORN to confirm your lab section. Some Thursday morning labs will begin later than 8:30 am; dates are TBD. We will have tutorials related to the labs every other week. The schedule will be posted on Moodle/ACORN. The tutorials will cover several topics related to the lab and may also include a field trip within the campus. Attendance for the tutorials is mandatory.

Section	Day and Time
W101	Tuesdays, 1 – 3:50 pm
W102	Wednesdays, 1 – 3:50 pm
W103	Thursdays, 8:30 – 11:20 am
W104	Thursdays, 1 – 3:50 pm
W105	Fridays, 1 – 3:50 pm

This is the schedule for lab exercises this semester:

Dates	Experiment/topic to be covered
Jan 6 - 10	No Labs
Jan 14 -17	Tutorials, pipet review, review of first lab
Jan 21-24	Bradford assay
Jan 28 - 31	Tutorials: Topic: TBD
Feb 4 - 7	Tetrahymena phagocytosis assay
Feb 11 - 14	Tutorials: Topic: TBD
Feb 18 - 21	Reading week
Feb 25 - 28	Onion staining lab
March 4 - 7	Tutorials: Topic: TBD
March 11 - 14	Actinidin and Gelatin enzyme assay
March 18 - 21	Tutorials: Topic: TBD
March 25 - 28	SDS-PAGE: Protein gels
April 1 - 4	Final tutorials: Topic: TBD

Assignments
Online Lab assignments/reports are due during your scheduled lab via Moodle. A 20% penalty will be deducted for every day the report is late. Reports handed in after this time will be marked late unless an arrangement has been made between the student and the instructor.
For scientific writing and formatting, please refer to the writing guide PowerPoint posted on Moodle (soon) or the Biology Scientific Writing Guide when writing your lab reports. Follow the outline/rubric provided in lab. Points will be deducted for missing info and incorrect formatting.

Plagiarism
Plagiarism is not tolerated at Acadia University. Even though you may work in pairs or groups, all flowcharts, assignments, and reports must be written as individual efforts. Any submission found to contain plagiarized information will receive a mark of zero. You can review the university policies on plagiarism at: https://library.acadiau.ca/research/guides/plagiarism/student/

Work submitted electronically and on paper will be checked for AI.

You are required to pass the lab to pass the course. (For Biology courses with labs).

Part 4: Course Policies

Attend Class (Lectures)

Students are expected to attend all class sessions as listed above.

While you are permitted to use laptops or tablets to take notes in lecture, please limit their use to classroom material only. Using them for other purposes (i.e. social media) will negatively impact your ability to learn, and it is distracting to myself and others. Please don't do it.

Attend Class (Labs)

Attendance in labs is mandatory. If you have to miss a scheduled lab, you MUST contact me immediately, (not days later!!) and arrange to come to another lab section - you will lose marks for missed labs**.**

Absence from labs, without submission of a Declaration of Cause form to the Registrar, will result in -2%. Missed labs, with a valid reason, will need to be made up in the same week, or in the following week, and will depend on available space.

Lab information will be available for download from ACORN.

Part 5: University Policies

University policies are available in the Acadia University Academic Calendar or through the Registrar's website:

https://registrar.acadiau.ca/welcometotheregistrarsoffice.html

Last Drop Day

Last day to drop a course and receive a "W". Please check the Acadia University calendar dates, which are available here:

https://registrar.acadiau.ca/AcademicCalendars.html

Inform Your Instructor of Accommodations

If you are a student with a documented disability who anticipates needing supports or accommodations, please contact Dr. Abu Kamara, Coordinator, Accessible Learning Services at *902-585-1291*, abu.kamara@acadiau.ca, or Marissa McIsaac, Accessibility Resource Facilitator at *902-585-1520*, disability.access@acadiau.ca. Accessible Learning Services is located in Rhodes Hall.

https://www2.acadiau.ca/student-life/accessiblelearning.html

Commitment to Integrity

Cheating in the lecture and/or lab, including plagiarism, will not be tolerated. Please read the appropriate sections of the current Acadia University Academic Calendar

https://registrar.acadiau.ca/AcademicCalendars.html

If caught cheating you will automatically receive a grade of zero on the quiz/assignment/exam, and your name will be submitted to the registrar. If this is not the first occurrence you will either receive a mark of zero for the course (2nd occurrence) or be expelled from the University (3rd occurrence).

Information on copy-write and course content from Acadia University is available through the Vaughan Memorial Library:

http://libguides.acadiau.ca/c.php?g=433650&p=5027078

The spoken and written course content (including the syllabus, handouts, lectures, presentations, labs, assignments, quizzes, tests, and exams) are the intellectual property of the instructor and may only be copied for personal use. Sharing these materials or uploading them where they may be accessed by others is a violation of copyright. If you wish to make audio, video, or photographic recordings in class, you must first obtain the consent of the instructor and of any other persons (e.g. guest speakers, other students) who may be captured in such recordings. In the case of personal use by students with disabilities, the instructor's consent shall not be unreasonably withheld. Students with disabilities who wish to request accommodation should contact Accessible Learning.

Program Level Outcomes

Program Level Outcomes	**Sub-outcomes**	*Introduced/ reinforced/ proficient*
Discipline Knowledge		

Scientific Method & Inquiry	Scientific Method	*Introduced*
	Applied Science	*Introduced*
Cells, Tissues & Evolution	Form and Function	*Reinforced*
	Cellular Communication	*Introduced*
	Development	*Reinforced*
Molecules, Genetics & Evolution	DNA sequence and expression	*Introduced*
	Phenotype and Environment	*Reinforced*
	Mutations	*Introduced*
Human & Environmental Health	Environmental/Social Awareness	*Introduced*
	Human Health and Disease	*Introduced*
Lab/Field Skills		
Laboratory Skills	PCR setup/primer design	*Introduced*
Data Analysis	Data Interpretation	*Reinforced*
	Pipetting	*Reinforced*
Transferable Skills		
Professionalism	respect/professionalism	*Reinforced*
	Equity, Diversity & Inclusion	*Reinforced*
	Ethics and Professionalism	*Reinforced*
Academic Integrity	Academic Integrity and Accountability	*Reinforced*
Problem Solving	Problem solving	*Reinforced*
	Critical Thinking	*Reinforced*
Time Management	Time Management	*Reinforced*
Literature Critique	Journal article critique	*Reinforced*
	Online Source Critique	*Reinforced*

Scientific Communication	Scientific writing/referencing	*Reinforced*
	Seminars/presentations	*Reinforced*
	Interpretation of “Biology in the News”	*Reinforced*
	Media	*Reinforced*