Syllabus: BIO 100N-2 Biology Concepts

Course Information
Course Title: Biology Concepts
Course Prefix/Number: BIO 100N-2
Semester: Spring 2022
Class Days/Times: Online (Course is delivered online in an asynchronous modality)
Credit Hours: 4 (includes lab)
Prerequisites: None

Instructor Information
Name: Kimberly Danny, M.S.
Office Phone/Voice Mail: (520) 479-2300 Ext. 1518
E-mail: kdanny@tocc.edu
Office location: Ha-Maṣcamdam Ha-Ki: (Faculty Building), Room 121, S-Cuk Du’ag Maṣcamakuḍ (Main Campus), Sells, AZ
Office hours:
- In-person: Tuesdays & Thursdays 1:45-2:45 PM
- Zoom: https://us06web.zoom.us/j/9262129224
- BIO 100N Study Session (Optional): Monday 4:45-5:30 PM
- BIO 105N Study Session (Optional): Monday 5:30-6:15 PM
- Open to all: Wednesdays 12-1:30 PM
- Or by appointment

Course Description
Basic principles and concepts of biology. Includes methods of scientific inquiry, cell structure, chemistry, metabolism, reproduction, genetics, molecular biology, evolution, ecology, and current issues in biology. Lecture and lab are taught simultaneously.

Student Learning Outcomes
After completion of the course students will be able to:
1. Perform activities to demonstrate improvement in the general education goals of communication, critical thinking and mathematics.
2. Describe characteristics of living organisms that distinguish them from non-living constituents of the biosphere.
3. Utilize scientific methods to formulate and answer questions and discuss its strengths and limitations.
4. Describe and explain the properties and roles of biologically important molecules, including proteins, carbohydrates, lipids, and nucleic acids.

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5. Describe the structure and function of cells and cellular components in single and multicellular organisms.
6. Describe how energy is acquired and used by living organisms.
7. Describe how traits are inherited and apply patterns of inheritance.
8. Explain the molecular biology of genes and their expression.
10. Explain possible origins of life on Earth and mechanism(s) of evolution that help us account for the amazing diversity of life we now find on our planet.
11. Explain how the flow of energy through an ecosystem influences its structure.
12. Describe how organisms interact with each other and their environment.
13. Apply biological and ecological principles to discuss current issues in human health, and human impact on the environment.

Course Structure

BIO 100N will be delivered online and asynchronously, meaning that the class will not convene on any specified day or time. This type of course requires good time management skills and the ability to learn independently. Ideally, you should schedule the equivalent of 6 hours course time plus 12 hours per week for homework and assignments. Although the time you dedicate to this course is flexible, there are course deadlines for assignments.

This course is divided into three modules, each with a broad focus. The modules are 1) Cellular foundation of life, 2) Cell division and genetics, 3) Evolution and Ecology. Each module consists of the elements below. In addition, learners will be asked complete to complete one individual research presentation this semester.

- Weekly reading assignments from the text and PowerPoint presentations
- Micro-lectures via an unlisted YouTube Channel
- Assignments, labs, and online discussions
- One online exam

Attendance is counted by the completion of a week-specific assignment (e.g. Week 1 discussion) every Monday. Please note that your attendance does not factor into your final grade, but is used to determine student retention and/or withdrawal from the course.

There will be an optional Zoom meeting on Mondays from 4:45-5:30 PM MST (Arizona time). This optional meeting will be a space where BIO 100N-1 and BIO 100N-2 students can ask questions, review content, and more. If this Zoom meeting is cancelled or rescheduled, I will make an announcement in Canvas.

Course Learning Materials and Textbook Information

Canvas, https://tocc.instructure.com/login/canvas

I highly recommend bookmarking Canvas on your web browser and/or downloading the “Canvas Student” app and setting notifications to your preference. All assignments, quizzes, lab reports, and presentations should be submitted via Canvas. I will only accept assignments by email in unavoidable cases. Please note that assignments submitted via email are more likely to get lost or graded later than the rest of the class.

