II.A.9.05 See Pages 1 and 2

Moorpark College

Division of Physical Sciences & Career Education
Department of Physics, Astronomy, Engineering, and Computer Science

Physics M20A-32565 – Spring 2022

Instructor:
Erik D. Reese, PhD PS-233 805-378-1488 ereese@vcccd.edu

Lecture:
M 10:00am-11:50am PS-202
W 10:00am-11:50am PS-202

Office hours:
M 12:00pm-1:00pm PS-233 & Zoom
W 12:00pm-1:00pm PS-233 & Zoom; and by appointment

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Course description:
This is an introductory course in the branch of physics known as classical mechanics, aimed primarily at scientists and engineers. The purpose is to understand motion using Newton's Laws and conservation principles. I will find that this is a surprisingly subtle, complex, and intriguing subject. Upon mastering classical mechanics, I will also acquire some of the tools needed for future studies in science and engineering, gain a new appreciation for the beauty of everyday phenomena, and substantially develop my reasoning skills.

Course Objectives:
Upon successful completion of the course, I will:

- recognize, recall, and apply the equations that describe physical phenomena involving the mechanics of solids and fluids; analyze and solve physics problems of at least average complexity appropriate for the course.
- demonstrate ability to analyze and solve physics problems of greater than average difficulty.
- demonstrate ability to analyze, synthesize physics problems of reasonable complexity and evaluate and judge the results of the solutions to these problems.

Course Learning Outcomes:
In addition to the above this course will also help me to develop the following skills and knowledge:

- Demonstrate an intermediate-to-advanced understanding of basic knowledge, principles, and laws that govern the physical world, in the area of mechanical systems and simple harmonic motion.
- Demonstrate competence in applying the methods of scientific inquiry using calculus-based physics principles to solve problems involving kinematics, force, energy, momentum, and simple harmonic motion.

My Textbook:
Physics for Scientists and Engineers with Modern Physics, Tenth Edition, by Raymond A. Serway & John W. Jewett, Jr. (ISBN 978-1-337-55329-2). This is the hardbound version with volumes 1 and 2 combined, which is probably the best option if I plan to continue in the Physics 20 series. If I plan to take *only* Physics M20A, it may save me money to buy just volume 1 (ISBN 978-1-337-55357-5). Prior editions are fine for reading and, in fact, homework will be assigned from the *Ninth Edition* with problems posted weekly. Texts by Halliday & Resnick, Young & Freedman, etc. are all pretty similar to ours.

There is a free series of calculus-based physics texts online from OpenStax. This course is covered by University Physics Volume 1.

Prerequisites:
Math M25A or equivalent. Proficiency with algebra, geometry, trigonometry, calculus, exponential notation, the metric system, and unit conversions is required; see Appendix B and the inner covers of our text. A prior course in trig-based physics (such as PHYS M10A or high school CP or AP physics) and at least concurrent enrollment of MATH 25B are strongly recommended.

My Class Web site:
Announcements, assignments, problem solutions, lecture slides, etc. will be made available on the *Canvas* course site available through myVCCCD or directly through our local *Canvas* implementation. All announcements and possible supplemental material will be posted via the *Canvas* site.

I will turn on *email notifications* (and text notifications if I wish). To manage my notifications, I will log into *Canvas*, click on "Account" on the upper left, then notifications. I will select the check mark next to "Announcement" under "Course Activities" and any others that I wish to receive.
Announcements will be the main form of communication for this class. I will want to receive email so I know when there is new information without constantly logging in to check.

How I Will Earn My Grade:
To do well in this course I will complete all of the homework, quizzes, and exams. The breakdown for the grading is:

25%	quizzes			
40%	midterms	1. Wednesday	February	9th, 10am
		2. Wednesday	March	16th, 10am
		3. Wednesday	April	27th, 10am
25%	final exam	Wednesday	May	18th, 10:15am-12:15pm
10%	essay		steps throughout the semester	

I will earn my final grade based on the following percentage scale:

Percentage	**Grade**
90+	A
80-89	B
70-79	C
60-69	D
<60	F

I understand that there is no "rounding" so that if I earn 89.9999 that corresponds to a final grade of a B.

Note: Exam dates are set in stone, please plan accordingly. *My lowest quiz and midterm score will each be dropped; this covers both poor performance as well as absence for any reason.*

Also Note: As a general policy, grade information is not sent over email. I will visit Dr. Reese during his office hours for more detailed information on my grade or grade-related matters.

