**Instructor** Bruce Palmquist SCI 107C/SCCN 118B

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**Office Hours** Monday from 9 to 11 am, Thursday & Friday from 1:30 to 3 pm. Other times by appointment.

 Online tutoring Monday from 10-11 am and Friday from 1:30-2:30 pm unless noted.

**Official Course Description:** Topics in physics including kinematics and dynamics. Analyzing physical systems using algebra and trigonometry.

**About this course**

While this is an online course, you won’t just be reading and taking quizzes. You’ll also be doing online simulations, learning problem solving skills, and working on labs. I encourage you to be an active participant in this course. Hopefully, you’ll be able to participate in the online tutoring and office hours where the instructor will go over problem solving and key concepts. All times on this syllabus are for the Pacific Time Zone.

**Pre/Co-requisite:** Eligible for MATH 172 or completion of PHYS 110 or concurrent enrollment in PHYS 110.

## Learning Objectives

1. To demonstrate knowledge and understanding of the fundamental concepts in mechanics such as displacement, velocity, acceleration, Newton’s Laws of motion, force applications, and circular motion (chapters 1-6).
2. To demonstrate an ability to effectively apply this knowledge in solving problems.
3. To demonstrate enhanced quantitative reasoning skills and mathematical analysis skills.
4. Demonstrate through written communication proficiency and prudence in the use of the scientific method including designing labs, making hypotheses, and making inferences.

**Required Resource Materials**

1. College Physics by Urone and Hinrichs. This is an open source text available at <https://openstax.org/details/college-physics>. You may read this book online, download a free pdf version, get an ebook, or buy a low-cost printed copy. You should download the low-res pdf version of the book so you have it available in the event of an internet outage.

2. Expert TA, a low-cost, fully interactive online learning system. Enter the code UST49WA-4094E2-1G7 at <https://www.theexpertta.com/registration/>. For registration help, go to <http://theexpertta.com/support/student-support/>.

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| **Grading Scheme** |  |  |
| *Assignment Categories* | *Objectives* | *Weight* |
| Expert TA Homework (HW) | 1, 2, 3 | 14 % |
| Expert TA Practicing the Concepts (Practice) | 1, 2, 3 | 12% |
| Expert TA Quizzes | 1, 2, 3 | 14 % |
| Laboratory Activities | 1, 4 | 15% |
| Discussions | 1, 4 | 10% |
| Midterm Exam (**Sunday 2/5/17 from 6:00 to 8:00 p.m**) | 1, 2, 3 | 15% |
| Final Exam (**Sunday 3/12/17 from 6:00 to 8:00 p.m**) | 1, 2, 3 | 20% |
| **Total** |  | 100% |

**Final Grades** for the course will be calculated as follows:

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| --- | --- | --- | --- | --- | --- | --- | --- |
| A | 92 - 100% | A- | 90 - 91% | B+ | 88 - 89% | B | 82 - 87% |
| B- | 80 - 81% | C+ | 78 - 79% | C | 72 - 77% | C- | 70 - 71% |
| D+ | 68 - 69% | D | 62 - 67% | D- | 60 - 61% | F | <60% |

**Collaboration**: Students tend to feel isolated in an online class. In this class, labs will be done in collaborative groups set up by the instructor. There will also be interactive discussions about physics concepts. Please contact the instructor or TA if you are confused or feeling lost in class.

