Course Information:
Students in AP Physics C: Mechanics will be preparing for the Advanced Placement Physics C exam in Mechanics. The curriculum is set by The College Board, and you can learn more about it at www.collegeboard.com; essentially it is the internationally standardized curriculum for calculus-based Mechanics. Topics include: motion, forces, momentum, energy, rotation, torque, oscillation, and gravity. About half of these topics were covered at an introductory level in Physics 1 and Physics 2.

Physics 2 (or the equivalent) and experience with calculus (concurrent enrollment is fine) are strongly recommended prerequisites of this course.

Text:

Course Website:
After logging in to Schoology and navigating to the course website, you will see the ‘materials’ page. ‘Materials’ shows a list of folders containing resources for each unit thus far. The ‘overview’ page for each unit shows assignments and due dates, and the ‘agendas’ page includes highlights from each day of class. Other resources in each folder include lab instructions and problem set solutions.

Student Evaluation: Grades in this course are only partly an indication of subject mastery. True mastery of this content may require studying physics many times at different levels and from different perspectives. Rather than mastery, a high grade in this course indicates readiness to continue studying physics at the next level. As a result, even though most of the grade will reflect physics knowledge, grades in my class also include some factors related to study skills, including credit for merely completing problem sets and penalties for late assignments. Students with low grades should not conclude that they are unable to study physics; rather, they are not ready at this time to continue on in physics, but students can become ready by, for example, improving study habits and math skills.

Grades in this class should also give students a sense of how they are likely to perform on the AP test; to a certain extent the grade does this well, but not without exceptions. Most students who earn an A will also score a 4 or 5 on the AP test, and most students who earn a B will score a 3 or 4. However, students’ performances vary greatly, especially on a single exam like the AP, so course grades are only general indicators of likely AP exam scores.
The grades themselves are calculated from various types of assessments: tests (55%), labs (25%), and problem sets (20%).

The **lab activities** are important both as an opportunity to practice applying concepts and to put them in an actual (hands-on) physical context. **Lab reports** make up 25% of the final grade, based in part on the percentage of time that the College Board suggests we devote to lab investigations. I may need to postpone some lab activities in order to introduce enough concepts before the AP test in May; if so, they will be completed after the AP exam.

The **problem sets** are critical to the course because we build our understanding of physics concepts by exploring how they are applied in unfamiliar and revealing scenarios. These assignments make up 20% of the final grade, a high enough percentage to emphasize their fundamental importance to the course but low enough to recognize that these are opportunities for practice.

The **tests** make up the remaining 55% of the course grade. Performance on the unit tests will most clearly indicate the final level of understanding as well as your ability to demonstrate that understanding in an AP-exam-like context. Because students each learn at different rates, some students will need more than is available under the schedule required by the College Board, so I will offer a retake test for each unit – without penalty (only the highest score will be kept), which will be given approximately one week after the first version of the unit test is returned.

I do not offer any **extra credit** assignments of any kind; the core curriculum is challenging enough, and any additional time and energy should be devoted to working toward mastery of it. However, I do offer **curves**, or **bonus points**, added equally to everyone’s score on tests, and these curves can result in a test score of over 100%. I will set the amount of the bonus based on the performance of the current and previous students on this and similar tests (to gauge the difficulty of the test), as well as on the curve applied by the College Board to the AP exam results. The curves will allow students to leverage high achievement in one unit (and a resulting score of over 100%) to make up for lower scores in other units; they can use their strengths to make up for weaknesses in other areas.

**Late assignments** will be penalized by an amount depending on the type of assignment and on how late they are. Most late assignments will be worth a maximum of 70% of their original value, in recognition that engaging in the learning process is important whenever it occurs. However, the educational value of any assignment is diminished when it is completed outside the intended context. Assignments turned in after important results are released, such as other classmates’ graded assignments, may have their scores lowered further; for example, late lab reports cannot earn a higher score than the lowest score awarded to an on-time paper. This policy is designed to remove the incentive in increase your scores by turning work in late.

**Skyward:**

I will send periodic notes via Skyward; please update your email address on the Skyward system in order to receive them.
Skyward will list any assignment without a grade as ‘missing’ after the due date, but I may not have finished grading the assignment. I will mark actual missing work with a score of zero; these are the assignments that are truly missing.

**Extra Help and Tutoring:**

I am available for extra help by appointment, but students are free to look for me during the 15 minutes before and after school; I will accommodate ‘walk-in’ questions whenever I can.

We are fortunate to have MIHS Physics Teachers available for free physics tutoring: Brian Hampsch tutors for physics on Friday mornings from 6:50 to 7:50.

**Bellevue College:** Students taking this course have the option to receive 6 quarter credits of Physics 114 at Bellevue College, for an enrollment cost of $240. I will provide details about this program in the Spring.

Physics 114 is an algebra-based mechanics course; even though AP Physics C uses calculus, Bellevue College does not offer credit for their calculus-based physics course through high schools.

Even though the courses do not completely match, the Bellevue College credits are relatively inexpensive and may be a good option, especially for students who have difficulty with high stakes tests, like the AP exam.

**Physics Next Year?** For students who are not graduating this year, we have a second AP physics class, AP Physics 2, which is an algebra-based curriculum covering a completely different set of topics than AP Physics C, including: electricity, magnetism, thermodynamics, optics, fluids, and atoms. Students who enroll in AP Physics 2 after taking AP Physics C: Mechanics can also co-enroll in an independent study course in Electricity and Magnetism with calculus. This independent course is designed to prepare students for yet another AP exam, AP Physics C: Electricity and Magnetism. (However, this independent study course is not an official “AP” class, because it is not audited and approved by the College Board.)

**Schools Foundation:** This course would not have been possible without funds from the Schools Foundation for textbooks and laboratory equipment. I thank the foundation and this community which supports it.