A quick Note:
I am not going to go in depth about AP Physics, what it stands for, what it covers, and so on. Throughout the year I will give you all the information you will need for this class and the test, and I do not want to overwhelm you just yet. We will take practice tests throughout the year, and I base my tests on the AP test to prepare you for the pacing and style of that exam. This is the last I will mention the test for a while so we can focus on physics and getting the year underway. If you wish to get more information on this test you can always go to this site: www.apcentral.collegeboard.com

AP Physics 1 is a tough class. This is not just any physics class. It involves more mathematical insight and more conceptual understanding than other physics classes, and it covers a great deal of content before the AP exam in May. This means that your level of responsibility in this class may be greater than in your other classes here at Central. I expect for you to be here every day, but there is no hand holding. If you miss a lecture or a lab you are responsible for getting the info you missed, I will not track you down.

I am not trying to scare you here but to prepare you for a tough, but fun and informative, year. I love the area of physics and I am very excited to share it with you. Stay positive, ASK QUESTIONS, and have fun. My goal is for all of you to leave this class with a good understanding of physics, but more importantly, an understanding of study skills, learning methods, and problem solving.

My Policies:

I. What you need- (all supplies must be ready by Monday, August 26)

<table>
<thead>
<tr>
<th>Composition</th>
<th>Notebook paper</th>
</tr>
</thead>
<tbody>
<tr>
<td>Graph Paper</td>
<td>Calculator (Graphing is best)</td>
</tr>
<tr>
<td>Pencil every day</td>
<td>Colored pencils or fine tip markers for notetaking</td>
</tr>
</tbody>
</table>

Additional Supplies I am requesting for the classroom use:
paper towels, Kleenex, sanitizing wipes, hand sanitizer.

This list is optional but appreciated 😊

II. Classroom responsibilities-

- a. In your seats when the bell rings!!
- b. Cell phones stored inside bag during class, unless instructed otherwise
- c. No food or drink in the lab
- d. Participate in group discussion over problems.
- e. Actively participate during labs in the groups
- f. Turn in work on time
- g. Be respectful to your classmates, the room and the teacher
- h. Use class time for physics, do not work on other classes work during the period
Angelo State University Physics 1301 / 1101
Central High School AP Physics 1
Instructor: J. Dalrymple

III. Your responsibilities outside of class-
   a. Do the assigned work and be prepared for class
   b. Ask your classmates for help when you are stuck (forming a work/study group is highly recommended)
   c. Read your notes. Make notes on your notes.
   d. Get extra help from me both in and out of class (see my tutorial schedule)
   e. Do the outside of class reading

IV. Grading policy-

Tests – 40%
Labs – 30%
Quizzes – 20%
Homework – 10%

I will grade tests and quiz’s the way the AP graders will grade. I will be tough, but it important to see what you have missed and to do test corrections. You will receive extra credit on the test for completing test corrections. The test corrections must be completed outside of class time during tutorials, and they must be completed while in my classroom (you cannot take them home). The corrections provide for remediation and reteaching and must be thorough to receive extra credit. The amount of extra credit is based on the difficulty of the test and on what your score is. Test corrections are worth it for anyone and are available no matter what grade you made. As for your homework, labs, and quizzes, there will be no extra credit for corrections.

V. Homework and Quizzes-
You will be assigned readings and homework for every unit. There is an online homework program called Mastering Physics that you will be required to use. If you do not have internet at home, you may use the computers at the school, in my classroom, or at the public library outside of class time.

You will be given quizzes covering the assigned readings and homework. It is your responsibility to know how to do the homework problems so that you are prepared for the quizzes. If you are struggling with a particular assignment, you are the only one who can take the necessary steps to correct the situation: ask questions, work with classmates, and/or attend tutorials!

VI. Notes-
The composition notebook in the supply list will be your lab notebook. Your notebooks are yours. I may take them and grade them. I do stress to take good clean notes using colored pencils whenever possible. If you keep lecture notes, reference materials, and your work organized, you will find it very valuable when studying for class tests and for the AP exam.

VII. Tests-
There will probably be at least one, maybe two quizzes on each unit and one test. The quizzes will be short while the tests will look at your in-depth level of understanding. I will be creating these fun events in the same fashion as the real AP exam. My goal is to get you used to the exam format, style of questions, pacing etc. so that way you feel more comfortable when the real exam is in front of you.

VIII. Remind App-
I will use Remind in order to make class announcement, remind about due dates and communicate with the students. In order to join remind, please text @b2ff633 to 81010
IX. Tardy Policy
Out of respect for me and your peers/lab partners be on time. Excessive tardies will result in a disciplinary measures.

