Instructor: Charles Allen
Email: charles.allen@angelo.edu
Phone: 325-486-6780
Office: Vincent 126

Office Hours: T 15:00-17:00 (3 to 5 pm), W 10:00-13:00 (10 am to 1 pm) or by appointment

Course Information

Course Description
Vectors, Newtonian mechanics, non-inertial reference frames, central forces, systems of particles, Lagrangian mechanics, and oscillating systems.

Prerequisite and Co-requisite Courses
Physics 2326/2126, and credit for or parallel registration in Physics 3301.

Prerequisite Skills
Ability to use a scientific calculator and ability to use a printed integral table.

Student Learning Outcomes
Upon completion of this course, students will be able to:
- gain factual knowledge in physics,
- learned fundamental principles of physics, and
- apply course material to problem solving.

Course Delivery
To maintain academic quality while accommodating social distancing needs this semester, this course will use a split delivery model that combines face-to-face teaching with remote instruction.
The goal is to provide face-to-face instruction to students who want to return to campus, while also allowing students who may need to learn remotely to participate via virtual class sessions.

**How Does It Work?**
Your class will be divided and you will be placed into a smaller group of students to maintain physical distancing requirements in our assigned classroom space.

Your assigned group will receive a schedule of in-person class meetings. This schedule is not flexible. For instance, if you are supposed to attend class on a Tuesday, you cannot elect to go on Thursday with another class group instead.

When you are not in the physical class, you will attend live remote sessions at the same time as our scheduled course. You will also be expected to complete coursework via Blackboard.¹

Please refer to this Health and Safety web page² for updated information about campus guidelines as they relate to the COVID-19 pandemic.

**Required Texts and Materials**
  A printed math handbook with integral tables for use in class. Commonly used math handbooks:
  - *Schaum's Mathematical Handbook of Formulas and Tables*
  - *Pocket Book of Integrals and Mathematical Formulas*
  - *CRC Standard Mathematical Tables and Formulae*

A student of this institution is not under any obligation to purchase a textbook from a university-affiliated bookstore. The same textbook may also be available from an independent retailer, including an online retailer.

**Technology Requirements**
To successfully complete this course, students need to be able to use Blackboard, a scientific calculator, and complete the IDEA student ranking of instruction.

**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.

All private communication will be done exclusively through your ASU email address. Check frequently for announcements and policy changes. In your emails to faculty, include the course name and section number in your subject line.
Office hours and/or advising may be done with the assistance of the telephone, Collaborate, Skype, etc.

**Grading**

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

<table>
<thead>
<tr>
<th>Assessment</th>
<th>Percent of Total Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eight Midterm Quizzes</td>
<td>60</td>
</tr>
<tr>
<td>Homework and Practice Problems</td>
<td>20</td>
</tr>
<tr>
<td>Comprehensive Final Exam</td>
<td>20</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100%</strong></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 = 90.00-100 points
- B = 80.00-89.99 points
- C = 70.00-79.99 points
- D = 60.00-69.99 points
- F = 0-59.99 points (Grades are not rounded up)

The instructor reserves the right to lower the thresholds between letter grades (they will never be raised).

**Assignment and Activity Descriptions**
Attendance is required. Makeup exams must be pre-arranged with the instructor before the scheduled exam dates on this syllabus. Online assignments are uploaded in Blackboard. The lowest exam grade will be dropped from the final grade calculation. An academic assessment will be given late in the semester to assess this course as required by the institution.

Please do not ruin the learning experience for yourself or others by acquiring notes, homework solutions, or exam solutions, or give your notes, homework solutions, or exam solutions to a future student. It is difficult to make homework and exam problems that are both soluble and teach something about a topic. It is simply not possible to come up with completely new problems each time the course is offered.
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 to 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.

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 Miller, J.D.
Special Assistant to the President and Title IX Coordinator
You may also file a report online 24/7.

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, visit the Title IX website.

**Required Use of Masks/Facial Coverings by Students**

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.

