Cell Biology (Biology 3403) Course Schedule  
Spring 2021  
Dr. Loren K. Ammerman

Lecture: MWF 9:00-9:50am  CAV 023  
Office hours: M 10-12, 3-4, T 9-12, R 9-10 or by appointment  
Lab: Mon or Tues 2:00 - 4:50, CAV 001  
Phone: 325-486-6643  
E-mail: loren.ammerman@angelo.edu  
Office: CAV 003B

COURSE OBJECTIVE:  
Students will investigate the morphology, function, and biochemistry of cells and organelles through lecture, active learning activities, lab exercises, review of the primary literature and web-based inquiry.

STUDENT LEARNING OUTCOMES:  
At the completion of this course a student will be able to:  
• Demonstrate a basic understanding of fundamental cell biology topics such as cell membranes and cell interactions, the flow of information in a cell, the flow of energy in a cell, and cell division  
• Discuss current scientific issues related to cell biology  
• Demonstrate basic laboratory techniques and work safely in a laboratory setting  
• Demonstrate the ability to work as part of a lab team to collect and critically analyze data  
• Learn to incorporate background research into scientific writing  
• Communicate results of an investigation both graphically and in writing

TEXTBOOK:  
Lab: No additional text. We will use some readings from lecture text and handouts of lab procedures that will be available from the course web page (Blackboard).

REQUIRED USE OF MASKS/Facial Coverings by Students in Class at ASU:  
As a member of the Texas Tech University System, Angelo State University has adopted the mandatory  
Facial Covering Policy to ensure a safe and healthy classroom experience. Current research on the COVID-19 virus suggests there is a significant reduction in the potential for transmission of the virus from person to person by wearing a mask/facial covering that covers the nose and mouth areas. Therefore, in compliance with the university policy students in this class are required to wear a mask/facial covering before, during, and after class. Faculty members may also ask you to display your daily screening badge as a prerequisite to enter the classroom. You are also asked to maintain safe distancing practices to the best of your ability. For the safety of everyone, any student not appropriately wearing a mask/facial covering will be asked to leave the classroom immediately. The student will be responsible to make up any missed class content or work. Continued non-compliance with the Texas Tech University System Policy may result in disciplinary action through the Office of Student Conduct.

GRADING:  
Students will earn a grade based on the percentage of points earned on all exams, lab assignments, lab exams, and lab reports. Additional bonus points may be offered for participation or for extra assignments throughout the semester.  
Students are expected to use their Blackboard account and to check for e-mail messages on a regular basis. Grades will be assigned based on the following scale – No exceptions — 90-100%=A, 80-89%=B, 70-79%=C, 60-69%=D, below 60%=F.

Each exam, including the comprehensive final, will be worth 100 points. The final exam will cover the last material in the course AND a comprehensive portion. All students are required to take the final exam. If the grade on the final exam is higher than any of your exam scores, I will replace the lowest score with the grade you receive on the final (in other words, the final will count twice). The final exam score may only be used to replace ONE exam and may not be used to replace a zero.
LECTURE EXAM DATES (mark them on your calendars now):
Exams will cover all of the material up to the last class day before the test. They will be multiple-choice (using GradeScope answer sheets) and short-answer/essay format. Currently the plan is to have in-class exams that will be administered during our regular class time (9:00-9:50am) in the lecture and lab room simultaneously (Cavness 023 and Cavness 001) to allow students to spread out. You will be assigned to a particular room and will be notified if the plan changes. If we have to go to online testing, you will need to have a computer that can run Respondus Monitor (no Chromebook) and have a webcam.

Exam #1 19 Feb 2021, Fri
Exam #2 19 Mar 2021, Fri
Exam #3 16 April 2021, Fri
Final Exam 12 May 2021, Wed. (8:00am - 10:00am)

ATTENDANCE:
You are expected to attend all lab periods. Lecture videos will be posted each class day and there will be optional online classes each Monday via Bb Collaborate to review material or complete assignments for bonus points. If you encounter a problem attending classes, please contact me as soon as possible.

