BIOL 025A, Biology 25
6 Credits, 6 hours lecture

Topics studied include an introduction to biology and the scientific method; the biosphere, ecosystems and communities; cell structure and function, including photosynthesis, cellular respiration, and cell division; principles of genetics and genetic engineering, and evolutionary theory, including biological classification methods and the domains of life.

Alberta Education Course Equivalency: Science 10 (Biology unit) and Biology 20
Co-requisites: ENGL 10-2 or ENGL 10-1 or permission from the Program Chair

Instructor

Patricia Collins
Office S209 C
780-791-8955
patricia.collins@keyano.ca

Office Hours

Monday	12:00 p.m. – 12:50 p.m.
Tuesday	2:00 p.m. – 2:50 p.m.
Wednesday	12:00 p.m. – 1:50 p.m.
Thursday	12:00 p.m. – 12:50 p.m.

Hours of Instruction

Monday	10:00 a.m. – 11:50 a.m.	Room S216
Tuesday	10:00 a.m. – 11:50 a.m.	Room S216
Friday	10:00 a.m. – 11:50 a.m.	Room S216

Required Resources

- ***Miller & Levine Biology*** by K. Miller & J. Levine, Savvas (2019), ISBN 978-0-328-92512-4. Both print and digital variations are available from the Keyano Bookstore.

- ***Biology 025 Student Course Package***, available in print from the Keyano Bookstore.

- **Calculator**, basic or scientific

- **Pencil crayons**, or other colouring tools

- **Graph paper**

- **Computer** (laptop or desktop)—see page 7 for details

Course Outcomes

Upon successful completion of the course, the student shall be able to:

- appreciate that scientific understanding evolves from the interaction of ideas involving people with different views and backgrounds.
- seek and apply evidence using the scientific method when evaluating alternative approaches to investigations, problems and issues.
- explain the flow, cycling, and exchange of energy and matter through the biosphere and ecosystems.
- explain how the biosphere is composed of ecosystems with distinct biotic and abiotic factors.
- demonstrate sensitivity and responsibility in pursuing a balance between the needs of humans and a sustainable environment.
- describe the cell theory, and function of cell organelles and structures in a cell, in terms of life processes, and use models to explain these processes and their applications.
- relate photosynthesis to storage of energy in organic compounds.
- compare and contrast the roles of glycolysis, respiration, and fermentation in releasing potential energy from organic compounds.
- describe, in words and in diagrams, the processes of mitosis and meiosis.
- explain the basic rules and processes associated with the transmission of genetic characteristics.
- explore classical genetics at the molecular level, including several human genetic disorders.
- explain several mechanisms involved in the change of populations over time.
- describe a community as a composite of populations in which individuals contribute to a gene pool that can change over time.
- explain the types of interaction of individuals within and between populations.
- describe the fundamental principles of taxonomy and binomial nomenclature, and the defining characteristics of the six kingdoms of life.

Evaluation

Daily Work and Quizzes	30%
Projects	30%
Midterm Exam	20%
Final Exam	20%

A grade of 60% (1.7, or C-) is required for progression. The minimum standard for passing this course is a grade of 50% (1.0, or D).

Grading System

Descriptor	4.0 Scale	Percent
	4.0	96 – 100
Excellent	4.0	90 – 95
	3.7	85 – 89
	3.3	81 – 84
Good	3.0	77 – 80
	2.7	73 – 76
	2.3	69 – 72
Satisfactory	2.0	65 – 68
Minimum Prerequisite	1.7	60 – 64
Poor	1.3	55 – 59
Minimum Pass	1.0	50 – 54
Failure	0.0	0 – 49

Proposed Schedule

Units of Study	Textbook References*

UNIT 1: The Nature of Life

1.	The Science of Biology	Chapter 1 & A-8 to A-33
2.	The Chemistry of Life	Chapter 2 & A-42

UNIT 2: Ecology

1.	The Biosphere	Chapter 3
2.	Ecosystems	Chapter 4
3.	Populations	Chapter 5
4.	Community and Ecosystem Dynamics	Chapter 6
5.	Humans and Global Change	Chapter 7

UNIT 3: Cells

1.	Cell structure and function	Chapter 8
2.	Photosynthesis	Chapter 9
3.	Cellular Respiration and Fermentation	Chapter 10
4.	Cell Growth and Division	Chapter 11, 12.4

MIDTERM EXAM

UNIT 4: Genetics

1.	Introduction to Genetics	Chapter 12
2.	DNA	Chapter 13
3.	RNA and Protein Synthesis	Chapter 14
4.	The Human Genome	Chapter 15
5.	Biotechnology	Chapter 16

UNIT 5: Evolution and Diversity of Life

1.	Darwin's Theory of Evolution	Chapter 17
2.	Evolution of Populations	Chapter 18
3.	Biodiversity and Classification	Chapter 19 & DOL 1-5
4.	History of Life	Chapter 20 & A-38 to A-41
5.	Viruses, Prokaryotes, Protists and Fungi	Chapter 21 & DOL 6-19

FINAL EXAM

*Note: in the Textbook References, "A" refers to the "Appendices" near the end of the textbook; "DOL" refers to the "Diversity of Life" sections at the end of the textbook.