X. Classroom Policies-
This is a college class, so I will try and run it that way.

a. Restrooms - Go when you have to, do not ask, your old enough now. Take the pass with you.
b. Talking - When anyone is asking questions of or presenting to the class as a whole, you are to be quiet. During labs and other collaborative activities, have fun and talk all you want.
c. Food and Drinks - No food or drink in the labs. If you make a mess clean it up.
d. Clean Room - You class is not the only one that uses this room, and our Janitorial staff has better things to do then clean my classroom. Thus, if the room is messy and the bell is about to ring, clean it up! I will hold the whole class, regardless, until my room is clean.
e. The classrooms materials - they are there for you to use so use them.
f. Questions - Ask many and often, without the whole “raise your hand” bit. You’re adults, find the right time and blurt your questions out.
g. Cheating - Please refer to the academic dishonesty statement.
h. The bell - When it rings at the beginning of class, you need to be in your seats and ready to go. When it rings at the end of class you must make sure that your workspace is clean before leaving.
i. Late work - If you missed turning something in because you were absent and it was excused then your work is not late. However, if you do not turn in your work because of an unexcused absence, a bad memory or whatever, you will receive no credit. Also, if you know you are going to miss a test, quiz, or lab, you must tell me and do it BEFORE you leave. I will not track you down and tell you or remind you that you missed something; that is your responsibility. ALL missing work must be made up before the unit test that cover this work.
j. Cell Phones - While some use of technology will be utilized in this class, unless otherwise told, cell phones are NOT allowed to be out during class. Your phone will be taken up if you have it out without permission. There is a cell phone parking station at the front of the room that I highly suggest you use so that you will remove the temptation of looking at your phone when you shouldn’t. On test days, ALL CELL PHONES and SMART WATCHES must be placed in the appropriate pocket on the parking station until the end of the period.

RESOURCES
TEXTBOOK

TEACHING RESOURCES

Throughout this document, you will see side notes referring to CR#. These are curricular requirements set forth for this course by College Board.

CR1— Students and teachers have access to college-level resources including college-level textbooks and reference materials in print or electronic format.

Final Examination for Angelo State Dual Credit will be April 29-30, 2020 during scheduled class
Angelo State University Physics 1301 / 1101
Central High School AP Physics 1
Instructor: J. Dalrymple

All SAISD Advanced Academic policies will be strictly adhered to. Please make sure you are fully aware of all these policies.

COURSE SYLLABUS

UNIT 0. DATA ANALYSIS AND MATHEMATICAL REPRESENTATIONS
- Proper data collection and representation
- Algebraic representation of variables and isolation of variables
- Scientific Notation, system definition, problem solving and unit conversions
- Using Thermodynamics, Ideal Gas law, and Fluid Mechanics, apply the ideas of variable dependency and mathematical and unit representations.

UNIT 1. KINEMATICS [CR2a]
- Kinematics in one-dimension: constant velocity and uniform accelerated motion
- Vectors: vector components and resultant
- Kinematics in two-dimensions: projectile motion

UNIT 2. DYNAMICS [CR2b]
- Forces, types, and representation (FBD)
- Newton’s First, Second, and Third Laws
- Applications of Newton’s Second Law
- Friction
- Interacting objects: ropes and pulleys

UNIT 3. CIRCULAR MOTION AND GRAVITATION [CR2c]
- Uniform circular motion
- Dynamics of uniform circular motion
- Universal Law of Gravitation

UNIT 4. ENERGY [CR2f]
- Work & Power
- Mechanical Energy – Kinetic, Gravitational and Elastic
- Conservation of energy

UNIT 5. MOMENTUM [CR2e]
- Impulse
- Momentum
- Conservation of momentum
- Elastic and inelastic collisions

UNIT 6. SIMPLE HARMONIC MOTION [CR2d]
- Linear restoring forces and simple harmonic motion
- Simple harmonic motion graphs
- Simple pendulum
- Mass-spring systems

CR2a—The course design provides opportunities for students to develop understanding of the foundational principles of Kinematics.

CR2b—The course design provides opportunities for students to develop understanding of the foundational principles of Dynamics.

CR2c—The course design provides opportunities for students to develop understanding of the foundational principles of gravitation and circular motion.

CR2f—The course design provides opportunities for students to develop understanding of the foundational principle of energy.

CR2e—The course design provides opportunities for students to develop understanding of the foundational principles of linear momentum.

CR2d—The course design provides opportunities for students to develop understanding of the foundational principles of simple harmonic motion.
UNIT 7. ROTATIONAL MOTION [CR2g]
- Torque
- Center of mass
- Rotational kinematics
- Rotational dynamics and rotational inertia
- Rotational energy
- Angular momentum
- Conservation of angular momentum

UNIT 8. MECHANICAL WAVES [CR2j]
- Traveling waves
- Wave characteristics
- Sound
- Superposition
- Standing waves on a string
- Standing sound waves

UNIT 9. ELECTROSTATICS [CR2h]
- Electric charge and conservation of charge
- Electric force: Coulomb’s Law

UNIT 10. DC CIRCUITS [CR2i]
- Electric resistance
- Ohm’s Law
- DC circuits
- Series and parallel connections
- Kirchhoff’s Laws

LABORATORY INVESTIGATIONS

The AP Physics 1 course devotes over 25% of the time to laboratory investigations. [CR5] The laboratory component of the course allows the students to demonstrate the seven science practices through a variety of investigations in all of the foundational principles.

