BIOL 3412
Pathogenic Microbiology

Instructor: Dr. Emerson Crabill
Email: ecrabill@angelo.edu
Phone: 325-486-6642
Office: CAV 003C
Office Hours: MW 10:00-11:30, TR 12:30-2:00, F 2:00-3:00, or by appointment

Course Information

Course Description
The interactions between pathogenic microorganisms and their host organisms with an emphasis on bacteria. This includes elements of immunity, diagnosis and treatment of infection with an emphasis on human diseases. This course includes a heavy emphasis on the role and application of laboratory work.

Prerequisite and Co-requisite Courses
Any 3 of the following courses each with a grade of C or better: Biology 1306/1106, 1411, 1413, 3301, 3411, or by special departmental approval.

Prerequisite Skills
Accessing Internet websites, using ASU Library resources, and proficiency with Microsoft Word and Excel are expectations of the course.

Student Learning Outcomes
Upon completion of this course, students will be able to:
1. Isolate, maintain using aseptic technique, and laboratory test unknown bacteria
2. Use free publically available databases to evaluate protein sequences
3. Communicate the results in a scientifically appropriate written form.
4. Have a general understanding of host pathogen interactions
5. Recognize and be able to communicate using microbiologically specific terminology
6. Understand the mechanisms by which pathogens cause disease
Course Delivery
This course has a lecture component as well as a laboratory component. In lecture students will take notes and interact verbally with the professor. In the laboratory portion of the course the students will do hands on research in the microbiology lab.

Required Texts and Materials

Technology Requirements
To successfully complete this course, students need to have access to a computer connected to the internet. This course will require the use of free, publically available online databases for bioinformatics.

Communication
Students can communicate with the instructor face to face during office hours or by appointment. E-mails and phone calls will be responded to in a timely manner (typically within 24 hours), but do not expect an immediate response.

Grading
Evaluation and Grades
Course grades will be determined as indicated in the table below.

<table>
<thead>
<tr>
<th>Assessment</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exam 1</td>
<td>100</td>
</tr>
<tr>
<td>Exam 2</td>
<td>100</td>
</tr>
<tr>
<td>Exam 3</td>
<td>100</td>
</tr>
<tr>
<td>Exam 4</td>
<td>100</td>
</tr>
<tr>
<td>Lab Quizzes</td>
<td>50</td>
</tr>
<tr>
<td>Lab Reports</td>
<td>50</td>
</tr>
<tr>
<td>Protein of Unknown Function Project</td>
<td>100</td>
</tr>
<tr>
<td>Total</td>
<td>600</td>
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</tbody>
</table>

Grading System
Course grades will be dependent upon completing course requirements and meeting the student learning outcomes.
The following grading scale is in use for this course:
A = 540-600 points
B = 480-539 points
C = 420-479 points
D = 360-419 points
F = 0-359 points (Grades are not rounded up)
Assignment and Activity Descriptions
There will be four (4) exams over material covered in lecture. The first three will be during regularly scheduled class time, the fourth will be during the final exam schedule, but it is not cumulative. Each exam is worth 100 points. Lab Quizzes are taken at the beginning of lab and will cover content from the previous week. Each quiz is worth 10 points. There will be 7 quizzes during the semester and your lowest two quiz scores will be dropped. Lab reports are due the week following the lab section and are worth 10 points each. There will be 7 lab reports due during the semester, and your lowest two lab report scores will be dropped.

General Policies Related to This Course
All students are required to follow the policies and procedures presented in these documents:
- Angelo State University Student Handbook
- Angelo State University Catalog

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  
325-942-2047  
dallas.swafford@angelo.edu  
Houston Harte University Center, Room 112

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. Papers and lab reports are subject to evaluation 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.
You may also file a report online 24/7 at www.angelo.edu/incident-form.

If you are wishing to speak to someone about an incident in confidence you may contact the University Health Clinic and Counseling Center at 325-942-2173 or the ASU Crisis Helpline at 325-486-6345.

For more information about Title IX in general you may visit www.angelo.edu/title-ix.