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Textbook
Great news: your textbook for this class is available for free online! BIO 100N will be using two OpenStax textbooks: Concepts of Biology and Biology 2e. Both textbooks are available for free via web view, PDF, app, iBooks, Kindle, and more. If learners prefer a print copy, low-cost copies can be ordered via the OpenStax website. All formats can be reached or ordered (print copy) at the web addresses below.


Other Materials
You will also need the following basic household items to complete the online activities: measuring tape, water bottle, water, water dropper (optional), 100+ pennies, and a phone/camera for taking photos.

Course Outline and Important Dates

Course Outline

I. The Nature and Science of Biology
   a. Characteristics of Living Things
   b. Scientific Processes

II. The Chemical and Cellular Basis of Life
   a. Fundamentals of General and Organic Chemistry
   b. Cellular Structure and Function
   c. Energy Pathways

III. Principles of Inheritance
   a. Cellular Life Cycles
   b. Patterns of Inheritance

IV. Molecular Biology
   a. DNA Structure and Function
   b. Genetic Technologies and Society

V. Evolution and Diversity of Life
   a. Principles of Evolution
   b. Diversity of Life
   c. Organismal Structure and Function

VI. Principles of Ecology

VII. Current Issues in Biology

Important Dates


Evaluations and Grading & Assignments

Your grade will be determined by the following:

<table>
<thead>
<tr>
<th>GRADE</th>
<th>PERCENTAGE (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>90-100</td>
</tr>
<tr>
<td>B</td>
<td>80-89.9</td>
</tr>
<tr>
<td>C</td>
<td>70-79.9</td>
</tr>
<tr>
<td>D</td>
<td>60-69.9</td>
</tr>
<tr>
<td>F</td>
<td>0-59.9</td>
</tr>
</tbody>
</table>

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**Course Syllabus**

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### Evaluation

<table>
<thead>
<tr>
<th>Assignment Type</th>
<th># of Assignments</th>
<th>Points per Assignment</th>
<th>Total Pts</th>
<th>Approx. % of Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surveys, Practice Quizzes, Quizzes (2 lowest scores dropped)</td>
<td>15</td>
<td>5</td>
<td>65</td>
<td>8%</td>
</tr>
<tr>
<td>Discussion Boards (2 lowest scores dropped)</td>
<td>15</td>
<td>15</td>
<td>195</td>
<td>24%</td>
</tr>
<tr>
<td>Lab Activities/Reports (Lowest score dropped)</td>
<td>12</td>
<td>25</td>
<td>275</td>
<td>32%</td>
</tr>
<tr>
<td>Exams (Lowest score dropped)</td>
<td>4</td>
<td>50</td>
<td>150</td>
<td>18%</td>
</tr>
<tr>
<td>Individual Research Presentation</td>
<td>1</td>
<td>150</td>
<td>150</td>
<td>18%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td><strong>835</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

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**Himdag Cultural Component**

Tohono O’odham traditions and cultural beliefs will be discussed as relevant course topics, and only as appropriate to the Tohono O’odham Nation’s traditional standards for sharing information as determined by the Himdag committee.

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**Policies and Expectations**

**Attendance Policy (Asynchronous Online Classes)**

You are expected to complete all learning activities, participate in class, assignments, and quiz by the due dates listed in the course syllabus. Four consecutive missed due dates may result in a letter grade of “F” or an instructor withdrawal “FW” (see 45th-Day Instructor Withdrawal policy below). You may request to be excused from class for religious observances and practices, for illness, for school or work-related travel, or for personal or family emergencies. If you will be absent, please notify the instructor as soon as possible.

**Incomplete Policy**

A student may be considered for an incomplete (I) if:

1. The student completed 50% of the course. (Note: Students who have emergencies before 50% of the course is complete should withdraw "W" from the course).
2. While completing the course the student was in "good standing" (i.e. had a grade of "C" or better and had good attendance).
3. The reason for not completing course was COVID related (ex. student contracted COVID, student had to care for someone with COVID or had to take on major care taking roles, had a change in jobs, etc.)