Calendar of Important Events: shaded areas indicate no Biology 025 lectures.

Week	Monday	Tuesday	Wednesday	Thursday	Friday
1	Aug 29 Orientation Day	30 Orientation Day	**31**	Sept 1	2 **First day of Biol 025**
2	5 Labour Day Holiday College closed	6	7	8	9
3	12	13	14	15	16
4	19	20	21	22	23
5	26 **Science Project Due**	27	28	29	30 Truth and Reconciliation Day No classes
6	Oct 3	4	5	6	7
7	10 Thanksgiving Day Holiday College closed	11	12	1	14
8	17	18 **MIDTERM EXAM**	19	20	21
9	24	25	26	27	28
10	31	Nov 1	2	3	4
11	7	8	9 Reading Day No classes	10 Reading Day No classes	11 Remembrance Day Holiday College closed
12	14 **Genetics Project Due**	15	16	17	18
13	21	22	23	24	25
14	28	29	30	Dec 1	2
15	5 **Group Presentations** **Last day of Biol 025**	6	7	8 EXAMS	9 EXAMS
16	12 EXAMS	13 EXAMS	14 EXAMS	15 EXAMS	16 EXAMS
17	19 EXAMS	20	21 End of Fall Semester	22	23

Please Note:

Date and time allotted to each topic is subject to change.

Final exams are scheduled by the College. Do not book travel until December 20, 2022 for courses with final exams. Deferred exams will NOT be approved for travel, even if the travel was booked prior to enrolling in the course.

Course Specific Policies

1. <u>**Attendance:**</u> Biology 025 is designed as a ***face-to-face course***. Extended or frequent absences *for any reason* can impact your overall mark. Suggestions for handling occasional absences include:

   a. <u>**finding a "classroom buddy"**</u> whom you can contact for details regarding what you have missed.

   b. <u>**using Moodle**</u>: log into <u>ilearn.keyano.ca</u> to check the Calendar and see slide notes and pre-recorded audio PowerPoint lessons.

   c. <u>**using OneNote:**</u> this is the class notebook where I record daily lesson outlines and homework. Search your Keyano email during the first week of classes for an invitation from SharePoint, or use your Keyano credentials to log into <u>onenote.com</u>

   d. <u>**using your Keyanomail**</u> to get in touch with me. You will receive responses during office hours.

2. <u>**Electronic devices:**</u> some students find usage of tablets and laptops very helpful during lectures, so you are welcomed to bring these to class. Sounds on all devices should be turned off during class and if you need to take an important call, please leave the room to avoid disrupting others. *Please do not use electronic devices to record the class in any way (audio, video, photos, etc.).*

3. <u>**Late Work:**</u> for full marks, assigned work must be received <u>in hard copy</u> and <u>in person</u>, in class, on the due date. If you need extra time to get an assignment completed, it will receive

   a. the earned grade, minus 5%, if received after class on the due date.

   b. the earned grade, minus 20%, for <u>each</u> additional day late.

   c. **a mark of <u>zero</u> if received after I have returned them, OR if pushed under my office door.**

4. <u>**Laboratory:**</u> there is no laboratory component for Biology 025.

5. <u>**Other:**</u>

   a. Any work showing evidence of copying or plagiarism will receive a mark of zero. (see page 6)

   b. Biology 025 has in-class quizzes and Moodle quizzes (see Moodle Calendar). Moodle quizzes are completed online, in <u>one attempt</u>, during a limited timeframe—**see Moodle for quiz opening and closing dates**. *Extensions and "make-ups" will <u>not</u> be granted for <u>any</u> quizzes..*

   c. A missed exam may be written at an alternate time only under certain exceptional circumstances, ***at the instructor's discretion***. The instructor must be contacted within 24 hours of the scheduled exam, and documentation (e.g. a doctor's note) must be provided.

   d. The final exam will be written on the date scheduled by the College; otherwise, the procedure for "Deferred Final Examination" in the Credit Calendar is to be followed.

   e. There will be <u>no</u> alternative, "make-up", or "extra credit" assignments provided for this course.

