

AP Physics 2
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Room A-208

Welcome to AP Physics 2

I am so excited to have you in class this year. Please keep this syllabus handy to answer any questions that come up about physics class this year. I am looking forward to a great year with you!!

Course Overview:

This AP Physics 2 Course has been designed using College Board recommendations as a course equivalent to a second semester algebra-based college-level physics class. At the end of the course, students will take the AP Physics 2 Exam, which will test their knowledge of both the concepts taught in the classroom and their use of the correct formulas to solve problems students are unfamiliar with. The following are Big Ideas will be explored during this course.

Big Idea 1 – Objects and systems have properties such as mass and charge. Systems may have internal structure.

Big Idea 2 – Fields existing in space can be used to explain interactions.

Big Idea 3 – The interactions of an object with other objects can be described by forces.

Big Idea 4 – Interactions between systems can result in changes in those systems.

Big Idea 5 – Changes that occur as a result of interactions are constrained by conservation laws.

Big Idea 6 – Waves can transfer energy and momentum from one location to another without the permanent transfer of mass and serve as a mathematical model for the description of other phenomena.

Big Idea 7: The mathematics of probability can be used to describe the behavior of complex systems and to interpret the behavior of quantum mechanical systems.



Text book

There will be a limited class set of physics books to be used as reference. You will have access to the online IPAD eBook Titled *Physics 7th Edition*, by Giancoli, copyright 2014. You will also be registered to access the book's online resources at masteringphysics.com.

Laboratory Procedures

This course requires that 25 percent of the instructional time will be spent in hands-on laboratory work, with an emphasis on inquiry-based investigations that provide students with opportunities to apply the science practices. During the term, we will be performing numerous labs and hands-on activities and projects to introduce as well as reinforce concepts. Labs are an integral part of science and participation by each student is essential for success. Participation includes working cooperatively with your lab partners, following all safety rules, using time wisely, and cleaning up the work area upon completion of the assignment. Student safety is of utmost importance.

- 1) All students will be required to get a parent's signature on a safety contract prior to participation in any labs. If the safety contract is not signed prior to the first lab they will receive a grade of zero for that lab. This will be cosigned by the parent or guardian. **A lab safety contract signed by a parent or guardian will be required and will count as your first lab grade**
- 2) All students must pass a safety quiz with a grade of 100 before they are allowed to participate in labs.

AP Physics 2 Exam Review
February 25, 2017

AP Physics 2 Benchmark Dates
TBA

- 3) Any type of roughhousing, horseplay, or other forms of unsafe behavior while conducting a lab will result in a zero for the assignment and an immediate referral to the office.

Three websites that will be vital for your success this year:

- (1) Skyward: <http://www.mansfieldisd.org/skyward.htm> This is our grade book system. Your grade should be monitored frequently - there should be **no surprises!!!**
- (2) Our class website: We will be using Google classroom. **Students are strongly encouraged to have their iPad or a laptop every day. Cell phones will not be allowed to be used as a substitute!**
- (3) Bozeman Science - <http://www.bozemanscience.com/ap-physics-1-video-list> This website contains video lessons we will utilize. It has an enormous amount of information.
- (4) Khan Academy- <https://www.khanacademy.org/science/physics>

PLEASE UTILIZE THESE RESOURCES!!!

Classroom Rules

1. Show respect for other's opinions and personal space
2. Respect school and personal property
3. Follow instructions from teacher
4. Come to class prepared
5. Be on task at all times

Students will not be allowed to enter the classroom with food or drinks that do not have a spill tight cap. Again any tardies accrued due to non-compliance of this rule is the student's responsibility.

Electronics – All electronics, including but not limited to cell phones, Ipods and other mp3 players will NOT be allowed in class. Penalties for violating this policy might include taking the item up or a referral. Confiscated items will incur a \$15 fine per district policy.

Cell Phones - Cell phones are ***not to be seen in any Frontier classroom. Keep them- out of site!***

Discipline

- 1st offense- - warning and parent contact
- 2nd offense- - teacher hold it for class period and parent contact
- 3rd offense- (and beyond) teacher take up and turn phone into AP. Student pays \$15 fine. AP contact parent

ANY RULES NOT ADDRESSED IN THIS LETTER WILL BE FOLLOWED IN THE CLASSROOM AS PER THE HANDBOOK GUIDELINES.