For the incomplete, the Instructor must develop a plan with student and obtain permission from the student to grant an Incomplete. The student has until the end of FALL 2022 to complete the course. Failure to complete the required plan will result in the incomplete (I) being replaced by a grade of F.

**45th–Day Instructor Withdrawal Policy (FW), Asynchronous Online Classes**

Students who have missed four (4) consecutive course due dates for learning activities, participation, assignments, quizzes, exams, by the 45th-day census report, due on **March 4, 2022** are assumed NOT to be participating in the class and may be withdrawn at the faculty member’s discretion. After the 45th - day census, if a student needs to stop attending a course, they must withdraw from the course (see Student Withdrawal Policy below).
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life on campus and beyond. We encourage students who have experienced or witnessed any form of sexual misconduct to talk about their experience and seek the support they need.

Confidential support and academic advocacy can be found with: Student Services Title IX Coordinator/Counselor, Alberta Espinoza, M.Ed. located in I-We:mta Ki: Room 18. Phone: (520) 479-2300 Extension 1210. Email: aespinoza@tocc.edu.

**Conduct: Bias, Bullying, Discrimination and Harassment**

Tohono O’odham Community College faculty and staff are dedicated to creating a safe and supportive campus environment as a core value. Harassment based on age, class, color, culture, disability and ability, ethnicity, gender, gender identity and expression, immigration status, marital status, political ideology, race, religion/spirituality, sex, sexual orientation, and tribal sovereign status will not be tolerated.

**Instructor Policies and Expectations**

**Course Policies**

- Class participation and preparation are essential to student success. Students must read textual material, prepare for projects, and complete required research as stated on the course schedule.
- No work is accepted after the last day of classes unless specified.
- Unacceptable student behavior is also detailed in the TOCC Student Handbook under Student Code of Conduct Violations.

**Netiquette**

(Adapted from Association of College & University Educators participation norms)

BIO 100 includes discussion boards and other opportunities to provide feedback to fellow participants. Maintaining appropriate etiquette for online forms of communication—or netiquette—is crucial to ensuring that these discussion forums offer a rich learning experience for all participants. Learners are asked to kindly follow six norms for proper netiquette:

1. **Actively participate.** A greater number of voices enriches the course. Engaged learners can further their understanding of biology concepts through discussions and group activities.
2. **Read and respond to the discussion threads.** Learning is enhanced by engaging in meaningful discussions. A discussion does not take place by solely reading and responding to the initial prompts, but rather by reading other classmates’ posts and providing feedback, offering encouragement, and sharing relevant resources.
3. **Embrace the diversity among learners.** Learners benefit from the exchange of diverse perspectives and experiences. Everyone is expected to be respectful of these differences.
4. **Be timely.** Discussions are most beneficial when people respond to one another in a timely manner. Please do your best to stay on track to maximize learning.
5. **Be specific.** Please provide specific evidence from instructional materials or your own classroom experiences when posting to the discussion forums. Citing evidence whenever possible allows you to effectively support your ideas.
6. **Use an appropriate tone and language.** Without nonverbal cues, humor and sarcasm can be mistaken as cold or insulting. Please be aware of your use of tone and language before submitting discussion posts.
Late Work
- If you are experiencing hardships, please contact me as soon as possible so we can attempt to work something out.
- Late work is accepted until a certain date. Each assignment will have a hard deadline, after which no submissions will be allowed.
- Extra credit opportunities and optional activities are provided at the instructor’s discretion.
- A missed exam or presentation with no communication prior, during, or after the due date, the assignment will be marked zero.

