

**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

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780-791-8955

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**Office Hours**

Tuesday 9:00 a.m. – 9:50 a.m.

Wednesday 11:00 a.m. – 12:50 p.m.

Thursday 12:00 p.m. – 12:50 p.m.

Friday 12:00 p.m. – 12:50 p.m.

**Hours of Instruction**

| Day       | Time                  | Location |
|-----------|-----------------------|----------|
| Monday    | 3:00 p.m. – 4:50 p.m. | CC235    |
| Wednesday | 1:00 p.m. – 2:50 p.m. | CC235    |
| Thursday  | 8:00 a.m. – 9:50 a.m. | CC235    |

**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               | 20% |
| Midterm Exam           | 25% |
| Final Exam             | 25% |

*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  |
|----------------------|-----------|----------|
| Excellent            | 4.0       | 96 – 100 |
|                      | 4.0       | 90 – 95  |
|                      | 3.7       | 85 – 89  |
| Good                 | 3.3       | 81 – 84  |
|                      | 3.0       | 77 – 80  |
|                      | 2.7       | 73 – 76  |
| Satisfactory         | 2.3       | 69 – 72  |
|                      | 2.0       | 65 – 68  |
|                      | 1.7       | 60 – 64  |
| 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
2. The Chemistry of Life

Chapter 1 & A-8 to A-33  
Chapter 2 & A-42

**UNIT 2: Ecology**

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

Chapter 3  
Chapter 4  
Chapter 5  
Chapter 6  
Chapter 7

**UNIT 3: Cells**

1. Cell structure and function
2. Photosynthesis
3. Cellular Respiration and Fermentation
4. Cell Growth and Division

Chapter 8  
Chapter 9  
Chapter 10  
Chapter 11, 12.4

**MIDTERM EXAM****UNIT 4: Genetics**

1. Introduction to Genetics
2. DNA
3. RNA and Protein Synthesis
4. The Human Genome
5. Biotechnology

Chapter 12  
Chapter 13  
Chapter 14  
Chapter 15  
Chapter 16

**UNIT 5: Evolution and Diversity of Life**

1. Darwin's Theory of Evolution
2. Evolution of Populations
3. Biodiversity and Classification
4. History of Life
5. Viruses, Prokaryotes, Protists and Fungi

Chapter 17  
Chapter 18  
Chapter 19 & DOL 1-5  
Chapter 20 & A-38 to A-41  
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    | Jan 1<br>College Closed<br>New Year's Day        | 2                                | 3  | 4<br>First day of classes        | 5   |
| 2    | 8  | 9                                | 10   | 11                               | 12  |
| 3    | 15   | 16                               | 17   | 18                               | 19  |
| 4    | 22   | 23                               | 24   | 25<br>Ecology<br>Presentations   | 26  |
| 5    | 29   | 30                               | 31   | Feb 1                            | 2   |
| 6    | 5  | 6                                | 7  | 8                                | 9   |
| 7    | 12   | 13                               | 14   | 15<br>MIDTERM EXAM               | 16  |
| 8    | 19<br>College Closed<br>Family Day Holiday       | 20<br>Reading Day—<br>No Classes | 21<br>Reading Day—<br>No Classes                               | 22<br>Reading Day—<br>No Classes | 23<br>Reading Day—<br>No Classes            |
| 9    | 26   | 27                               | 28   | 29                               | Mar 1                                       |
| 10   | 4  | 5                                | 6  | 7                                | 8   |
| 11   | 11   | 12                               | 13   | 14                               | 15  |
| 12   | 18<br>Genetics Project Due                       | 19                               | 20   | 21                               | 22  |
| 13   | 25   | 26                               | 27   | 28                               | 29<br>College Closed<br>Good Friday Holiday |
| 14   | Apr 1<br>College Closed<br>Easter Monday Holiday | 2                                | 3  | 4                                | 5   |
| 15   | 8<br>Kingdoms of Life<br>Presentations           | 9                                | 10<br>Kingdoms of Life<br>Presentations<br>Last day of classes | 13                               | 14  |
| 16   | 15<br>FINAL EXAMS                                | 16<br>FINAL EXAMS                | 17<br>FINAL EXAMS  | 18<br>FINAL EXAMS                | 19<br>FINAL EXAMS                           |
| 17   | 22<br>FINAL EXAMS                                | 23<br>FINAL EXAMS                | 24<br>FINAL EXAMS  | 25                               | 26  |

**Please Note:**

The date and time allotted to each topic are subject to change.