Performance Requirements and Student Services

Student Responsibilities

As a student, it is your responsibility to contact the Office of the Registrar to complete the required forms, including the Withdraw Course or Program or a Change of Registration form. Please refer to the important dates listed in the Academic Schedule in the Keyano College credit calendar. The Keyano College credit calendar also has information about Student Rights and the Code of Conduct. It is the responsibility of each student to be aware of the guidelines outlined in the Student Rights and the Code of Conduct Policies.

Student Attendance

Class attendance is helpful for two reasons: First, class attendance maximizes a student's learning experience. Second, attending class is an excellent way to keep informed of matters relating to the course administration (e.g., the timing of assignments and exams). Ultimately, you are responsible for your learning and performance in this course. It is the responsibility of each student to be prepared for all classes. Absent students are responsible for the material covered in those classes, and students must ensure they are ready for their next class, including completing any missed assignments and notes.

Laboratory Safety

Students must complete the *WHMIS for Students* online training course on Moodle before entering the science laboratories.

Students must comply with the mandatory laboratory safety rules for this course as provided in the laboratory manual. Failure to do so will result in progressive discipline such as a verbal warning, refused entry into the laboratory, or suspension from the College.

Before entering the lab, students are responsible reviewing the lab manual and relevant Safety Data Sheets for the purpose of evaluating risks associated to health. Some hazards used in the laboratory may have additional risks to those with pre-existing medical conditions.

Academic Misconduct

Students are considered responsible adults and should adhere to the principles of intellectual integrity. Intellectual dishonesty takes many forms:

- Plagiarism or the submission of another person's work as their own,
- The use of unauthorized aids in assignments or examinations (cheating),
- Collusion or the unauthorized collaboration with others in preparing work,
- The deliberate misrepresentation of qualifications,
- The willful distortion of results or data,
- Substitution in an examination by another person,
- Submitting unchanged work for another assignment, and
- Breach of confidentiality.

The consequences for academic misconduct range from a verbal reprimand to expulsion from the College. More specific descriptions and details are found in the Student Rights and Code of Conduct section of the Keyano College credit calendar. It is the responsibility of each student to be aware of the guidelines outlined in the Student Rights and Code of Conduct Policies. To ensure your understanding of plagiarism, you may be required to complete the online Understanding Plagiarism tutorial and submit the certificate of completion.

Online Learning

Technology and internet connectivity will impact your online learning experience. You may be required to watch online videos, take online quizzes, or participate in live online classes. Live/virtual courses will be hosted in Microsoft Teams or Zoom. For all course delivery types, you will access your course resources on Keyano's learning management system: Moodle (iLearn). Login in using your Keyano username and password. Keyano College operates in a Windows-based environment and having access to the correct tools for online learning is essential. Here's a list of recommended system requirements.

Internet Speed

Minimum download and upload speeds of 10 Mbps. Recommended download speeds of 25 Mbps and upload speeds of 10 Mbps (if you are sharing your internet at home). You can check your internet speed with Speedtest by Ookla.

Computer System Requirements

Microsoft Windows	Apple (Mac)
Minimum Requirements:	**Minimum Requirements:**

1. Windows 10 Operating System or above
 	
2. 4GB of RAM
 	
3. 10GB available hard drive storage space
 	
   a. Install the Microsoft Office 365 suite (~3GB) *
 	
4. Microphone, webcam, and speakers (All modern laptops have these three accessories built-in.)
 	
5. Windows has built-in anti-virus/malware software. It is essential to install system updates to keep your device secured regularly.
 	
*Microsoft Office 365 is free to Keyano students.
	1. Mac Operating System 10.14 (Monterey) or above
	
	2. 4GB of RAM
	
	3. 10GB available hard drive storage space
	
	   a. Install the Microsoft Office 365 suite (~3GB) *
	
	4. Microphone, webcam, and speakers (All modern laptops have these three accessories built-in.)
	
	5. Mac has built-in anti-virus/malware software. It is important to install system updates to keep your device secured regularly.
	
	*Microsoft office 365 is free to Keyano students.

Recommended Upgrades • 8GB of RAM • Regularly back up or synchronize your files, locally or with a cloud-based storage option. OneDrive is the cloud-based storage option free to students after the setup of KeyanoMail and Microsoft 365.	**Recommended Upgrades** • 8GB of RAM • Regularly back up or synchronize your files locally or with a cloud-based storage option. OneDrive is the cloud-based storage option free to students after the setup of KeyanoMail and Microsoft 365.
Tablets, iPads, and Chromebooks are **not** recommended: they may not be compatible with the testing lockdown browsers and Microsoft Office 365.	

Computer Software

Students have access to Microsoft Office 365 and Read&Write for free using Keyano credentials.

Recording of Lectures and Intellectual Property

Students may only record a lecture if explicit permission is provided by the instructor or Accessibility Services. Even if students have permission to record a lecture or lecture materials, students may not share, distribute, or publish any of the lectures or course materials; this includes any recordings, slides,

instructor notes, etc., on any platform. Thus, no student is allowed to share, distribute, publish or sell course-related content without permission. It is important to recognize that the Canadian Copyright Act contains provisions for intellectual property. The Academic Integrity Policy provides additional information on Keyano College's expectations from students as members of the intellectual community.

ITS Helpdesk

If you have issues with your student account, you can contact the ITS Helpdesk by emailing its.helpdesk@keyano.ca or calling 780-791-4965.

COVID-19 We are subject to provincial, and municipal bylaws, and policies. These decisions may change pending further direction from the Alberta Chief Medical Officer, Alberta Health Services, and other provincial guidelines. To protect yourself and others, get immunized, wash your hands, wear a mask, keep your distance (2m/6 ft) and remain home when feeling unwell. For the most recent COVID-19 information, please refer to albertahealthservices.ca/COVID.

Specialized Supports The Student Services Department is committed to Keyano students and their academic success. There is a variety of student support available at Keyano. All student services are available during Keyano business hours: Monday to Friday, 8:30 a.m. to 4:30 p.m. The College is closed on statutory holidays. If you require support outside of regular business hours, please inform the support service team, and they will do their best to accommodate your needs.

Accessibility Services provides accommodations for students living with disabilities. Students with documented disabilities or who suspect a disability can meet with an Access Strategist to discuss their current learning barriers and possible accommodations. Students who have accessed accommodations in the past are encouraged to contact the department to request accommodations for the following semester. Please note that requesting accommodations is a process and requires time to arrange. Contact the department as soon as you know you may require accommodations. For accessibility supports and disability-based funding, please book an appointment by emailing us at: accessibility.services@keyano.ca.

Accessibility Services also provides individual and group learning strategy instruction for all students and technology training and support to enhance learning. You can meet with an Access Strategist to learn studying and test-taking strategies. In addition, you can schedule an appointment with the Assistive Technology Specialist to explore technology tools for learning. Book an appointment today by emailing: accessibility.services@keyano.ca

Wellness Services offers a caring, inclusive, and respectful environment where students can access free group and individual support to meet academic and life challenges. Mental Health Coordinators provide a safe and confidential environment for you to seek help with personal concerns. Our Wellness Navigator offers support with basic needs such as housing, financial and nutritional support, and outside referrals when needed. Wellness Services welcomes students to participate in group sessions that address topics including mindfulness and test anxiety throughout the academic year. Individual appointments can be made by emailing wellness.services@keyano.ca.

Library Services: provides students with research, information, and education technology supports as they engage in their studies. Library staff are available to help you online and in person throughout the semester. Librarians offer individual and small group appointments booked using the online Book A Librarian calendar. The Library also provides research and subject guides to help you with your studies. To view a subject or course-specific guide, check out the complete list of online Subject Guides. To start your research and access citation guides (APA, MLA, Chicago, or IEEE), visit the Research Help page. The Library's collections (including print and online materials) are searchable using OneSearch. The Library offers a Loanable Technology collection to support students accessing and using technology. For an up-to-date list of technology available for borrowing, visit the Library's Loanable Technology webpage. For a detailed list of library resources and services, go to www.keyano.ca/library. For all inquiries, please email askthelibrary@keyano.ca or chat with us online.

Academic Success Centre: The Academic Success Centre at Keyano College (CC-119) provides **free** academic support services to registered students, such as tutoring, writing support, facilitated study groups, workshops, and study space. Academic Content Specialists are available in Mathematics, Science, Trades, Power Engineering, Upgrading/College Prep, Human Services, English, Humanities, and more. Students are encouraged to visit the Academic Success Centre to discuss study strategies and academic concerns. For additional information, please email Academic.Success@keyano.ca.

Academic Success Coach: The Academic Success Coach is located in the Academic Success Centre and works with students to develop academic success plans, time management skills, study strategies, and homework plans. For additional information, please email Academic.Success@keyano.ca.