MAKE-UP POLICY:
There will be no make-ups for in-class assignments, quizzes, or labs. Make-up exams will be given as per the following:

1) If you miss an exam, you must notify me within 24 hours of the missed exam (by phone, e-mail or in person). Also, the absence must be a legitimate excuse, i.e. a death in your family, personal illness, or a university-sponsored event.
2) If the make-up exam is scheduled to be taken before the next class meeting you will be allowed to take the same exam as was given to the rest of the class.
3) If the make-up exam cannot be scheduled to be taken before graded exams are to be returned to the rest of the class, then the grade you earn on the final exam will be used to replace the missed exam score. The final exam may only be used to replace ONE exam.
4) If you do NOT have a legitimate excuse (see #1 above), you may not make up the missed exam. A missed exam will be recorded as a zero and will not be replaced.

LATE WORK POLICY:
Late work will not be accepted unless the student has received prior approval from the instructor. Once approval is granted, late work will be penalized by a 10% reduction per day in the grade. Work will not be accepted if it is more than 3 days past the original due date.
Tentative SEQUENCE OF LECTURE TOPICS

<table>
<thead>
<tr>
<th>Topic</th>
<th>Chapter</th>
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<tbody>
<tr>
<td>CELLS AND CELL RESEARCH</td>
<td>1</td>
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<tr>
<td>MOLECULES AND MEMBRANES</td>
<td>2</td>
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<tr>
<td>THE PLASMA MEMBRANE</td>
<td>15</td>
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<tr>
<td>BIOENERGETICS AND METABOLISM</td>
<td>3</td>
</tr>
<tr>
<td>CELL WALLS, ECM, AND CELL INTERACTIONS</td>
<td>16</td>
</tr>
<tr>
<td>RNA SYNTHESIS</td>
<td>8 (partial)</td>
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<tr>
<td>PROTEIN SYNTHESIS</td>
<td>10 (partial)</td>
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<tr>
<td>THE NUCLEUS</td>
<td>11</td>
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<tr>
<td>PROTEIN SORTING AND TRANSPORT</td>
<td>12</td>
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<tr>
<td>MITOCHONDRIA, CHLOROPLASTS, PEROXISOMES</td>
<td>13</td>
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<tr>
<td>THE CYTOSKELETON AND CELL MOVEMENT</td>
<td>14</td>
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<tr>
<td>CELL SIGNALING</td>
<td>17</td>
</tr>
<tr>
<td>CELL CYCLE</td>
<td>18</td>
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<tr>
<td>CELL DEATH AND RENEWAL</td>
<td>19</td>
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<tr>
<td>CANCER</td>
<td>20</td>
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</tbody>
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Please note that each chapter contains more information than will be presented in class. You should read and study those sections that are covered during lecture in detail.

STUDY TIPS AND COURSE RESOURCES:
Materials for this course will be posted on BLACKBOARD. Visit this site periodically to look for announcements, video lectures, lab handouts, power point files, or assignments. You are expected to read your textbook and use it to supplement your lecture notes. I encourage you to form study groups and talk with other students about the material. The best way to learn the material is to effectively explain it to someone else. Please come talk with me if you have any questions. I also would suggest that you use the review questions, chapter synopses, and self-quizzes to review on the interactive textbook web site.

ACADEMIC INTEGRITY: Students are expected to maintain complete honesty and integrity in all work. Any student found guilty of any form of dishonesty in academic work is subject of disciplinary action and possible expulsion from ASU. The College of Science and Engineering adheres to the university’s Statement of Academic Integrity.

ACCOMMODATIONS FOR STUDENTS WITH DISABILITIES: ASU is committed to the principle that no qualified individual with a disability shall, on the basis of disability, be excluded from participation in or be denied the benefits of the services, programs or activities of the university, or be subjected to discrimination by the university, as provided by the Americans with Disabilities Act of 1990 (ADA), the Americans with Disabilities Act Amendments of 2008 (ADAAA) and subsequent legislation.

Student Disability Services is located in the Office of Student Affairs, and is the designated campus department charged with the responsibility of reviewing and authorizing requests for reasonable accommodations based on a disability. It is the student’s responsibility to initiate such a request by contacting an employee of the Office of Student Affairs, in the Houston Harte University Center, Room 112, or contacting the department via email at ADA@angelo.edu. For more information about the application process and requirements, visit the Student Disability Services website. The employee charged with the responsibility of reviewing and authorizing accommodation requests is:

Dallas Swafford, Director of Student Disability Services
Office of Student Affairs, Houston Harte University Center, Room 112
325-942-2047
dallas.swafford@angelo.edu
INCOMPLETE GRADE POLICY: It is policy that incomplete grades be reserved for student illness or personal misfortune. Please contact faculty if you have serious illness or a personal misfortune that would keep you from completing course work. Documentation may be required. See ASU Operating Policy 10.11 Grading Procedures for more information.

PLAGIARISM: Plagiarism is a serious topic covered in ASU’s Academic Integrity policy in the Student Handbook. Plagiarism is the action or practice of taking someone else’s work, idea, etc., and passing it off as one’s own. Plagiarism is literary theft. In your discussions and/or your papers, it is unacceptable to copy word-for-word without quotation marks and the source of the quotation. It is expected that you will summarize or paraphrase ideas giving appropriate credit to the source both in the body of your paper and the reference list. Papers are subject to be evaluated for originality. Resources to help you understand this policy better are available at the ASU Writing Center.

STUDENT ABSENCE FOR OBSERVANCE OF RELIGIOUS HOLY DAYS: A student who intends to observe a religious holy day should make that intention known in writing to the instructor prior to the absence. See ASU Operating Policy 10.19 Student Absence for Observance of Religious Holy Day for more information.

TITLE IX AT ANGELO STATE UNIVERSITY: The University prohibits discrimination based on sex, which includes pregnancy, sexual orientation, gender identity, and other types of Sexual Misconduct. Sexual Misconduct is a broad term encompassing all forms of gender-based harassment or discrimination including: sexual assault, sex-based discrimination, sexual exploitation, sexual harassment, public indecency, interpersonal violence (domestic violence and/or dating violence), and stalking. As a faculty member, I am a Responsible Employee meaning that I am obligated by law and ASU policy to report any allegations I am notified of to the Office of Title IX Compliance.

Students are encouraged to report any incidents of sexual misconduct directly to ASU’s Office of Title IX Compliance and the Director of Title IX Compliance/Title IX Coordinator at:

Michelle Boone, J.D., Director of Title IX Compliance/Title IX Coordinator
Mayer Administration Building, Room 210
325-942-2022
michelle.boone@angelo.edu

You may also file a report online 24/7 at www.angelo.edu/incident-form.

DROP POLICY:
The last day to drop the course is determined by the university calendar (Friday, 30 April, 5:00pm). Please talk with me if you are considering dropping the course.
CELL BIOLOGY LAB:
Labs will meet in-person in CAV001 with reduced room capacity, facemasks, and either face shields or plexiglass barriers to provide a safe environment. The lab room and equipment will be disinfected before each lab. The lab will comprise a substantial portion of your course grade. There are 2 lab sections (Monday and Tuesday). You may only attend your lab section unless you have prior permission to attend another section. It is in your best interest to attend every lab however you should not attend lab if you are sick. You will be allowed to drop one lab assignment or missed work due to illness or quarantine. Contact me ASAP if you must miss a lab day and we will come up with a plan for missed work.

There is no lab manual. Most lab handouts will be available a few days before each lab ON BLACKBOARD. READING ASSIGNMENTS will also be posted on the Blackboard web site. Some weeks there will be introductory lab lectures posted on Blackboard and you must watch them before attending. You will need to purchase a bound lab notebook (no spirals) to record methods, calculations, observations, and results in each lab period. Lab notebooks will not be collected or graded. HOWEVER, it is important to keep every notebook entry current and complete because you will be allowed to use your lab notebooks for lab exams. Only lab notebooks will be allowed as a reference during the lab exams (no handouts or extra materials). Bring a calculator to each lab. Requirements for each assignment will be outlined during the lab. Your first assignment is to complete the safety training and quizzes on Blackboard.

There will be three possible lab report grades this semester and your best 2 grades will be used to calculate your final grade. They generally are due the next lab period after completion of the lab. Lab reports will be an individual effort. You may NOT submit a lab report if you are absent from any part of the lab activity. You may discuss the results of a lab activity with your group but the work submitted must be your own.

Lab report guidelines are posted on the Blackboard Website under “Course Material”. We will discuss specific requirements for lab reports during the lab period and some examples of good lab reports will be provided in the lab room. Your reports will be submitted by uploading them to Blackboard as a Word document and my feedback will be provided in the digital file/rubric. USE THE CHECKLIST before you submit to make sure you have met the major requirements. This checklist document is available on Blackboard with the lab report guidelines.