Course Schedule

<table>
<thead>
<tr>
<th>Date</th>
<th>Lecture Topic</th>
<th>Lab Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/14 &amp; 1/16</td>
<td>Intro and <em>Staphylococci</em></td>
<td>Aseptic Technique, Pure Culture</td>
</tr>
<tr>
<td>1/21 &amp; 1/23</td>
<td><em>Streptococci</em> and <em>Enterococci</em></td>
<td>No Labs this week</td>
</tr>
<tr>
<td>1/28 &amp; 1/30</td>
<td><em>Pneumococcus</em></td>
<td>Enumerating Bacteria</td>
</tr>
<tr>
<td>2/4</td>
<td><em>Neisseria</em></td>
<td>Antibiotics and Hand scrubbing</td>
</tr>
<tr>
<td>2/6</td>
<td><strong>Exam 1</strong></td>
<td>Isolation of Antibiotic Producer</td>
</tr>
<tr>
<td>2/11 &amp; 2/13</td>
<td><em>Bacteroides</em> and Enteric Bacteria</td>
<td>Microbial Competition</td>
</tr>
<tr>
<td>2/18 &amp; 2/20</td>
<td>Enteric Bacteria and <em>P. aeruginosa</em></td>
<td>Bacteria in food and water</td>
</tr>
<tr>
<td>2/25 &amp; 2/27</td>
<td><em>Bordetella</em> and <em>Clostridia</em></td>
<td><em>Staphylococcus</em> identification</td>
</tr>
<tr>
<td>3/3</td>
<td><em>Legionella</em> and <em>Coxiella</em></td>
<td><em>Streptococcus</em> and <em>enterococcus</em></td>
</tr>
<tr>
<td>3/5</td>
<td><strong>Exam 2</strong></td>
<td>Isolation and Identification</td>
</tr>
<tr>
<td>3/17 &amp; 3/19</td>
<td><em>Helicobacter</em> and <em>Mycobacteria</em></td>
<td>Gm$^-$ Intestinal pathogens</td>
</tr>
<tr>
<td>3/24 &amp; 3/26</td>
<td><em>Syphilis</em> and <em>Borrelia burgdorferi</em></td>
<td>Plasmid Purification</td>
</tr>
<tr>
<td>3/31 &amp; 4/2</td>
<td><em>Bartonella</em> and <em>Chlamydiae</em></td>
<td>Bacterial Transformation</td>
</tr>
<tr>
<td>4/7</td>
<td>Rickettsioses</td>
<td>Bioinformatics</td>
</tr>
<tr>
<td>4/9</td>
<td><strong>Exam 3</strong></td>
<td>Bioinformatics</td>
</tr>
<tr>
<td>4/14 &amp; 4/16</td>
<td><em>Listeria</em> and <em>Brucella</em></td>
<td>Bioinformatics</td>
</tr>
<tr>
<td>4/21 &amp; 4/23</td>
<td><em>Yersinia pestis</em> and <em>B. anthracis</em></td>
<td>Bioinformatics</td>
</tr>
<tr>
<td>4/28 &amp; 4/30</td>
<td>Plant Pathogens</td>
<td>Project Paper is Due</td>
</tr>
<tr>
<td>5/5</td>
<td><strong>Exam 4</strong></td>
<td></td>
</tr>
</tbody>
</table>

1 [https://www.angelo.edu/student-handbook/](https://www.angelo.edu/student-handbook/)
2 [https://www.angelo.edu/catalogs/](https://www.angelo.edu/catalogs/)
3 [https://www.angelo.edu/student-handbook/community-policies/academic-integrity.php](https://www.angelo.edu/student-handbook/community-policies/academic-integrity.php)
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)
6 [https://www.angelo.edu/student-handbook/community-policies/academic-integrity.php](https://www.angelo.edu/student-handbook/community-policies/academic-integrity.php)
7 [https://www.angelo.edu/dept/writing_center/academic_honesty.php](https://www.angelo.edu/dept/writing_center/academic_honesty.php)