Classroom Participation:
Attendance and participation in lecture are mandatory to do well in this course. Helpful questions will be posed in class. Some of these will be elementary, and some will be designed to highlight common pitfalls and misunderstandings. Problem solving techniques will also be discussed. Asking questions in class is also strongly encouraged; *the class is better as a dialog*.

I understand that I may be dropped from the class after missing 4 class sessions.

Etiquette:
We have a large class, so I will be considerate of my fellow students. I will: arrive on time, will not leave early, will not read a newspaper, send text messages or email, or post on social media.

- **Note on cell phones:** If my cell phone rings during class then Dr. Reese will kindly answer it for me. If it sounds a text message alert then Dr. Reese will happily respond to the text message. I might consider turning my cell phone off. Please turn them on silent mode or off completely for exams as some make quite a bit of noise even on vibrate.
    - *If I leave a quiz or exam to use the restroom, I will leave my cell phone with Dr. Reese in the front of the class on my way out.*

- **Note on laptops:** Laptops may only be used in the classroom for taking notes. Other activities such as surfing the web, playing games, or other disruptive activities will not be tolerated.
- **Note on sound or video recording devices:** Recording devices of any kind are not permitted in the classroom unless the instructor receives verification from ACCESS for its use prior to the use of the device.
- **Note on faculty/staff offices:** Please treat offices as the owner's personal space. If the door is partially or completely closed, knock on the door and do not just enter the office. Even if the door is wide open, it is still polite to knock on the door jam or make yourself known before entering someone's office.
- **Note on email:** I will be courteous and respectful in all email exchanges. I will start email to faculty and staff with proper salutations such as "Dear Dr. Reese", will sign (write) my name at the end of each email, and include course & section information. I understand that email may be returned without answering my query if I do not follow proper email etiquette.
- **Note on web cameras:** Turning on cameras is as close to the in-person experience as possible in our virtual environment. All are strongly encouraged to turn on cameras.
    - Cameras must be on during exams taken online.

Quizzes and Homework:
Homework will be assigned weekly. Although the homework will not be graded, all students will find it necessary to complete a substantial fraction of the homework in order to master the material and do well on the exams and quizzes. Quizzes will be soon after we discuss homework in class and reflect the topics of the previous assignment.

Quizzes, Midterms, and Final Exam:
All quizzes and exams will begin and end on time. Arrive early and take alternate seating (in the rare cases when space allows). Backpacks, purses, briefcases, etc., should all be closed and placed under my seat so that the contents are not visible. Exams and quizzes will be closed-book, and closed-note. I will be allowed to use a calculator. I best remember to bring my calculator to class. Cell phones will *not* be allowed as calculators. An equation sheet will be provided. Only clarifying questions will be answered during a quiz or exam. I will write on the test itself, so I need not bring any other paper. Most exam problems will be similar (but not identical) to the harder homework problems – I should concentrate on *understanding* how to do those problems rather than on memorizing solutions to particular problems. It is possible that some questions will be more conceptual and qualitative, similar to some of the "Conceptual Questions" at the end of each chapter. Midterms will focus on material covered since the previous test but a cumulative understanding is required for good performance. The final will be cumulative. In general, quizzes are 15 minutes, midterms are 1 hour, and the final exam is 2 hours.

It is my responsibility to bring a scientific calculator to class and specially to quizzes and exams. Dr. Reese will NOT loan out calculators, though my classmates may if they so choose, before the quiz or exam begins. Cell phones may NOT be used as calculators during exams.

Note that smart devices and watches of any kind are prohibited for all quizzes and exams.

I understand that if I do not write my full name legibly and sign the statement of academic integrity with my full name then I will receive a zero on that quiz or exam.

All quizzes and exams are scheduled on-ground.

Quizzes & Exams Online
Online quizzes will be available for a large, 6-10 hour, window and once started I will have roughly 30 minutes (15 minutes to take quiz and 15 minutes for download, scan, and upload) to complete the quiz and upload my solutions in *Canvas*. Midterms will be available over a 3-hour window with 1.5 hours to complete and the final exam will be available over a 4-hour window with 2 hours to complete, inclusive of download, scan, and upload time. I understand that I must log into the class Zoom session and turn my camera on for exams. Late quizzes and exam will not be accepted so I will be sure to plan accordingly. File management is part of online quizzes and exams.

Make-up Policy:
There will be no make-up quizzes or exams for any reason. In the event of "excused absences" the course grade will be based on the remaining quizzes and/or exams. If I fail to take a quiz or midterm exam and the absence is not excused, I will receive a zero for that quiz or exam. Documentation for the excuse will *always* be required and electronic documentation will not be accepted. I will notify the instructor *before* the quiz or exam of any absences, otherwise it will be considered an unexcused absence.

Academic Honesty:
Obviously, any form of copying or cheating on assignments, quizzes, or exams is strictly forbidden and may result in severe sanction or even expulsion. Academic dishonesty, in any form, is a violation of the Moorpark College Student Code of Conduct and, as such, is subject to investigation, charges of misconduct, and disciplinary consequences.

I understand that if I do not write my full name legibly and sign the statement of academic integrity with my full name then I will receive a zero on that quiz or exam.

Re-grade Policy:
Every effort will be taken to grade fairly; however, mistakes sometimes occur. If I believe a grading mistake has been made, I will write a polite note to Dr. Reese including a description of the mistake as I see it, staple it to my quiz/exam, and hand it to the instructor. Do not write on the original quiz/exam itself. Re-grade requests will not be accepted more than *one week* after the return of the graded work. Note that *all* problems on a submitted exam may be re-graded, not just the problem in question; it is possible that my grade could go down. If I believe I was penalized differently from another student who committed the same error, then I must include both quizzes/exams in my request. Note also that choice of policy for assigning partial credit is not a mistake subject to revision via re-grading.

Online Addendum for Re-grade:
The note for re-grade requests will be via email with no need to send the quiz or exam.

Important Dates:
See the Moorpark College academic calendar for full details.

Jan	21	Last day to drop without fees
Jan	21	Last day to add this class
Jan	28	Last day to drop without a "W"
Apr	22	Last day to drop with a "W", no drops after this date

Course Topics

Ch 1: Physics and Measurement
Ch 2: Motion in One Dimension
Ch 3: Vectors
Ch 4: Motion in Two Dimensions
Ch 5: The Laws of Motion
Ch 6: Circular Motion and Other Applications of Newton's Laws
Ch 7: Energy of a System
Ch 8: Conservation of Energy
Ch 9: Linear Momentum and Collisions
Ch 10: Rotation of a Rigid Object About a Fixed Axis
Ch 11: Angular Momentum
Ch 12: Static Equilibrium and Elasticity
Ch 13: Universal Gravitation
Ch 14: Fluid Mechanics
Ch 15: Oscillatory Motion

We will cover approximately one chapter per week. The course is fast moving so I must be careful not to fall behind. I will come to office hours or arrange a time to meet with the instructor if I have questions. Sooner is better than later.

Weekly Class Structure:
In general, Monday will entail going over homework and introducing new material and Wednesday will start with a quiz or exam and then new material will be introduced. After quizzes, solutions will be discussed immediately afterwards. During weeks with missed class, for example due to a holiday, there will be no discussion of homework and no quiz.

Online Class Structure:
Quizzes will be taken outside of scheduled class meetings and no new material will be introduced after exams.

Study Tips for My Success:

- Come to lecture and keep up with the class. This sounds elementary, but it is really important. The material is progressive, in that each chapter depends on material presented in previous chapters. If I get behind, I *cannot* just skip a chapter and go on to the next; I have to understand the material at each stage before I can progress.

- Read the text slowly. A physics or math text cannot be read like a novel. I have to read each part carefully, and usually read each section more than once, maybe many times. I am strongly urged to read the relevant chapter *before* the material is discussed in class.
- Do the homework carefully—this is where the real learning takes place. If I cannot do all the problems, then I do not fully understand the concepts and I should work to identify and address the source of difficulty. Spend more time on homework problems than on reading. I solemnly swear to struggle with the homework before looking at the solutions. Doing my homework with the solutions next to me is not helpful.
- Compare my solutions against those posted on the course site. If I find an incorrect answer, I will try to understand why – was it a silly math mistake or a fundamental misunderstanding of the physics? If I identify the source of difficulty, then I can fix it. After a few days, when I have forgotten the posted solution, make a fresh attempt at all the problems that you missed.
- It is more useful to fully master *all* the assigned homework problems than to make half-attempts at additional unassigned problems from the textbook or elsewhere.
- Study groups can be extremely helpful. Do *not* use them as a way of dividing up the effort of doing the homework; that way I will lose the educational benefit of doing the homework in the first place. *Do* use them as a way of discussing the ideas presented in the course and general approaches to physics problems. Often, a good way to test if I understand something is to see if I can explain it to someone else.
- Old examinations are posted on the course site as a tool for test preparation. To make the best use of this resource, I should take the tests "honestly" under simulated test conditions without checking the answers (if posted) until you are done. Looking at the question, looking at the solution, and saying "yes, I could have done that" is not a useful approach. Note that the scope of each exam may vary from year to year. I will check to make sure I have access to the exam archives so, if need be, we can correct this quickly, well ahead of the exams.