Absences/ Tardies

See student handbook for district attendance policies. It is **YOUR** responsibility to get any missed information, which includes but is not limited to warm-ups, notes, and assignments. If you miss a test or quiz, you will have one class day from the date the assessment was administered to make it up; otherwise, it will remain a zero. **Being absent on a review**

day does not entitle you miss the test or quiz the following class. It is imperative you attend tutorials if you are absent! All tardies after 3 will result in a referral and the assistant principal will determine the appropriate course of action. Be aware of the following statement in the student handbook: **Excessive tardies may result in an alternative placement. Five tardies or more within a 6-month period may result in truancy charges being filed with the juvenile courts. (TEC 25.095)*

NOTE: • Tardies are cumulative per semester

- “No show” to D Hall will result in additional disciplinary action which may include AC Placement
- Two tardies in one day = may be placed in AC for one day

Grading Rubric

Tests/Projects:	50%
Labs:	30%
Daily/Homework/Quizzes:	20%

The semester grade will be calculated as follows:

$$(1^{\text{st}} \text{ 6-wks} \cdot 26.6\%) + (2^{\text{nd}} \text{ 6-wks} \cdot 26.6\%) + (3^{\text{rd}} \text{ 6-wks} \cdot 26.6\%) + (\text{Semester Exam} \cdot 20\%) = \text{Semester Grade}$$

- Course credit is awarded with a grade of 70 or higher. If a student fails either semester of any MISD yearlong course and passes the opposite semester with a high enough grade for an overall average of 70 for the full course, a full credit will be granted. In this situation, for averaging to occur, the courses must have been taken during the same school year and in consecutive semesters.

SEMESTER EXAMS- Each semester, specific exam schedules are designated for MISD high schools and as related to dual credit courses. These schedules must be followed. Neither mid-term nor final exams are given early. If a student is absent on the day of an exam he/she will take the exam at a school designated time and date. A student is expected to contact the course teacher to schedule a make-up time for a **first semester exam** missed because of student absence and the school counseling department to schedule a make-up time for any **second semester exam** missed because of student absence.

STUDENT WORK- The amount of time to complete assignments may vary with each student’s study habits, academic skills and selected course load. This includes major projects such as research reports, book reports, major essays, and other assignments teachers designate as major projects.

Retesting

Test retakes for students receiving a grade under a 70 on all major tests within six weeks will be offered when the following requirements are met. A student will receive the grade they make on the retest up to a 70 even if they score higher than a 70 on the retest.

1. In order to be eligible for a retest, a student must have received a grade below a 70.
2. The student **must come in to review the previously failed test** to better prepare for the retest. Tutorials can occur during advisory or after school as necessary.
3. Test retakes will be given only on Thursday afternoons unless otherwise scheduled by the student.
4. Retests must occur within two weeks of the original test and **MUST** occur before the end of the six weeks grading period!

SEMESTER AND FINAL EXAMS ARE NOT ELIGIBLE FOR RETAKES.

Tutorials

There will be tutorials available Monday– Thursday from 2:30-3:20. All retests will be given on the Thursday afternoons. All retests and tutorials will be held in room A208.

Late Work

Late work will be accepted as per district policy. For example, on day, the due date the assignment receives full credit. One A/B day late the assignment will receive 30pts deduction. Late work will not be accepted later than one A/B day late.

If a student is absent, all school policies will be followed for makeup work. **IT IS THE STUDENT'S RESPONSIBILITY TO TURN IN ANY LATE WORK BEFORE OR AFTER CLASS TO RECEIVE APPROPRIATE CREDIT.**

POSTING STUDENT WORK

Student grades will be posted in Skyward parent portal within five business days for daily grades and major grades. Special consideration is given to major projects, including lengthy writing assignments.

WEIGHTED CREDIT

Per MISD Board Policy EIC (LOCAL):

- The District uses a weighted numerical grading system. In calculating GPA, ten points (per semester) shall be added to a student's average in Advanced Placement (AP), Pre-AP, Academic Decathlon, and courses considered to be District-approved college level dual credit courses. All other courses shall not receive weighted points for completion.
- No weighted credit point shall be added for grades lower than 70.
- Weighted grading shall be reflected in the student's GPA and not numerically per course on either the student's report card or transcript.