Course Schedule
This schedule is designed to evolve and change throughout the semester based on class progress and interests. You will be notified of any changes as they occur.

| Key: CoB = Concepts of Biology Textbook | S = Sunday |
| B2E = Biology 2e Textbook | M = Monday |
| W_D_ : Week _ Discussion | T = Tuesday |
| W_PQ_ : Week _ Practice Quiz | W = Wednesday |
| W_Q = Week _ Quiz | R = Thursday |
| W_LAB_ = Week _ Lab Activity | F = Friday |
| RP = Research Presentation |

<table>
<thead>
<tr>
<th>Week</th>
<th>Dates</th>
<th>Important dates</th>
<th>Topic</th>
<th>Book section(s)</th>
<th>Assignments</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1/17-1/24</td>
<td>T 1/18: 1st Day of Instruction</td>
<td>Getting Started</td>
<td></td>
<td>W0Q; W0D</td>
</tr>
<tr>
<td>1</td>
<td>1/17-1/24</td>
<td>F 1/21: Course Registration Deadline</td>
<td>Intro to biology &amp; the scientific method</td>
<td>B2E: 1.1</td>
<td>W1PQ; W1D; W1LAB</td>
</tr>
<tr>
<td>2</td>
<td>1/24-1/31</td>
<td>M 1/31: Full Refund for Dropped Course(s) Deadline</td>
<td>The chemical foundation of life</td>
<td>B2E: 2.1-2.3</td>
<td>W2PQ; W2D; W2LAB</td>
</tr>
<tr>
<td>3</td>
<td>1/31-2/7</td>
<td></td>
<td>Biological macromolecules</td>
<td>B2E: 3.1-3.6</td>
<td>W3PQ; W3D; W3LAB</td>
</tr>
<tr>
<td>4</td>
<td>2/7-2/14</td>
<td>F 2/11: Week 4 Progress Report</td>
<td>Cell structures and functions</td>
<td>B2E: 4.1-4.5, 5.1</td>
<td>W4PQ; W4D; W4LAB</td>
</tr>
<tr>
<td>5</td>
<td>2/14-2/21</td>
<td>M 2/21: President’s Day – College Closed</td>
<td>Cell energy and metabolism</td>
<td>B2E: 6.1-6.5</td>
<td>W5PQ; W5D; W5LAB</td>
</tr>
<tr>
<td>6</td>
<td>2/21-2/28</td>
<td></td>
<td>Cell Respiration, Photosynthesis, and Energy Flow</td>
<td>B2E: 7.1, 8.1-8.3, 42.6</td>
<td>W6PQ; W6D; W6LAB; Exam 1</td>
</tr>
</tbody>
</table>

**Unit 1: The Cellular Foundation of Life**

**Unit 2: Cell Division and Genetics**

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<table>
<thead>
<tr>
<th>Week</th>
<th>Dates</th>
<th>Events</th>
<th>Topics</th>
<th>Chapters</th>
<th>Assignments</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>4/4-4/11</td>
<td></td>
<td>Biotechnology</td>
<td>CoB: 10.1-10.3</td>
<td>W11PQ; W11D; W11LAB; Exam 2</td>
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</table>

**Unit 3: Evolution and Ecology**

<table>
<thead>
<tr>
<th>Week</th>
<th>Dates</th>
<th>Events</th>
<th>Topics</th>
<th>Chapters</th>
<th>Assignments</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>4/11-4/18</td>
<td>F 4/15: Week 12 Progress Report</td>
<td>Evolution</td>
<td>B2E: 18.1; CoB: 11.2; B2E: 19.2 (p476)</td>
<td>W12PQ; W12D; W12LAB</td>
</tr>
<tr>
<td>13</td>
<td>4/18-4/25</td>
<td></td>
<td>Diversity and Study of Life</td>
<td>CoB: 12.1-12.2; B2E: 1.2</td>
<td>W13PQ; W13D; W13LAB</td>
</tr>
<tr>
<td>14</td>
<td>4/25-5/2</td>
<td></td>
<td>Ecology</td>
<td>TBD</td>
<td>W14PQ; W14D; RP1; Exam 3</td>
</tr>
<tr>
<td>15</td>
<td>5/2-5/6</td>
<td>F 5/6: Last Day of Instruction</td>
<td></td>
<td></td>
<td>Final Exam</td>
</tr>
<tr>
<td>-</td>
<td>5/13</td>
<td>Course Grades Due</td>
<td></td>
<td></td>
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</tbody>
</table>

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