**Final exams are scheduled by the College. Do not book travel until April 25, 2024 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. **Attendance:** 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. **finding a “classroom buddy”** whom you can contact for details regarding what you have missed.
  - b. **using Moodle:** log into [ilearn.keyano.ca](http://ilearn.keyano.ca) to check the Calendar and see slide notes and pre-recorded audio PowerPoint lessons.
  - c. **using OneNote:** 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 [onenote.com](http://onenote.com)
  - d. **using your Keyanomail** to get in touch with me. You will receive responses during office hours.
2. **Electronic devices:** 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. **Late Work:** for full marks, assigned work must be received in hard copy and in person, 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 each additional day late.
  - c. a mark of zero if received after I have returned them, OR if pushed under my office door.
4. **Laboratory:** there is no laboratory component for Biology 025.
5. **Other:**
  - 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 one attempt, during a limited timeframe—**see Moodle for quiz opening and closing dates**. *Extensions and “make-ups” will not be granted for any 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 no 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 [Withdrawal/Drop Form](#). All forms are available on the [College website](#). Please refer to the important dates listed in the Academic Schedule in the [Keyano College credit calendar](#) and/or on the [College website](#). It is the responsibility of each student to be aware of the guidelines outlined in the [Student and Academic 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.

### Course Evaluation

Midterm exams and term work is to be completed at the time/date indicated in your course syllabus. It is the expectation of the College that students make every reasonable effort to complete all course evaluation, including, quizzes, midterms, and exams, as scheduled. In the event of an emergency, rescheduling of exams and/or extensions are only provided at the discretion of the course instructor. Students should contact the instructor as soon as they are able, to notify them of missing an evaluative component. Instructors will use discretion in deciding whether circumstances justify granting a reschedule and/or extension.

Regular term quizzes, midterms, and exams are not eligible for deferral and/or date extension accommodations. Students with accommodations, please refer to Accessibility Services.

Final Exams are subject to deferral processes, please refer to the current [Keyano College Credit Calendar](#).

### Academic Integrity & Misconduct

Academic integrity requires commitment to the values of honesty, trust, fairness, respect, and responsibility. It is expected that students at Keyano College will adhere to these ethical values in all activities related to learning, teaching, research, and service. Any action that contravenes this standard, including misrepresentation, falsification, or deception, undermines the intention and worth of scholarly work and violates the fundamental academic rights of members of our community.

Academic 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),
- Using Artificial Intelligence (AI) to complete coursework (without instructor approval),
- 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.

In all academic work, the ideas and contributions of others must be appropriately acknowledged and work that is presented as original must be, in fact, original. Using an AI-content generator (such as ChatGPT)

to complete coursework without proper attribution or authorization is a form of academic dishonesty. If you are unsure about whether something may be plagiarism or academic dishonesty, please contact your instructor to discuss the issue.

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 & Academic Policies* 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, Academic Integrity, and Non-Academic Misconduct 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.

### 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

Keyano College software are Windows based.

| Minimum Requirements and Recommended Upgrades for Windows (preferred system) and Apple devices   |
|--|
| These minimum standards are required for a Windows computer/laptop (OS 10 or 11) and a Macintosh (OS 10.14 or above).  |
| <ol style="list-style-type: none"><li>1. Windows 10 Operating System or above</li><li>2. 4GB of RAM. Recommended upgrade to 8GB of RAM.</li><li>3. 10GB+ available hard drive storage space. Note installing Microsoft Office 365 requires 3GB of available hard drive space.<ol style="list-style-type: none"><li>a. Install the Microsoft Office 365 suite (~3GB) *</li></ol></li><li>4. Microphone, webcam, and speakers (All modern laptops have these three accessories built-in. However, a headset or earbuds with a microphone is also recommended.</li><li>5. Windows has built-in anti-virus/malware software. It is essential to install system updates to keep your device secured regularly.</li></ol> <p>*<a href="#">Microsoft Office 365</a> is free to Keyano students.</p> |
| Tablets, iPads, and Chromebooks are <b>not</b> 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.

See [Recommended Technology](#) for more information.

### 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](mailto:its.helpdesk@keyano.ca) or calling 780-791-4965.

### Specialized Supports

Keyano College 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](mailto: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](mailto: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](mailto:wellness.services@keyano.ca).

**Library Services** provides students with research, information, and educational 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 consultations booked using the online [Book A Librarian calendar](#). The library also provides virtual research and subject guides to help you with your studies. Find the guide that supports your course-related research by viewing 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](http://www.keyano.ca/library). For all inquiries, please email [askthelibrary@keyano.ca](mailto:askthelibrary@keyano.ca) or [chat with us online](#).

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.

Specialists in the Academic Success Centre also work with students to develop academic success plans, time management skills, study strategies, and homework plans. For additional information, please email [Academic.Success@keyano.ca](mailto:Academic.Success@keyano.ca).