UIL ELIGIBILITY ("No Pass/No Play")

- Semester grades are computed by averaging the numerical grades recorded for each of the three six week reporting periods.
- Each six week grading period will stand alone for eligibility purposes.
- A student who is declared academically ineligible after a six week grading period will be able to regain eligibility if all of the student's grade averages are 70% or higher at the subsequent 3-week grade reporting period.
- See MISD Board Policy FM (LOCAL) – Exempt Courses.

Academic Dishonesty

Cheating and plagiarism will not be tolerated. Assignments that use the internet as a source must include appropriate citation/credit. Lab discussion and conclusions **MUST** be in your own words. District policies as outlined in the student handbooks will be followed.

Supply List

1. Pencils
2. IPAD/school issued laptop (will use frequently for lab activities)
3. A scientific calculator; graphing is not necessary but encouraged
4. A protractor
5. Box of tissue

Miscellaneous

Get your sleep at home and not in my class. No one will be permitted to go to the bathroom during instructional time unless it is an emergency. Unless given specific permission you may not have on earphones/buds. I will confiscate them until the end of the period. No food or drink other than bottled water. During labs you may not have bottled water.

Communication

Parental involvement is key to a student's success, and therefore it is extremely important that I have some way to contact you. The best and easiest form of communication is via e-mail or telephone call. If you need to reach me, please call 682-

314-1600 or email at annettegonzales@misdmail.org. Please take a minute to provide parent contact information by scanning the QR code below or using this link <http://goo.gl/forms/WFUJ8rXIRW>



Unit	Big Ideas and Learning Objectives by grading period
Grading Periods 1-3	
<i>Electrostatics</i>	<ul style="list-style-type: none"> • Electric force (Coulomb’s Law) • Electric field • Electric potential <p style="text-align: center;">Benchmark Exam</p> <p>Big Ideas 1, 2, 3, 4, 5</p>
<i>Electric Circuits</i>	<ul style="list-style-type: none"> • Current • Potential Difference • Electric resistance • Ohm’s Law • DC circuits with resistors only • Kirchhoff’s Laws • Series, parallel, and series-parallel circuits • Capacitance • DC circuits with resistors and capacitors (RC circuits; steady state) <p style="text-align: center;">Benchmark Exam</p> <p>Big Ideas 1, 4, 5</p>
<i>Magnetism and Electromagnetic Induction</i>	<ul style="list-style-type: none"> • Magnetic field • Magnetic force on a charged particle • Magnetic force on a current-carrying wire • Magnetic flux • Electromagnetic induction: Faraday’s Law • Lenz’s Law • Motional EMF <p style="text-align: center;">Benchmark Exam</p> <p>Big Ideas 1, 2, 3, 4</p>
Grading Period 4	
<i>Thermodynamics</i>	<ul style="list-style-type: none"> • Kinetic theory of gases • Ideal gases • First law of thermodynamics • Thermodynamic processes and PV diagrams • Heat engines • Carnot cycle • Efficiency • Second law of thermodynamics: entropy

	Benchmark Exam
	Big Ideas 1, 4, 5, 7
<i>Fluids</i>	<ul style="list-style-type: none"> • Fluid Statics • Fluid Dynamics • Density • Pressure: atmospheric and fluid pressure • Pascal's principle • Buoyant force • Archimedes' principle • Flow rate • Continuity equation • Bernoulli's principle <p style="text-align: center;">Benchmark Exam</p> <p>Big Ideas 1, 3, 5</p>
Grading Period 4	
<i>Geometric and Physical Optics</i>	<ul style="list-style-type: none"> • Reflection • Image formation by flat and curved mirrors • Refraction and Snell's Law • Index of refraction • Image formation by thin lenses • Interference and diffraction • Superposition • Double slit, single slit, and diffraction grating interference • Thin film interference <p style="text-align: center;">Benchmark Exam</p> <p>Big Idea 6</p>
<i>Quantum Physics, Atomic and Nuclear Physics</i>	<ul style="list-style-type: none"> • Atoms, atomic mass, mass number, and isotopes • Atomic energy levels; atomic energy states • Absorption and emission spectra • Radiation • Models of light: wave and particle • Photoelectric effect • DeBroglie wavelength • Wave properties of matter • Wave function graphs • Mass-energy equivalence • Radioactive decay: alpha, beta and gamma decay • Half life • Conservation of nucleon number: fission and fusion • Nuclear Reactions <p style="text-align: center;">Benchmark Exam</p> <p>Big Ideas 1, 3, 4, 5, 6, 7</p>