Biology 301.001 – Spring 2020
Biology for Teachers (Grades 4-8) Lecture

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Office Hours M, W, F 10:00-11:00; R 8:00am - 10:00am; or by appointment
Class meeting time and place: M & W 4:30 – 5:20

Course Description:
This course provides instruction in the main areas of biological science for which science teachers (Grades 4-8) are expected to demonstrate competency for teacher certification. Students seeking certification in Early Childhood-Grade 6 Generalist are also encouraged to enroll. Topics include basic principles of science, structure and function of living things, reproduction and heredity, adaptation and evolution, regulatory mechanisms and behavior, and organisms and environment.

Number of Credit Hours: 4 semester hours – 3 hours lecture and 2 hours lab per week.

Course Prerequisites and Corequisites:
Prerequisites: None; Corequisites: 301L

Program Learning Outcomes:
There are no specific program learning outcomes for this major addressed in this course. This course is a general education course and a service course.

General Education Core Curriculum Objectives:
There are no specific general education core curriculum objectives in this course. This course is not a core curriculum course.

Course Objectives:
To train science teachers, in grades four through eight, on the basic concepts of biological principles. To demonstrate the applications of these concepts in the classroom, especially by the use of appropriate hands-on exercises.

Student Learning Outcomes:
Upon completion of this course, the students are expected to:
- Understand the correct management of the classroom, field and laboratory activities to ensure the safety of all students and the ethical care and treatment of organisms and specimens.
- Understand that investigations require a research question, careful observations, data gathering, and analysis of the data to identify the patterns that will explain the findings.
- Understand that scientific investigations are used to learn about the natural world.
- Understand that all living organisms are made up of smaller units called cells.
- Understand that all cells use energy, get rid of wastes, and contain genetic material.
- Understand the internal structures within plant and animal cells that allow them to obtain energy, get rid of wastes, grow, and reproduce in different ways.
• Understand that cells can organize into tissues, tissues into organs, and organs into organ systems.
• Understand the organization of hereditary material (e.g., DNA, genes, chromosomes).
• Understand how inherited traits can be determined by one or many genes and how more than one trait can be influenced by a single gene.
• Understand that the major functions of human body systems
• Understand the relationship between living organisms and their environment.
• Understand that different environments support different living organisms that are adapted to that region of Earth.
• Understand that successful organisms can reestablish a balance through different processes such as a feedback mechanism.
• Understand that during both sexual and asexual reproduction, traits are passed onto the next generation.
• Understand that changes in traits sometimes occur in a population over many generations.
• Understand the interactions between organisms in ecosystems
• Understand how biotic and abiotic factors affect the number of organisms and populations present in an ecosystem
• Understand that ecological succession can be seen on a broad or small scale.

The Texas Examinations of Educator Standards (TExES) are criterion-referenced examinations designed to measure your knowledge in relation to an established criterion rather than to the performance of other candidates. The TExES (116) Science 4-8 exam is based on the Texas Essential Knowledge and Skills (TEKS), which are the Texas state standards for what students should know and be able to do. This course focuses on Domain III: Life Science, “The science teacher knows the curriculum (TEKS) in life science” (Competencies 1, 2, 3, 11, 12, 13, 14, 15). For specific details about these competencies see the following web page or look in your D2L content:


Text and Material:


The electronic version is free. If you would like a hard bound copy of the textbook they are available on Amazon for about $30.

Course Requirements:
Four (4) exams worth 100 points each. The exams will consist of multiple choice, fill-in-the-blank and short essay questions. Homework assignments will total 200 points.

Each student is expected to maintain a laboratory notebook of all hands-on-exercises, including student data sheets. Lab reports (200 points) will be turned in on time, with a 25% per day penalty for any late work. All homework, lab reports and all other written assignments must be type written. Handwritten work will not be accepted.
Grading Scheme:

<table>
<thead>
<tr>
<th>Component</th>
<th>Points</th>
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<tbody>
<tr>
<td>Exams (4)</td>
<td>400</td>
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<tr>
<td>Homework &amp; Assignments</td>
<td>200</td>
</tr>
<tr>
<td>Lab Reports</td>
<td>150</td>
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<tr>
<td>Lab Safety, Notebook, Leaf Project</td>
<td>150</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>900 points</strong></td>
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Grading Policy:

- **A**: 90.00% = 810 points
- **B**: 80.00% = 720 points
- **C**: 70.00% = 630 points
- **D**: 60.00% = 540 points
- **F**: <59.99%

Exam Dates:

- Exam #1: Feb 12, Chapters 1-5
- Exam #2: Mar 18, Chapters 6, 7, 8, & 16
- Exam #3: Apr 15, Chapters 9, 10, 11, & 12
- Exam #4: May 4, Chapters 19, 20, & 21

Course Topics (percent time during course):

- **Unifying Concepts in Biology (15%)**
  - Chapter 1: Introduction to Biology

- **Structure and Function of Living Things (25%)**
  - Chapter 2: Chemistry of Life
  - Chapter 3: Cell Structure and Function
  - Chapter 4: How Cells Obtain Energy
  - Chapter 5: Photosynthesis
  - Chapter 12: Diversity of Life, Organizing Life on Earth

- **Regulatory Mechanisms and Behavior (5%)**
  - Chapter 16: The Body’s Systems

- **Reproduction and Heredity (20%)**
  - Chapter 6: Reproduction at the Cellular Level
  - Chapter 7: The Cellular Basis of Inheritance
  - Chapter 8: Patterns of Inheritance
  - Chapter 9: Molecular Biology
  - Chapter 10: Biotechnology

- **Adaptation and Evolution (10%)**
  - Chapter 11: Evolution and Its Processes

- **Organisms and Environment (25%)**
  - Chapter 19: Population and Community Ecology
  - Chapter 20: Ecosystems and the Biosphere
  - Chapter 21: Conservation and Biodiversity
Attendance Policy:
Regular and punctual attendance is expected. The value of a college education depends upon the student’s full participation. Because students are expected not merely to receive information passively or to pass examinations but to participate actively in class, it is important that unnecessary class absences be avoided. Students are expected to be present for all classes and no absence will be automatically excused.

The missing of three (3) or more lecture/lab periods will result in the reduction of your course grade by one full letter grade. On any given day, missing of the lecture or lab period will count as one absence. There will be no distinction between excused and unexcused absences in counting absences. Legitimate excuses for absences only affect whether students may be given an opportunity to make up work. Students will be responsible for all missed work.

If you come in late you must check with me after class in order to clear any record of absence for that day. This is your responsibility. Reoccurring tardiness should be explained. A seating chart may be utilized in this course. In addition, an attendance sheet will be passed around on which you will put your signature next to your name. It is your responsibility to see that the role sheet is signed before leaving the lecture class. Do not sign in for another student, doing so will result in a significant reduction in your course grade and the assignment of seats for all students in the class. It is also your responsibility to keep up with the number of absences that you have accrued.

Some appropriate reasons for absenteeism are: an illness with dated medical notes; death in the immediate family with clippings from a newspaper announcing the death; scheduled athletic events; scheduled academic events. Other reasons can be discussed, but may not be excused. You are responsible to know what was announced and what material was covered in class during your absence. Lecture notes are not available from your instructor.

The will be no make-up of individual experiments or class exercises.

Academic Integrity (A-9.1):
Academic integrity is a responsibility of all university faculty and students. Faculty members promote academic integrity in multiple ways including instruction on the components of academic honesty, as well as abiding by university policy on penalties for cheating and plagiarism.

Definition of Academic Dishonesty
Academic dishonesty includes both cheating and plagiarism. Cheating includes but is not limited to (1) using or attempting to use unauthorized materials to aid in achieving a better grade on a component of a class; (2) the falsification or invention of any information, including citations, on an assigned exercise; and/or (3) helping or attempting to help another in an act of cheating or plagiarism. Plagiarism is presenting the words or ideas of another person as if they were your own. Examples of plagiarism are (1) submitting an assignment as if it were one's own work when, in fact, it is at least partly the work of another; (2) submitting a work that has been purchased or otherwise obtained from an Internet source or another source; and (3) incorporating the words or ideas of an author into one's paper without giving the author due credit.

Please read the complete policy at http://www.sfasu.edu/policies/academic_integrity.asp
Any student found cheating will be subject to the penalties as stated in the Student Code of Conduct handbook; including but not limited to a score of zero on exam, expulsion from the class or expulsion from the University.

**Withheld Grades Semester Grades Policy (A-54):**
Ordinarily, at the discretion of the instructor of record and with the approval of the academic chair/director, a grade of WH will be assigned only if the student cannot complete the course work because of unavoidable circumstances. Students must complete the work within one calendar year from the end of the semester in which they receive a WH, or the grade automatically becomes an F. If students register for the same course in future terms the WH will automatically become an F and will be counted as a repeated course for the purpose of computing the grade point average.

The circumstances precipitating the request must have occurred after the last day in which a student could withdraw from a course. Students requesting a WH must be passing the course with a minimum projected grade of C.

