**Welcome!**

This is an introductory Physics course with hands-on labs (2020-21 Labs will be modified due to Covid-19 concerns). The course covers a standard U.S. Physics curriculum, including classical Newtonian mechanics, rotational motion, mechanical waves and sound, periodic motion, electrostatics, and DC circuits. This is not calculus-based Physics. Prerequisites: Completed Algebra 1 and recommended concurrent Geometry.

AP Physics 1 students will do targeted homework problems and slightly more in-depth lab reports to prepare for the AP exam in the Spring if they choose to take it.

Technical requirements: Access to a computer with Internet connection, and a $15-20 scientific calculator such as a TI-30Xa.

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Instructor: Kris Johanson, M.S. [kjohanson@san.rr.com](mailto:kjohanson@san.rr.com). I am available throughout the week to answer questions on the homework topics.

Textbook: 1) BJU *Physics*, 3rd ed. and 2) Princeton Review *Cracking the AP Physics 1 Exam*, latest edition. You don’t need to buy a lab manual. I will provide lab protocols as needed throughout the course.

**Course Outline Labs**

Unit 1 – Motion in 1D Cart-Ramp lab I: velocity

Unit 2 – Motion in 1D (cont.) Cart-Ramp lab II: acceleration

Unit 3 – Vectors Surveying lab

Unit 4 – Motion in 2D Projectile motion lab

Unit 5 – Motion in 2D (cont.) Open

Unit 6 – Newton’s Laws Cart-Ramp: mass & acceleration

Unit 7 – Applying Newton’s laws Machines lab

Unit 8 – Rotational Motion Bridge Design lab

Unit 9 – Rotational Motion (cont.) Gravity & Orbits lab

Unit 10 – Work and Energy Energy Skate Park lab

Unit 11 – Conservation of Energy Wind Turbine design lab

Unit 12 – Momentum Collision lab

Unit 13 – Periodic Motion Spring-Mass lab: Hooke’s law

Unit 14 – Mechanical Waves & Sound Waves lab

Unit 15 – Electric Charge and Coulomb’s law Braun Electroscope lab

Unit 16 – Electric Fields and Capacitors Coulomb’s Law lab

Unit 17 – DC Circuits Circuits lab

Unit 18 – DC Circuits (cont.) Solar Power design lab

**Homework**

Weekly homework will be assigned from each chapter. Typical homework for this class consists of standard end-of-chapter questions and short Internet research assignments. I go over the homework questions carefully on the Internet to provide additional support (included in the course). Students should read the chapter ahead of time and be prepared to take notes and participate in class discussion. Estimated homework and study time for Physics is at least 5 hours per week.

**Teaching Pedagogy** (Read the Covid-19 update on the homepage)

The course uses a combination of hands-on labs, classroom instruction, and customized Internet homework videos. During classes there is typically much lively discussion, and class cohesiveness and positive student-student interaction is encouraged over the course of the year.

**Exams**

There will be a take-home style, open-book, midterm and final exam, covering material learned that semester. The exams are not burdensome, and you will be given a week to complete each one. Emphasis is on applications, not on rote memorization.

**Course Requirements**

* Attend the classes (including both in-person and webinar sessions). Be on time.
* Take notes and ask relevant questions during the lectures
* Participate in the class labs
* Turn in your homework assignments by the due date
* Don’t fall behind in your work. Do not procrastinate!

**Grading Policy**

Your work will be graded on a point system. Your total points earned will be divided by total points possible and converted to a percentage as shown:

Grading Scale Grading Elements

above 90% A: advanced Class participation 25%

89 – 80% B: proficient Labs 25%

79 – 70% C: basic Weekly homework 25%

69 – 60% D: below basic Midterm & Final 25%

Below 60% F: far below basic Total 100%

Timely completion of the required assignments is a basic requirement. Assignments turned in early will receive a “bonus incentive”. Assignments turned in later than the due date will receive a reduced grade.

**Progress Reporting**

Attendance, homework, lab reports, and teacher comments are reported in Canvas, and parents can access this information any time. Student progress reports are emailed to parents at the end of each semester.