Physics is “The mystery of being!”

"We each exist for but a short time, and in that time explore but a small part of the whole universe. But humans are a curious species. We wonder, we seek answers. Living in this vast world that is by turns kind and cruel, and gazing at the immense heavens above, people have always asked a multitude of questions: How does the universe behave? What is the nature of reality? Where did all this come from? Did the universe need a creator? Most of us do not spend most of our time worrying about these questions, but almost all of us worry about them some of the time. Why is there something rather than nothing? Why do we exist? Why this particular set of laws and not some other"

Steven Hawking
include electricity, magnetism, electromagnetism, wave motion, acoustics and optics with emphasis on problem solving. Laboratory experiments supporting the topics are required. (3 Lec. 3 Lab.)

**Course Description (Lab):** Laboratory experiments supporting theoretical principles presented in PHYS 2426 involving the principles of electricity and magnetism, including circuits, electromagnetism, waves, sound, light, and optics; experimental design, data collection and analysis, and preparation of laboratory reports.

**Course Pre-requisites (Lecture):** PHYS 2425. MATH 2414 credit or concurrent enrollment in MATH 2414. DREA 0093 or English as a Second Language (ESOL) 0044 or have met the Texas Success Initiative (TSI) standard in Reading

**Course Pre-requisites (Lab):** Co-requisite: PHYS 2426—University Physics II

**WCEM Statement:** In the event of severe weather conditions, please listen to local radio or television stations for information concerning official closing of Mountain View College facilities. You can also call the information line at 214.860.8680, or check for updates on this web site. Decisions for evening classes will be made by 4:00 pm.
http://www.mountainviewcollege.edu/1weather.aspx

**Course Material:**

**Course Materials/Supplies Needed:** You are required to purchase the access key for the following text book. You can use any Calculus based physics textbook for your own reading.
You also have access to free university physics textbook on openstax.org. at no cost-
You can download the textbook or view it online for free.

**Lab Experiments:** will be posted on ecampus.
**Core Objectives:**

**Critical Thinking Skills** - to include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information

**Communication Skills** - to include effective development, interpretation and expression of ideas through written, oral and visual communication

**Empirical and Quantitative Skills** - to include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions

**Teamwork** - to include the ability to consider different points of view and to work effectively with others to support a shared purpose or goal

**Assignment and measurement for the core objectives:**

**Critical thinking:** Students will work on a project throughout the semester. They will keep a journal of the steps and procedures that they follow. They will use these journals to create a final report on their product. The AACU Critical Thinking VALUE Rubric will be used for the evaluation of the assignment.

**Empirical and quantitative skills:** Students will use physics concepts, mathematical equations, graphs, and calculations to create the assigned project. They will modify and troubleshoot their project in order to reach a presentable and workable product. The final reports will reflect the students’ experiences of the course. The evaluation will be based on a modified version of the AACU Quantitative Literacy VALUE Rubric; modification of the rubric will reflect the nature of the assignment.

**Communication:** Students will use PowerPoint software to present their project to their classmates. Internet-based students will record their presentations and will post them on a designated media service. The AACU Written Communication Rubric and Visual Rubric will be used.

**Teamwork:** Students will work in groups throughout the semester. Each student will evaluate her or his own work by explaining how she or he contributed to team meetings, facilitated the contributions of team members, and performed work individually outside of team meetings. The AACU Teamwork VALUE Rubric will be adopted and modified for the evaluation.

**Student Learning Outcomes (Lecture)**
Upon successful completion of this course, students will:
1. Articulate the fundamental concepts of electricity and electromagnetism, including
electrostatic potential energy, electrostatic potential, potential difference, magnetic field, induction, and Maxwell’s Laws.

2. State the general nature of electrical forces and electrical charges, and their relationship to electrical current.

3. Solve problems involving the inter-relationship of electrical charges, electrical forces, and electrical fields.

4. Apply Kirchhoff’s Laws to analysis of circuits with potential sources, capacitance, and Resistance, including parallel and series capacitance and resistance.

5. Calculate the force on a charged particle between the plates of a parallel-plate capacitor.

6. Apply Ohm’s law to the solution of problems.

7. Describe the effects of static charge on nearby materials in terms of Coulomb’s Law.

8. Use Faraday’s and Lenz’s laws to find the electromotive forces.

9. Describe the components of a wave and relate those components to mechanical Vibrations, sound, and decibel level.

10. Articulate the principles of reflection, refraction, diffraction, interference and superposition of waves.

11. Solve real-world problems involving optics, lenses, and mirrors.

**Students Learning Outcomes (Lab):**

Upon successful completion of this course, students will:

1. Prepare laboratory reports that clearly communicate experimental information in a logical and scientific manner.

2. Conduct basic laboratory experiments involving electricity and magnetism.

3. Relate physical observations and measurements involving electricity and magnetism to theoretical principles.

4. Evaluate the accuracy of physical measurements and the potential sources of error in the measurements.

5. Design fundamental experiments involving principles of electricity and magnetism.

6. Identify appropriate sources of information for conducting laboratory experiments Involving electricity and magnetism.