The students use guided-inquiry (GI) or open-inquiry (OI) in the design of their laboratory investigations. Some labs focus on investigating a physical phenomenon without having expectations of its outcomes. In other experiments, the student has an expectation of its outcome based on concepts constructed from prior experiences. In application experiments, the students use acquired physics principles to address practical problems. Students also investigate topic-related questions that are formulated through student-designed/selected procedures.

Students are expected to record their observations, data, and data analyses. Data analyses include identification of the sources and effects of experimental uncertainty, calculations, results and conclusions, and suggestions for further refinement of the experiment as appropriate. [CR7]
INSTRUCTIONAL ACTIVITIES

Throughout the course, the students engage in a variety of activities designed to build the students’ reasoning skills and deepen their conceptual understanding of physics principles. Students conduct activities and projects that enable them to connect the concepts learned in class to real-world applications. Examples of activities are described below.

1. REAL WORLD APPLICATION

ACTIVITY: Torque and Art [CR4]

DESCRIPTION:
This activity provides an opportunity for students to see the complexity in an everyday object. Students design and build a mobile that will demonstrate both translational and rotational equilibrium. They can use readily available materials in the classroom, their home, or they can use any other supplies as they wish. In their lab report, students are required to document the different stages of their design. Required elements include project procedure, design sketches, scaled blueprint, force diagrams, mathematical representations of translational and rotational equilibrium, and numerical calculations.

Learning Objective 3.F.1.1
The student is able to use representations of the relationship between force and torque.

Learning Objective 3.F.1.2
The student is able to compare the torques on an object caused by various forces.

Learning Objective 3.F.1.3
The student is able to estimate the torque on an object caused by various forces in comparison to other situations.

Learning Objective 3.F.1.4
The student is able to design an experiment and analyze data testing a question about torques in a balanced rigid system.

Learning Objective 3.F.1.5
The student is able to calculate torques on a two-dimensional system in static equilibrium, by examining a representation or model.

2. SCIENTIFIC ARGUMENTATION

In the course, students become familiar with the three components of scientific argumentation. The first element is the claim, which is the response to a prediction. A claim provides an explanation for why or how something happens in a laboratory investigation. The second component is the evidence, which supports the claim and consists of the analysis of the data collected during the investigation. The third component consists of questioning, in which students examine and defend one another’s claims. Students receive explicit instruction in posing meaningful questions that include questions of clarification, questions that probe assumptions, and questions that probe implications and consequences. As a result of the scientific argumentation process, students are able to revise their claims and make revisions as appropriate [CR8].

ACTIVITY 1: Formative Assessment: Changing Representations in Energy Description:

Students work in pairs to create exercises that involve translation from one representation to another. Some possible translations are:
- from a bar chart to a mathematical representation
- from a physical situation diagram to a bar chart
ACTIVITY 2: Real World Physics Solutions Description:
In order for students to become scientifically literate citizens, students are required to use their knowledge of physics while looking at a real world problem. [CR4]

Students may pick one of the following solutions:
- Students will pick a Hollywood movie and will point out three (or more) instances of bad physics. They will present this information to the class, describing the inaccuracies both qualitatively and quantitatively.
- Students will research a thrill ride at an amusement park. They will present information to the class on the safety features of the ride, and why they are in place.
- Students will present information to the class on noise pollution, and its danger to both human and animal life. They will also propose solutions to noise pollution problems.
- Students will go to the insurance institute of highway safety website (iihs.org) and will look at the safest cars in a crash. They will present information as to why these cars are safer and how the safety features keep people safe.

Student Disability Services

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 at www.angelo.edu/ADA. The employee charged with the responsibility of reviewing and authorizing accommodation requests is:
Title IX

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](http://www.angelo.edu/incident-form)
- Face to Face: Mayer Administration Building, Room 210
- Phone: 325-942-2022
- Email: michelle.boone@angelo.edu

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).
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.

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.

**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 Statement of Academic Integrity

**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 via Turnitin. Resources to help you understand this policy better are available at the ASU Writing Center.

**Copyright Policy**

Students officially enrolled in this course should make only one printed copy of the given articles and/or chapters. You are expressly prohibited from distributing or reproducing any portion of course readings in printed or electronic form without written permission from the copyright holders or publishers.

All students are required to follow the policies and procedures presented in these documents:

- Angelo State University Student Handbook
- Angelo State University Catalog
Central High School AP/DC Physics 1
Instructor: J. Dalrymple

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THIS IS TO CERTIFY THAT I/WE HAVE RECEIVED A COPY OF THE COURSE SYLLABUS AND THE
REQUIREMENTS FOR AP/DC PHYSICS 1. I have read the grading policies, academic honesty
policy, and classroom expectations.

STUDENT SIGNATURE: ________________________________

STUDENT’S PRINTED NAME: _____________________________PERIOD:_______

STUDENT EMAIL ADDRESS: ________________________________

PARENT/GUARDIAN NAME: __________________________________________________________________________

PARENT/GUARDIAN SIGNATURE: ________________________________________________________________

PARENT E-MAIL ADDRESS: ________________________________________________________________

Parent Cell Phone(s): ___________________________ Parent Home Phone(s): _______________________

Student extracurricular activities and outside work: