Fall 2019
Ecology, Evolution, and
Molecular Biology of Viruses -
BIOL 4381 & 6381

Instructor: Dr. Greg Krukonis
Email: gkrukonis@angelo.edu
Office: Cavness Science Building 003A
Office Hours: TR 9:30-10:30AM, W 2:00-4:00PM (and other times by appointment)

Course Information

Class Meeting Dates and times
Fall 2019 Semester: Monday 26 August-Friday 13 December
TR 11:00 am - 12:15 pm Cavness Science 111
**Course Description**

Viruses are the most diverse group of organisms on the planet. This course will introduce students to this diversity with respect to both virus structure and virus/host interaction using examples from all of the major virus groups (e.g. RNA, DNA, and Retroviruses, etc). In addition, it will integrate this systematic knowledge with an understanding of the processes that generate and maintain viral diversity. The most numerous organisms on the planet, viruses infect every known form of life. This connects them ecologically to all the branches of the tree life, and thus to all of the organismal offerings in the Biology Department. More significantly, because of their small size and simple structure, the study of viruses can assist in bridging the gap between the study of the molecular and the organismal. Viruses complete their entire life cycle within a single cell. The environment of the cell is their ecosystem, nucleic acid synthesis and packaging their developmental process. This connects the study of virology with fields of cell biology and genetics and will reinforce material from courses in these areas. This course is designed to expose the student to the Natural Science Inquiry as well as practice the integration of previous knowledge with newly acquired knowledge. Students will develop and build upon their communication skills through reading and discussion of primary scientific literature, and several oral presentations of varying length.

**Student Learning Outcomes**

This course will introduce students to viral diversity with respect to both virus structure and virus/host interactions. In addition it will integrate this systematic knowledge with an understanding of the processes that generate and maintain viral diversity.

- Students will acquire knowledge about the diversity of viruses and the specific characteristics of different virus groups.

- Students will gain an understanding of the processes that are responsible for creating and maintaining this biodiversity.

- Students will recognize that the evolutionary process can act on a time scale relevant to human well-being. For example -- the evolution of HIV within a patient is what ultimately overcomes the patient’s immune system, viruses of all kinds evolve resistance to our best drugs, new flu strains appear every year.

**Course Delivery**

This is a face-to-face course with learning resources and supplemental materials posted in Blackboard¹.
Required Texts and Materials

- Extensive readings from primary literature

Communication

Faculty will respond to email and/or telephone messages within 24 hours during working hours Monday through Friday. Weekend messages may not be returned until Monday evening.

Written communication via email: All private communication will be done exclusively through your ASU email address. Check your ASU email frequently for announcements and policy changes. In your emails to faculty, include the course name and section number in your subject line.

Virtual communication: Office hours and/or advising may be done with the assistance of the telephone and/or Blackboard Collaborate.

Grading

Evaluation and Grades

Course grades will be determined based on a combined total of 1000 points from lecture and lab as indicated in the following table.

<table>
<thead>
<tr>
<th>Assessment</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral presentations and class discussions</td>
<td>300</td>
</tr>
<tr>
<td>Exam 1</td>
<td>100</td>
</tr>
<tr>
<td>Exam 2</td>
<td>100</td>
</tr>
<tr>
<td>Final presentation</td>
<td>200</td>
</tr>
<tr>
<td>Final Exam* (comprehensive)</td>
<td>300</td>
</tr>
<tr>
<td>Course total points</td>
<td>1000</td>
</tr>
</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 = 900-1000 points  
B = 800-899.9 points  
C = 700-799.9 points  
D = 600-699.9 points
F = 0-599.9 points (Grades are not rounded up)

*The Comprehensive Final Exam (percentage grade) can also replace a lower grade on one of the two semester lecture exams.

**Make-up Exams**
Make-up exams will be given only in emergency situations which preclude class attendance or pre-arranged, approved university absence. Opportunity to take a make-up exam is based on University policy and instructor discretion. Arrangements for excused make-up exams should be made prior to the scheduled date of the exam, unless it is a health emergency, in which case you should contact the instructor before the first class following the absence.

**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.

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
Angelo State University is committed to providing and strengthening an educational, working, and living environment where students, faculty, staff, and visitors are free from sex discrimination of any kind. In accordance with Title VII, Title IX, the Violence Against Women Act (VAWA), the Campus Sexual Violence Elimination Act (SaVE), and other federal and state laws, the University prohibits discrimination based on sex, which includes pregnancy, and other types of Sexual Misconduct. Sexual Misconduct is a broad term encompassing all forms of gender-based harassment or discrimination and unwelcome behavior of a sexual nature. The term includes sexual harassment, nonconsensual sexual contact, nonconsensual sexual intercourse, sexual assault, sexual exploitation, stalking, public indecency, interpersonal violence (domestic violence or dating violence), sexual violence, and any other misconduct based on sex.

You are encouraged to report any incidents involving sexual misconduct to the Office of Title IX Compliance and the Director of Title IX Compliance/Title IX Coordinator, Michelle Boone, J.D. You may submit reports in the following manner:

Online: www.angelo.edu/incident-form
Face to face: Mayer Administration Building, Room 210
Note, as a faculty member at Angelo State, I am a mandatory reporter and must report incidents involving sexual misconduct to the Title IX Coordinator. Should you wish to speak to someone in confidence about an issue, you may contact the University Counseling Center (325-942-2371), the 24-Hour Crisis Helpline (325-486-6345), or the University Health Clinic (325-942-2171).

For more information about resources related to sexual misconduct, Title IX, or Angelo State's policy please visit: [www.angelo.edu/title-ix](http://www.angelo.edu/title-ix).

**Course Schedule**

Tentative schedule of dates, topics, and exams. Order and dates are subject to change.

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Intro to Virology</td>
</tr>
<tr>
<td>2</td>
<td>Cann Chapters 1,2,3</td>
</tr>
<tr>
<td>3</td>
<td>Cann Chapters 4,5</td>
</tr>
<tr>
<td>4</td>
<td>EXAM #1 – T 17 September / R Epidemiology</td>
</tr>
<tr>
<td>5</td>
<td>T Presentations and Discussion / R Viral Ecology/Evolution</td>
</tr>
<tr>
<td>6</td>
<td>T Presentations and Discussion / R Viral Ecology/Evolution 2</td>
</tr>
<tr>
<td>7</td>
<td>T Presentations and Discussion / R Orthomyxoviridae 1</td>
</tr>
<tr>
<td>8</td>
<td>T Presentations and Discussion / R Orthomyxoviridae 2</td>
</tr>
<tr>
<td>9</td>
<td>T Presentations and Discussion / R Retroviridae 1</td>
</tr>
<tr>
<td>10</td>
<td>T Presentations and Discussion / R Retroviridae 2</td>
</tr>
<tr>
<td>11</td>
<td>Exam #2 T5 November R Herpesviridae 1</td>
</tr>
<tr>
<td>12</td>
<td>T Presentations and Discussion / R Emerging Viruses</td>
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<tr>
<td>13</td>
<td>Long Presentations</td>
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<tr>
<td>14</td>
<td>Long Presentations</td>
</tr>
<tr>
<td>15</td>
<td>Final Thoughts</td>
</tr>
<tr>
<td>16</td>
<td>FINAL EXAM TUESDAY 10 December – 8:00-10:00am</td>
</tr>
</tbody>
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1. [https://blackboard.angelo.edu](https://blackboard.angelo.edu)  
2. [https://www.angelo.edu/student-handbook/](https://www.angelo.edu/student-handbook/)  
3. [https://www.angelo.edu/catalogs/](https://www.angelo.edu/catalogs/)  