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## Syllabus: **BIO 100N: Biology Concepts**

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### Course Information

Course Prefix/Number: BIO 100N	Credit Hours: 4 (3 lec; 3 lab periods)
Semester: SUMMER 2017	Course Title: Biology Concepts
Class Days/Times: MTWR 9:00 to 11:30 a.m.	Room: Main Building Sci Lab

<b>Instructor Information:</b> Name: Adrian Quijada, Ph.D.	Phone : (520) 383-0114 E-mail: <a href="mailto:jquijada@tocc.edu">jquijada@tocc.edu</a> Office location: Hamascamdham Ha-Ki ; Room 108 Office hours: by appt.
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**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.

### Student Learning Outcomes (SLOs) :

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.
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.
9. Describe potential impacts of genetic technologies on society.
10. Explain how the flow of energy through an ecosystem influences its structure.
11. Describe how organisms interact with each other and their environment.
12. Apply biological and ecological principles to discuss current issues in human health, and human impact on the environment.

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### Course Structure:

This course consists of six units. Each unit consists of PowerPoint lectures, assigned reading, films, in-class activities, discussions, an article review, laboratory project and an exam. The final project for the course is an Inquiry Report in which you choose a question related to biology and research the answer to the question. The objective of this research project is 1) to stimulate the process of scientific inquiry and develop habits of life-long learning 2) to synthesize, apply, and add to course content by researching a scientific topic 3) to learn to gather information from a variety of sources and assessing the scientific credibility of the information and 4) to demonstrate successful passage through the process of inquiry.

### Course Assessment:

Course assessment consists of exams, discussions, short written assignments, hands-on activities, informal in-class assessment, laboratory projects, presentations, and research papers. Study guides will be available to help you prepare for exams. In accordance with my teaching philosophy in which I believe student learning occurs primarily through hands-on, real world application of course materials, exams comprise less than 50% of the final grade (although they are still an important aspect of course assessment and grade). In order to facilitate on-going faculty-student feedback, many class projects are divided into smaller intermediate steps such as topic choice, project proposals, and rough drafts. I welcome student feedback about the course anytime. I will also provide students an opportunity to give me feedback on their course experience through an anonymous mid-course and final course evaluation.

### Texts and Materials:

#### Required Texts:

Essentials of Biology - January 10, 2014

by Sylvia Mader & Michael Windelspecht

ISBN-13: 978-0078024221; ISBN-10: 0078024226 Edition: 4th

<b>Evaluation:</b>	<b>Points:</b>	<b>Percent of Total Points:</b>
Exams & Quizzes	<b>185 pts</b>	<b>18.5%</b>
Labs/Field Trips	<b>312 pts</b>	<b>31.2%</b>
Cancer/Diabetes Essay and Presentation	106 pts	10.6%
Discussions/Reflective Writing/Assignments	17 pts	1.7%
<b>ATTENDANCE</b>	<b>380 pts</b>	<b>38.0%</b>
TOTAL	1000	100%

### Himdag Cultural Component:

The theme of this course is the Himdag value of kinship relationships (*T-l:migi*) which explains the unity of life on Earth. During the course, the students have an opportunity to compare and contrast the O'odham way of knowing and scientific methodology using both a traditional story and material on Science presented in a PowerPoint. They also compare and contrast the Western scientific definition of life with the Tohono O'odham definition of life through reflective writing and discussion. The course also includes a discussion

and reflective writing on bioethics. Diabetes and nutritional content of traditional foods are topics in this course since these are relevant issues for Tohono O'odham students and are important to the students' well-being (*T-Apedag*).

### **Policies and expectations**

**Course Policies Requirements:** (1) **Attend class regularly;** (2) Complete in-class and out-of-class assignments and submit to the instructor; (3) Attend all labs and field trips; (4) Take all exams (5) Complete all class projects & presentations.

**Attendance: You are expected to arrive to class on time and actively participate each class period.** Four consecutive, unexcused absences may result in withdrawal. You may request to be excused from class for religious observances and practices, for illness, for travel or for personal or family emergency. If you will be absent or have been absent, please notify the instructor as soon as possible. Quizzes and exams are given out at the beginning of class time. Field trips and class activities begin at the start of class and may be missed if you do not arrive to class on time. Because exams, labwork and/or other assignments potentially occur every class period, points potentially will be lost each class period missed. If you miss all or a portion of a class, then you are solely responsible for obtaining missed class material from fellow students. Complete attendance is mandatory during student project presentations; otherwise presentation points will be forfeited.

**Make-up policy:** Missed exams can be made up within two days of the exam date. Late assignments that can be made up will be accepted but will be penalized 25%. Laboratories cannot be made up. At the instructor's discretion, extra credit opportunities and optional activities may be provided.

**Academic Integrity:** Violations of scholastic ethics are considered serious offenses by Tohono O'odham Community College, the Student Services Department, and by your instructor. Students may consult the TOCC Student Handbook sections on student code of conduct, on scholastic ethics and on the grade appeal procedure. Copies are available at Tohono O'odham Community College.

All work done for this class must be your own. While you may discuss assignments with other class members, the final written project must clearly be your own. You may use work from books and other materials if it is properly cited. Copying from a book without proper reference or from a person under any circumstances will result in an "F" for the assignment, and at the instructor's discretion, possibly an "F" for the course.

### **ADA Compliance:**

Tohono O'odham Community College strives to comply with the provisions of the Americans with Disabilities Act and Section 504 of the Rehabilitation Act. If you have a learning problem, physical disability, or medical illness that requires you to have any special arrangements, please inform your instructor at the beginning of the semester so your academic performance will not suffer because of the disability or handicap.

