Instructor: Andrew B. Wallace
Email: awallace@angelo.edu
Phone: 3254866516
Office: Vincent 125

Office Hours: 2:00-4:30 TW pm or by appointment

Course Information

Course Description
A study of thermodynamics and statistical methods in physics with applications from classical and quantum physics.

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

Prerequisite Skills
Ability to use Blackboard, a scientific calculator, and proficiency in calculus are expectations of this course.

Student Learning Outcomes
Upon completion of this course, students will be able to:

- Gain a basic understanding of the subject (e.g., factual knowledge, methods, principles, generalizations, theories) and
- Learn appropriate methods for collecting, analyzing, and interpreting numerical information.

Course Delivery
This course is a face-to-face course with learning resources and supplemental materials posted in Blackboard.

Required Texts and Materials
There is no required text for this course. Students desiring a text may refer to opensource texts available in Blackboard. 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 use a scientific calculator, Blackboard, 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.

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>
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</thead>
<tbody>
<tr>
<td>Homework Assignments</td>
<td>50%</td>
</tr>
<tr>
<td>Exams</td>
<td>40%</td>
</tr>
<tr>
<td>Presentation Project</td>
<td>10%</td>
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<tr>
<td>Total</td>
<td>100%</td>
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</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 = 90-100 points
- B = 80-89 points
- C = 70-79 points
- D = 60-69 points
- F = 0-59 points (half points are rounded up)

Assignment and Activity Descriptions
Homework assignments may be found imbedded in PowerPoint lecture notes for the first third of the course. Remaining homework assignments will be placed in Blackboard. Late homework will receive zero credit. Detailed instructions for the presentation project are in Blackboard.

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.7

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 Day8 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.

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.

Facial Covering Policy
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.

Course Schedule

<table>
<thead>
<tr>
<th>Lessons</th>
<th>Important Due Dates</th>
<th>Dates</th>
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<tbody>
<tr>
<td>1: Zeroth and First Laws of Thermodynamics</td>
<td>Homework 1 Due Aug 25</td>
<td>Aug 18-20</td>
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<tr>
<td>2: Second Law of Thermodynamics</td>
<td>Homework 2 Due Sep 1</td>
<td>Aug 25-27</td>
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<tr>
<td>3: Entropy and Microcanonical Formalism</td>
<td>Homework 3 Due Sep 8</td>
<td>Sep 1-3</td>
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<tr>
<td>4: Gases, Potentials, and Maxwell’s Relations</td>
<td>Homework 4 Due Sep 15</td>
<td>Sep 8</td>
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<tr>
<td>5: Applications of Maxwell’s Relations</td>
<td>Homework 5 Due Sep 22</td>
<td>Sep 10-15</td>
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<tr>
<td><strong>Exam 1 Recitation</strong></td>
<td>Exam 1 Due</td>
<td>Sep 22</td>
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<tr>
<td>6: Canonical Formalism and Debye Model</td>
<td>Exam 6 Due</td>
<td>Oct 15</td>
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<tr>
<td>6: Density of States and Lattice Vibrations</td>
<td>Exam 2 Due</td>
<td>Oct 20</td>
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<tr>
<td>6: Electromagnetic Radiation</td>
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<td>6: Ideal Gas &amp; Equipartition Theorem</td>
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<td>6: Maxwell Speed Distribution</td>
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<td>6: Statistical Interpretation of Heat and Work</td>
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<td>6: Thermal Fluctuations</td>
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<tr>
<td>Presentation Project Guidelines &amp; Exam 2 Recitation</td>
<td>Homework 6 Due</td>
<td>Oct 22</td>
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<tr>
<td>7: Information Theory and Disorder</td>
<td>Exam 2 Due</td>
<td>Oct 20</td>
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<tr>
<td>7: Grand Canonical Formalism</td>
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<tr>
<td><em>University Closed</em></td>
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<tr>
<td>8: Quantum Statistics</td>
<td>Homework 7 Due</td>
<td>Oct 27</td>
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<td>8: Fermi-Dirac Statistics</td>
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<td>8: Bose-Einstein Statistics</td>
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<td>8: The Photon Gas</td>
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<tr>
<td>8: Chemical Potential</td>
<td>Homework 8 Due</td>
<td>Nov 17</td>
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<tr>
<td>Article Presentations</td>
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<tr>
<td><strong>Final Exam Recitation</strong></td>
<td>Exam 3 Due</td>
<td>Nov 19</td>
</tr>
</tbody>
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2. https://www.angelo.edu/catalogs/
4. https://www.angelo.edu/services/disability-services/
5. https://www.angelo.edu/content/files/14197-op-1011-grading-procedures
7. 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