**Modifications to the Syllabus**

This syllabus, including grade evaluation and course schedule, is subject to modification. In particular, the COVID-19 pandemic may require significant changes in course delivery and content on potentially short notice.
# Course Schedule

<table>
<thead>
<tr>
<th>Date</th>
<th>Lecture ID</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan 26</td>
<td>1A</td>
<td>Vector analysis and separation of variables</td>
</tr>
<tr>
<td>Jan 28</td>
<td>1B</td>
<td>Newton's 2nd Law in rectangular and polar coordinates</td>
</tr>
<tr>
<td>Feb 2</td>
<td>2AB</td>
<td>Motion in a vacuum, Linear resistance</td>
</tr>
<tr>
<td>Feb 4</td>
<td>2C</td>
<td>Quadratic resistance</td>
</tr>
<tr>
<td>Feb 9</td>
<td>2D</td>
<td>Series expansions and hyperbolic trig functions</td>
</tr>
<tr>
<td>Feb 11</td>
<td>Q0102</td>
<td><strong>Quizzes for chapters 1 and 2 (online)</strong></td>
</tr>
<tr>
<td>Feb 16</td>
<td>3A</td>
<td>Rockets in space</td>
</tr>
<tr>
<td>Feb 18</td>
<td>3BC</td>
<td>Rockets with external forces, Center of mass</td>
</tr>
<tr>
<td>Feb 23</td>
<td>4A</td>
<td>Kinetic energy, work, and path integrals</td>
</tr>
<tr>
<td>Feb 25</td>
<td>4BC</td>
<td>Potential energy and conservative forces, Linear 1-D systems</td>
</tr>
<tr>
<td>Mar 2</td>
<td>4D</td>
<td>Potential energy graphs and stability</td>
</tr>
<tr>
<td>Mar 4</td>
<td>4E</td>
<td>Central forces and collisions</td>
</tr>
<tr>
<td>Mar 9</td>
<td>Q0304</td>
<td><strong>Quizzes for chapters 3 and 4 (online)</strong></td>
</tr>
<tr>
<td>Mar 11</td>
<td>5A</td>
<td>Hooke's law and simple harmonic motion</td>
</tr>
<tr>
<td>Mar 16</td>
<td>5B</td>
<td>Damped oscillations</td>
</tr>
<tr>
<td>Mar 18</td>
<td>5C</td>
<td>Driven damped oscillations</td>
</tr>
<tr>
<td>Mar 23</td>
<td>5D</td>
<td>Resonance</td>
</tr>
<tr>
<td>Mar 25</td>
<td>7A</td>
<td>Unconstrained motion using Lagrange’s equations</td>
</tr>
<tr>
<td>Mar 30</td>
<td>7BC</td>
<td>Multiple coordinates and particles, Examples</td>
</tr>
<tr>
<td>Apr 1</td>
<td>Q0507</td>
<td><strong>Quizzes for chapters 5 and 7 (online)</strong></td>
</tr>
<tr>
<td>Apr 6</td>
<td>8A</td>
<td>The equivalent one-body problem</td>
</tr>
<tr>
<td>Apr 8</td>
<td>8B</td>
<td>The equation of the orbit</td>
</tr>
<tr>
<td>Apr 13</td>
<td>8CD</td>
<td>The Kepler orbits, Energy and eccentricity</td>
</tr>
<tr>
<td>Apr 15</td>
<td>9AB</td>
<td>Centrifugal and Coriolis forces I, Newton’s 2nd law in non-inertial frames</td>
</tr>
<tr>
<td>Apr 20</td>
<td>9C</td>
<td>Centrifugal and Coriolis forces II</td>
</tr>
<tr>
<td>Apr 22</td>
<td>9D</td>
<td>Tidal forces</td>
</tr>
<tr>
<td>Apr 27</td>
<td>Q0809</td>
<td><strong>Quizzes for chapters 8 and 9 (online)</strong></td>
</tr>
<tr>
<td>Apr 29</td>
<td>11A</td>
<td>Coupled oscillators</td>
</tr>
<tr>
<td>May 4</td>
<td>11B</td>
<td>Weak coupling</td>
</tr>
<tr>
<td>May 6</td>
<td>11C</td>
<td>Lagrangillators</td>
</tr>
<tr>
<td>May 11</td>
<td>FINAL</td>
<td>Comprehensive Final Exam (online)</td>
</tr>
</tbody>
</table>

1. [https://angelo.blackboard.com/](https://angelo.blackboard.com/)
3. [https://www.angelo.edu/current-students/student-handbook/](https://www.angelo.edu/current-students/student-handbook/)
4. [https://www.angelo.edu/academics/catalog/](https://www.angelo.edu/academics/catalog/)
6. [https://www.angelo.edu/current-students/disability-services/](https://www.angelo.edu/current-students/disability-services/)
https://www.angelo.edu/content/files/14197-op-1011-grading-procedures
https://www.angelo.edu/current-students/writing-center/academic_honesty.php
https://www.angelo.edu/content/files/14206-op-1019-student-absence-for-observance-of
http://www.angelo.edu/incident-form
https://www.angelo.edu/title-ix