**Tentative Content Schedule for Winter 2017 (See Canvas for specifics)**

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| --- | --- | --- | --- | --- | --- | --- |
| M | T | W | Th | F | Sa | Su |
| 1/2/17 | 1/3 | ETA Practice 1Syllabus QuizDB1: Intro Self | 1/5 | ETA HW 1Read Sect. 1.1-1.4DB1: Responses | 1/7 | ETA Quiz 1 on ch. 1 |
| Lab 1a: Pre-lab quiz | 1/10 | ETA Practice 2Read Sect. 2.1-2.3DB2: 1st Post | 1/12 | ETA HW 2Read Sect. 2.4-2.6DB2: Responses | 1/14 | ETA Quiz 2 on ch. 2 |
| Lab 2: 1-D Motion using PhET Sim | 1/17 | ETA Practice 3Read Sect. 2.7-2.8DB3: 1st Post | 1/19 | ETA HW 3DB3: Responses | 1/21 | ETA Quiz 3 on ch. 2 |
| Lab 3: 1-D Motion using DMV | 1/24 | ETA Practice 4Read Sect. 3.1-3.3DB4: 1st Post | 1/26 | ETA HW 4Read Sect. 3.4-3.5DB4: Responses | 1/28 | ETA Quiz 4 on ch 3 |
| Lab 4: Free Fall Accel using DMV | 1/31 | ETA Practice 5 | 2/2 | ETA HW 5 | 2/4 | **Midquarter Exam ch. 1-3** |
| Lab 5: Proj. Motion using PhET Sim | 2/7 | ETA Practice 6Read Sect. 4.1-4.3DB5: 1st Post | 2/9 | ETA HW 6Read Sect. 4.4-4.6DB5: Responses | 2/11 | ETA Quiz 6 on ch. 4 |
| Lab 6: Newton’s Laws & Rel Motion | 2/14 | ETA Practice 7Read Sect. 4.7-4.8DB6: 1st Post | 2/16 | ETA HW 7DB6: Responses | 2/18 | ETA Quiz 7 on ch. 4 |
| Lab 7: Forces & Motion PhET SIM | 2/21 | ETA Practice 8Read Sect. 5.1-5.2DB7: 1st Post | 2/23 | ETA HW 8Read Sect. 5.3DB7: Responses | 2/25 | ETA Quiz 8 on ch. 5 |
| Lab 8: Friction using DMV | 2/28 | ETA Practice 9Read Sect. 6.1-6.2DB8: 1st Post | 3/2 | ETA HW 9Read Sect. 6.3-6.4DB8: Responses | 3/4 | ETA Quiz 9 on ch. 6 |
| Lab 9: Uniform Circular Motion | 3/7 | ETA Practice 10Read Sect. 6.5-6.6 | 3/9 | ETA HW 10Lab 1b: Post-lab quiz | 3/11 | **Final Exam ch. 2-6** |

**Brief summary of assignments**

**General Expert TA Issues**: Read the registration instructions available on Canvas. All Homework and Practicing the Concepts Expert TA assignments are penalized 60% if they are late, even one minute late. But this penalty will not increase throughout the quarter so you may complete any HW or Practice assignment up to 11:59 p.m. on Monday, March 13, 2017. See Expert TA for the specifics of how points are earned on each assignment. No accommodations for Expert TA assignments will be made for technical issues on your end so please plan ahead. If there is a system-wide Expert TA issue, accommodations may be made. The lowest Homework, Practicing the Concepts, and Quiz score will be dropped at the end of the quarter. <http://theexpertta.com/support/student-support/> has the student user manual. For a help video specific to our class, go to <http://screencast.com/t/fdDaoivRL>.

**Expert TA Homework (ETA HW):** There will be graded homework assigned on Expert TA for nearly every topic covered. These homework assignments will cover quantitative and qualitative concepts. There will be conceptual questions, numerical problems, and multi-part problems. You cannot fully learn the physical principles presented in this course without doing the homework problems to develop and practice your understanding of these principles. If you are well prepared, the typical ETA HW assignment will take you about 60-90 minutes. Expert TA homework is due online by 11:59 pm on Fridays. See Expert TA for the specifics of how points are earned on each assignment.

**Expert TA Practicing the Concepts (ETA Practice):** There will be low risk assignments assigned on Expert TA to help you practice key concepts. You cannot fully learn the physical principles presented in this course without practicing the concepts. Expert TA Practice assignments are due online by 11:59 pm on Wednesdays. On these assignments, you will receive no penalties for accessing hints or feedback. See Expert TA for the specifics of how points are earned on each assignment.