Most experiments will be completed within the scheduled lab time, however a few experiments will require time in the lab outside of scheduled class times. Each lab group should make arrangements to perform procedures outside of class time and distribute information to all group members. Every individual is responsible for cleaning and disinfecting their lab bench and equipment after lab, keeping track of supplies and equipment used by their table, and keeping the lab neat and orderly.
<table>
<thead>
<tr>
<th>WEEK</th>
<th>DATE</th>
<th>TOPIC</th>
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<tbody>
<tr>
<td>1*</td>
<td>1 Feb</td>
<td>MEASUREMENT SKILLS/EXTRACTING DNA FROM CELLS</td>
</tr>
<tr>
<td>2</td>
<td>8 Feb</td>
<td>CELL SPECIALIZATION AND ELECTROPHORETIC MOBILITY OF LACTATE DEHYDROGENASE ISOENZYMES</td>
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<td>3</td>
<td>15 Feb</td>
<td>SEPARATING MOLECULES BY AFFINITY CHROMATOGRAPHY</td>
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<tr>
<td>4</td>
<td>22 Feb</td>
<td>I. GENETIC ANALYSIS OF PTC TASTE RECEPTORS</td>
</tr>
<tr>
<td>5*</td>
<td>1 Mar</td>
<td>II. GENETIC ANALYSIS OF PTC TASTE RECEPTORS</td>
</tr>
<tr>
<td>6</td>
<td>8 Mar</td>
<td>TRACKING DISEASE TRANSMISSION USING ENZYME-LINKED IMMUNOSORBENT ASSAY (ELISA)</td>
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<td>7</td>
<td>15 Mar</td>
<td>LAB EXAM 1</td>
</tr>
<tr>
<td>8</td>
<td>22 Mar</td>
<td>I. MEASURING ACID PHOSPHATASE ACTIVITY USING SPECTROPHOTOMETRY: DATA COLLECTION</td>
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<tr>
<td>9</td>
<td>29 Mar</td>
<td>II. MEASURING ACID PHOSPHATASE ACTIVITY USING SPECTROPHOTOMETRY: DATA ANALYSIS</td>
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<tr>
<td>10*</td>
<td>5 Apr</td>
<td>INHIBITING METABOLIC PATHWAYS IN THE CHLOROPLAST</td>
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<td>11</td>
<td>12 Apr</td>
<td>ASSAYING FOR BEHAVIORAL EFFECTS IN CELL SIGNALING MUTANTS</td>
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<tr>
<td>12</td>
<td>19 Apr</td>
<td>I. CRIME SCENE INVESTIGATION: POLYMERASE CHAIN REACTION</td>
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<tr>
<td>13</td>
<td>26 Apr</td>
<td>II. CRIME SCENE INVESTIGATION: ELECTROPHORESIS</td>
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<tr>
<td>14</td>
<td>3 May</td>
<td>LAB EXAM 2</td>
</tr>
</tbody>
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Labs marked with an asterisk are to be written up as formal lab reports. You will have 3 opportunities to write lab reports and 2 of them will count toward your grade (one will be dropped). Each lab report is worth 50 points and is due the following week. Guidelines and checklist are posted on BLACKBOARD.

Two LAB EXAMS will be given and will cover material from the lab activities that have been conducted. Lab exams are worth 50 points each. Assignments from each lab will be due the following lab period or occasionally by the end of lab. Assignments are worth 10 - 20 points each.

READING ASSIGNMENTS FROM THE TEXTBOOK FOR LAB TOPICS CAN BE FOUND ON THE BLACKBOARD WEB SITE

Any changes to the schedule will be at the discretion of the instructor and will be announced in lecture and/or on the class Blackboard web site.

1. [http://blackboard.angelo.edu/](http://blackboard.angelo.edu/)
2. [https://oup-arc.com/access/cooper8e-student-resources - all_resources](https://oup-arc.com/access/cooper8e-student-resources - all_resources)
4. [https://www.angelo.edu/services/disability-services/](https://www.angelo.edu/services/disability-services/)
5. [https://www.angelo.edu/content/files/14197-op-1011-grading-procedures](https://www.angelo.edu/content/files/14197-op-1011-grading-procedures)
7. [https://www.angelo.edu/dept/writing_center/academic_honesty.php](https://www.angelo.edu/dept/writing_center/academic_honesty.php)
8. [https://www.angelo.edu/content/files/14206-op-1019-student-absence-for-observance-of](https://www.angelo.edu/content/files/14206-op-1019-student-absence-for-observance-of)