**Evaluation Procedures:**

- Homework on mastering 25%
- HW on paper 10%
- All Labs and Activities: 25%
- Project: 10%
- Exams: 30%
- ♥Extra credit 0-10 = extra curriculum activities.
Grading Scale:
A=100 - 90
C=79 - 70
D=69 - 60
F=59 - below

Instructor Attendance Policy:
Students are expected to attend all classes. Students have the responsibility to attend class and to consult with the instructor when an absence occurs. If for some reason you must leave class early, you should inform the instructor prior to the start of class of your reason for leaving early.

Students must begin attendance in all classes of enrollment. No exceptions. Financial Aid will not be granted to students who have been certified as not attending, by the certification date. For this lecture course, your physical participation in class, on or before the certification date will allow you to receive credit for FA purposes. For certification dates, check with the division or FAO for further information. Students, who are not certified as beginning class, are responsible for any payments due as a result of non-certification, to include the dropping of courses.

Late Work Policy:
1-All the due dates will be posted on ecampus and Mastering Physics(MP).
2-You can make up one lab session without penalty. You will do the makeup lab during the last week of the semester (week 15.)
3- For HW assignments on MP you will be penalized 20% per late day.

Makeup Exam Policy:
There will be no late exam – In rare occasion you will be able to make up the exam only if you present the required and valid documentation.

Electronic Devices:
You will be able to use ipads and computer in the classroom and in the labs. You are allowed to use your own electronic devices in the physics classroom and laboratory only for physics assignments.

Responsibility of College Learner:
As a student in this college course, it is your responsibility to have necessary course materials and to locate a computer with reliable internet access. Computer and internet issues/problems not associated with the eCampus and Mastering websites, technical issues or downtime will not be considered exceptions to the late work and makeup exam policies. It is also your responsibility to have the necessary course materials to complete the assignments. You will not receive extensions on assignments or tests due
to financial issues, not receiving mastering physics by the start of class, or personal computer issues. Please plan ahead and do not wait until the last minute to complete assignments or tests.

Certification Procedures:
Students must begin attendance in all classes of enrollment. No exceptions. Financial Aid will not be granted to students who have been certified as not attending, by the certification date. For this lecture course, your physical participation in class, on or before the certification date will allow you to receive credit for FA purposes. For certification dates, check with the division or FAO for further information. Students, who are not certified as beginning class, are responsible for any payments due as a result of non-certification, to include the dropping of courses.

Electronic Devices:
You will be able to use ipads and computer in the classroom and in the labs. You are allowed to use your own electronic devices in the physics area only for physics assignments.

Course Calendar:
All the due dates for various assignments such as homework, Labs, Projects, Exams, and etc. Are listed on ecampus and mastering astronomy website is their corresponding folders.
The last day to certify the class is Monday January 30th.
The withdraw date for this class is Wednesday April 12th. I strongly encourage you to contact me before you drop. I may be able to help you to help you to complete the course.
School calendar has been posted is on ecmapus.

Institution Policies:
Please visit https://www.mountainviewcollege.edu/Academics/Documents/Institutional%20Policies.pdf for a complete list of institutional policies (Stop Before You Drop; Withdrawal Policy; Repeating a Course; Financial Aid; Academic Honesty; Americans with Disabilities Act Statement; Harassment, Discrimination and Sexual Misconduct, Religious Holidays; and Campus Emergency Operation Plan and Contingency Plan.)

Spring Academic Semester, 2019

January 2 (W) College buildings and offices open
January 14 (M) Faculty Reports
January 21 (M) Dr. Martin Luther King, Jr. Holiday
January 22 (T) Classes Begin
February 4 (M) 12th Class Day
<table>
<thead>
<tr>
<th>Date Range</th>
<th>Event Description</th>
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<tr>
<td>February 28 - March 1 (R-F)</td>
<td>Professional Development Days -- Thursday and Friday day classes will not meet. Friday evening, Saturday and Sunday classes will meet.</td>
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<tr>
<td>March 4 (M)</td>
<td>Classes Resume</td>
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<tr>
<td>March 11-15 (M-F)</td>
<td>Spring Break - College buildings and offices will be closed for the week.</td>
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<tr>
<td>March 18 (M)</td>
<td>Classes Resume</td>
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<tr>
<td>April 17 (W)</td>
<td>Last Day to Withdraw*</td>
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<tr>
<td>April 19 (F)</td>
<td>Holiday</td>
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<tr>
<td>April 22 (M)</td>
<td>Classes Resume</td>
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<td>May 13-16 (M-R)</td>
<td>Final Exams</td>
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<td>May 16 (R)</td>
<td>Semester Ends</td>
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<tr>
<td>May 20 (M)</td>
<td>Last Day for faculty to submit grades electronically through eConnect to the Registrar's Office.</td>
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