**Expert TA Quizzes (ETA Quiz)**: Expert TA quizzes are timed assignments available each week to quickly evaluate your understanding of the concepts from the previous week. You may use the textbook, online resources or even work with other students while working on quizzes. But you’ll have only 90 minutes to finish a quiz once you start it. So if you are not familiar with the concepts of the previous week, there will not be enough time to learn them on the fly. Expert TA quizzes will be available every weekend from 12:01 am Saturday to 11:59 p.m. Sunday. You may complete the quiz during any 90-minute interval. Late quizzes will **NOT** be accepted for reduced credit.

**Midquarter and Final examinations:** There will be an open-book midquarter exam and final exam that you will take online at a specified time. The exams will be administered through theexpertta.com so everybody will get a different exam. You will copy your exam numbers onto an exam template. You cannot make up an exam for full credit unless it is an emergency and you contact the instructor in advance to make alternate plans.

**Discussion Boards (DB)**: This is the main way you will interact with your peers in this class. Each week, I will post a short physics video to watch and write about. Discussion board assignments consist of your original post due by Wednesday night and responses to two different classmates by Friday night. Read the handout under the assignment link on Canvas for more information. No late Discussion Board assignments will be accepted and no accommodations will be made for technical issues on your end. If your initial post is late, you may still earn partial credit for successfully completing the rest of the assignment on time. If there is a system-wide Canvas issue on a Discussion Board due date, accommodations will be made. Your lowest Discussion Board grade will be dropped.

**Lab Activities**: Labs will be guided inquiry in which you will work with your classmates to investigate phenomena using materials around the house or using online simulations. All of the labs will be submitted through Google Drive. No late Lab Activities will be accepted and no accommodations will be made for technical issues on your end. If there is a system-wide technical issue on the due date, accommodations will be made. Your lowest Lab Activities grade will be dropped at the end of the quarter.

General Lab Activities Rubric

Assignment is complete and correct, all or nearly all relevant physics principles appropriately applied, all or nearly all relevant steps described in complete sentences, all or nearly all necessary and relevant sketches clear and complete, few or no mechanical writing errors (18-20 points)

Assignment is mostly complete and correct, most relevant physics principles applied, most relevant steps described, most sentences clear and complete, some relevant sketches (14-17 points)

Assignment is partially complete, some relevant physics principles applied, some relevant steps described adequately, some sentences clear and complete, some sketches (10-13 points)

Assignment is complete and/or unclear, few/no relevant principles applied, primarily single word answers (1-9 pts)

**Administrative notes**: It is your responsibility to keep up with the work in this class. The numerous small assignments are organized to keep you on task. Studies show that students are more successful in an online class with many small assignments throughout the term rather than a few large assignments. Being busy on a day an assignment is due does not excuse you from turning it in when it is due. All Expert TA assignments are available the entire quarter so there are no surprises. Unless stated, assume the audience for your written assignments is an educated person who is unfamiliar with the concepts you are trying to explain. A good rule of thumb in writing is if you had trouble understanding something, your audience probably would, too. Thus, do your best to make the concept clear.

**Honesty**: You are individually accountable for the work you submit in this class. The first instance of getting caught cheating on an assignment will result in a grade of zero for that assignment for everyone involved in the cheating. This policy on cheating includes, but is not limited to, copying another student's assignment, having someone give you answers while you are working on an assignment, submitting someone else’s work as your own, and copying answers from outside sources. If it keeps happening, you will eventually receive a failing grade in the course. If you are having trouble with the course concepts, please ask for help.

**Accommodation Statement**: Central Washington University is committed to creating a learning environment that meets the needs of its diverse student body. If you anticipate or experience any barriers to learning, discuss your concerns with the instructor.  Students with disabilities should contact Disability Services to discuss a range of options to removing barriers, including accommodations. Student Disability Services is located in Hogue 126. Call (509) 963-2214 or email [ds@cwu.edu](http://ds@cwu.edu) for more information.