**Students with Disabilities**
To obtain disability related accommodations, alternate formats and/or auxiliary aids, students with disabilities must contact the Office of Disability Services (ODS), Human Services Building, and Room 325, 468-3004 / 468-1004 (TDD) as early as possible in the semester. Once verified, ODS will notify the course instructor and outline the accommodation and/or auxiliary aids to be provided. Failure to request services in a timely manner may delay your accommodations. For additional information, go to [http://www.sfasu.edu/disabilityservices/](http://www.sfasu.edu/disabilityservices/).

**Acceptable Student Behavior**
Classroom behavior should not interfere with the instructor’s ability to conduct the class or the ability of other students to learn from the instructional program (see the Student Conduct Code, policy D-34.1). Unacceptable or disruptive behavior will not be tolerated. Students who disrupt the learning environment may be asked to leave class and may be subject to judicial, academic or other penalties. This prohibition applies to all instructional forums, including electronic, classroom, labs, discussion groups, field trips, etc. The instructor shall have full discretion over what behavior is appropriate/inappropriate in the classroom. Students who do not attend class regularly or who perform poorly on class projects/exams may be referred to the Early Alert Program. This program provides students with recommendations for resources or other assistance that is available to help SFA students succeed.

As future teachers, I expect you to conduct yourselves as you would expect your students to behave. Please be considerate of your classmates and the instructor. Please keep cell phones on silent, on vibrate, or turned off and in your backpack, purse or pocket. If you are found to be using your cell phone (including text messaging) during class, you will be asked to leave class for that day and will be counted absent.

**DISCUSSION OF GRADES**
Grades will not be discussed online, via email or on the telephone. You must meet with me face-to-face to discuss your grade in the course.
TENTATIVE LECTURE SCHEDULE

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<tr>
<th>✓</th>
<th>Date</th>
<th>Topic</th>
<th>Chapter</th>
<th>Pages</th>
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<tbody>
<tr>
<td></td>
<td>Jan 15</td>
<td>Introduction to Biology</td>
<td>1</td>
<td>9-30</td>
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<tr>
<td></td>
<td>Jan 20</td>
<td>- MLK Holiday -</td>
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<td></td>
<td>Jan 22</td>
<td>Chemistry of Life</td>
<td>2</td>
<td>31-60</td>
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<td></td>
<td>Jan 27 &amp; 29</td>
<td>Cell Structure and Function</td>
<td>3</td>
<td>61-96</td>
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<tr>
<td></td>
<td>Feb 3</td>
<td>How Cells Obtain Energy: Respiration</td>
<td>4</td>
<td>97-122</td>
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<td>Feb 5</td>
<td>Photosynthesis</td>
<td>5</td>
<td>123-140</td>
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<td>Feb 10</td>
<td>Reproduction at the Cellular Level</td>
<td>6</td>
<td>141-158</td>
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<td>Feb 12</td>
<td>Exam #1</td>
<td>1-5</td>
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<td>Feb 17 &amp; 19</td>
<td>Body Systems</td>
<td>16</td>
<td>411-459</td>
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<td>Feb 24 &amp; 26</td>
<td>The Cellular Basis of Inheritance</td>
<td>7</td>
<td>159-178</td>
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<td>Mar 2 &amp; 4</td>
<td>Patterns of Inheritance</td>
<td>8</td>
<td>179-203</td>
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<td>Mar 9-11</td>
<td>- Spring Break -</td>
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<td>Mar 16</td>
<td>Molecular Biology</td>
<td>9</td>
<td>205-229</td>
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<td>Mar 18</td>
<td>Exam #2</td>
<td>6, 7, 8, &amp; 16</td>
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<td>Mar 23</td>
<td>Biotechnology</td>
<td>10</td>
<td>231-254</td>
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<td>Mar 25</td>
<td>Evolution and Its Processes</td>
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<td>255-295</td>
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<td></td>
<td>Mar 30 &amp; Apr 1</td>
<td>Diversity of Life, Organizing Life on Earth</td>
<td>12</td>
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<td>Apr 6 &amp; 8</td>
<td>Population and Community Ecology</td>
<td>19</td>
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<td>Apr 13</td>
<td>TBA</td>
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<td>Apr 15</td>
<td>Exam #3</td>
<td>9, 10, 11 &amp; 12</td>
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<td>Apr 20 &amp; 22</td>
<td>Ecosystems and the Biosphere</td>
<td>20</td>
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<td>Apr 27 &amp; 29</td>
<td>Conservation and Biodiversity</td>
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<td>May 4</td>
<td>Exam #4 – 4:30pm-6:00 pm</td>
<td>19, 20 &amp; 21</td>
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This syllabus is an estimate of topics to be covered for each date indicated. It is the responsibility of each student to be aware of the lecture schedule, and the material to be presented, as the course progresses. It is expected that the student will have read the appropriate sections of the textbook prior to each lecture.