### **Classroom Behavior:**

- Because of insurance limitations, non-registered visitors are not allowed at class sessions or on field trips.
- Possession of drugs, alcohol or firearms on college property is illegal.
- Food and beverages are allowed in classrooms.
- Pets, telephones, pagers and other electronic devices that distract students are not allowed in classrooms. Phone use during class will result in removal from the class for the rest of the period. iPads can be used during class for projects and labs, but may not be used during lecture

- Students creating disturbances that interfere with the conduct of the class or the learning of others will be asked to leave.

**Course Feedback:**

All assignments, written papers and quizzes will be graded and returned to the students one week after the assignment is due. E-mail and phone messages will be returned within two days. A student or the instructor may request a student conference at any time during the semester. A mid-semester grade report will be provided to each student by October 15th.

**Instructor Withdrawals:**

Students who have missed four consecutive classes, not submitted any assignments nor taken any quizzes by the 45th day census report, due on October 2<sup>nd</sup>, 2013 are assumed NOT to be participating in the class and will be withdrawn. Students may withdraw from class at any time during the first 2/3 of the semester without instructor permission and without incurring any grade penalty. Please be sure to withdraw yourself by October 29<sup>th</sup>, 2013 if you do not expect to complete the class, otherwise you may receive an "F" grade.

**Incomplete (I) grade:**

"I" grades are not awarded automatically. The student must request an "I" from the instructor who will judge the student's ability to complete the course on his or her own. Generally the student must have completed over 80% of the course requirements with at least a "C" grade. An "I" requires a written contract between the student and the instructor listing work to be completed as well as how and when the work will be done. If the work is not completed within the contract period, the "I" grade automatically reverts to an "F." "I" grades will not be re-evaluated during the final two weeks of the semester when class activities are normally at their most intense.

**Special Withdrawal (Y) grade:**

The "Y" grade is an administrative withdrawal given at the instructor's option when no other grade is deemed appropriate. Your instructor must file a form stating the specific rationale for awarding this grade. "Y" grades are discouraged since they often affect students negatively. Your instructor will not award a "Y" grade without a strong reason.

**Final Grades:** Students will receive a grade transcript from the college mailed to the address given with registration materials at the end of the semester when all grades have been recorded.

**SPECIAL NOTE TO STUDENT:**

For privacy and security reasons, instructors are advised **NOT** to give grades over the telephone. Grades will only be emailed with written permission from the student.

Your instructor will make every attempt to follow the above procedures and schedules, but they may be changed in the event of extenuating circumstances.

Students submitting assignments through the mail or by email are advised to make copies for their own protection.

If you move during the semester, please file a change of address form with the Student Services Office, and inform your instructor.

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### Course Outline:

	Topic	Schedule
I.	The Nature and Science of Biology	Week 1
A.	Characteristics of Living Things	
B.	Scientific Processes	
C.	APA Writing Style	
II.	The Chemical and Cellular Basis of Life	Week 2
	Fundamentals of General and Organic Chemistry	
A.	Chemistry	
B.	Cellular Structure and Function	
C.	Energy Pathways	
III.	Principles of Inheritance	Week 3
A.	Cellular Life Cycles	
B.	Patterns of Inheritance	
IV.	Molecular Biology	Week 4
A.	DNA Structure and Function	
B.	Genetic Technologies and Society	
V.	Evolution and Diversity of Life	Week 5
A.	Principles of Evolution	
B.	Diversity of Life	
C.	Organismal Structure and Function	
VI.	Principles of Ecology	Week 6
VII.	Current Issues in Biology	Week 7
VIII	Individual project presentations	Week 8

**DISCLAIMER:** This syllabus 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.

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<b>BIO 100 SPRING 2017--Grade Tracking Form</b>	<b>Points to be Earned</b>	<b>Points Earned</b>
Quiz Science	<b>10</b>	
EXAM 1-Biological and Chemical Principles of Life	<b>100</b>	
EXAM 2—Genetics and Evolution of Life Forms	<b>100</b>	
EXAM 3—Ecology, Populations, Ecosystems	<b>100</b>	
Reflection: Identifying Life Forms	<b>10</b>	
Reflection: Are we made of stars?	<b>10</b>	
Reflection: Cancer, Diabetes and Nutrition	<b>10</b>	
Reflection: Evolution of Desert Life	<b>10</b>	
Reflection: Gaia and Mother Earth	<b>10</b>	
Reflection: Predicting the Future of our Life	<b>10</b>	
Lab: Biology/Scientific Method	<b>10</b>	
Lab: Modeling Organic Molecules	<b>10</b>	
Lab: Building a Section of DNA	<b>16</b>	
Lab: Natural Selection: Peppered Moth Simulation	<b>16</b>	
Lab: Measuring Bean Biodiversity	<b>16</b>	
Lab: Principles of Desert Ecology	<b>16</b>	
British Parliament Debate: DNA technology issues	<b>10</b>	
Individual Essay: Cancer/Diabetes	<b>80</b>	
Individual Presentation: Cancer/Diabetes	<b>80</b>	
Viewpoint Question 1	<b>10</b>	
Viewpoint Question 2	<b>10</b>	
Viewpoint Question 3	<b>10</b>	
Viewpoint Journal Paper	<b>50</b>	
Viewpoint Presentation	<b>20</b>	
Final Jeopardy Quiz	<b>30</b>	
Video: Cosmos Episode 2	<b>10</b>	
Video: Cosmos Episode 5	<b>10</b>	
Video: Cosmos Episode 6	<b>10</b>	
Video: Fed Up	<b>10</b>	
Video: Don't Panic: The Truth of Human Population	<b>10</b>	
Attendance & in class participation	<b>185</b>	
<b>Total Points Earned</b>	<b>1000</b>	