Solving Physics Problems:
Part of this first semester of physics is learning the format of how to solve problems, in addition to the method of solving problems. The basic steps are:

1) Write the basic equation first;
2) Solve algebraically;
3) Show the numbers used;
4) Box final answer with units if appropriate.

A few acronyms and shortened expressions are used when grading. Some of the more common ones are:

1) BEF: basic equation first
2) SAF: solve algebraically first
3) Work?: show more work
4) #'s: show the numbers used
5) Units?: include proper units
6) FBD: free-body diagram

Tutoring and Help:
Open access computer labs are available in the LLR building and in room 225 of the PS building (just down the hall from Dr. Reese's office).

Students enrolled in this course are encouraged to use The Learning Center, The Math Center, and the Writing Center services to support their efforts in this class. The Learning Center, Math Center, and Writing Center, located in LLR 322, will provide tutorial services and supplemental instruction based on course goals. When using these services, students need to state their instructor's name for tracking and reporting purposes. Students will also need to provide their student ID numbers when receiving tutorial services. For further information call The Learning Center 805-378-1556 or visit the Learning Center website.

Students with disabilities, whether physical, learning, or psychological, who believe that they may be entitled to accommodations in their class, are encouraged to contact ACCESS as soon as possible to ensure that such accommodations are implemented in a timely fashion. Authorization from ACCESS is required before any accommodation can be made. The phone number for ACCESS is 805-378-1461 and they are located on the ground floor of the LMC Building. More information may be found on the ACCESS website.

Student Tech Support for Canvas:
Moorpark College has technical support for students studying online or using CANVAS in their classes! Contact by:

- Phone: 805-553-4188;
- Email: MConlineSTUDENTsupport@vcccd.edu
- Walk-in location: AA-101.

Emails and calls during off hours will be returned within 1 regular business day.

Title IX / Sexual Misconduct:
Incidents of sexual misconduct can involve students and employees and include: sexual harassment, gender/sexual orientation-based slurs, social media harassment related to sex/gender/sexual orientation/gender identity, sexual assault of any type, stalking (including text/digital stalking), dating/domestic violence, gender/sex-based hate crimes, etc. If you or another student has experienced any of these types of events, regardless of where they occurred or who the perpetrator may have been, please immediately contact your instructor, Dean or the Title IX Coordinator: Priscilla Mora (pmora@vcccd.edu). It is the responsibility of the College to investigate the matter and provide support and appropriate assistance to the student who may have been affected. Questions? Visit our website on TIX/Sexual Misconduct: MC Title IX / Sexual Misconduct website.

Complaints—Academic, Non-Academic, and Discrimination:
If for any reason one wants to submit a complaint, including for discrimination, there is a general webpage dedicated to student complaints that will guide you through the process and provide contact details for assistance.

Tobacco Policy:
Smoking, including the use of electronic smoking devices and the use of tobacco products, is prohibited on all property and in all indoor and outdoor spaces owned, leased, licensed, or otherwise controlled by VCCCD. Smoking, including the use of electronic smoking devices and the use of smokeless tobacco products, is prohibited in all vehicles owned by VCCCD, and at any event or activity on campus property. Furthermore, the use of nicotine products or nicotine delivery systems that are not regulated by the Food and Drug Administration (FDA) as cessation devices is prohibited in all indoor and outdoor spaces where smoking and tobacco use is prohibited. Products covered under this policy include, but are not limited to, cigarettes, cigars, pipes, water pipes (hookahs), electronic smoking devices such as electronic cigarettes and electronic hookahs, chewing tobacco, spit tobacco, snus, snuff, and dissolvable tobacco products. More information about the no smoking policy and tobacco cessation may be found on the related Health Center web pages.

COVID-19 Campus Access:
The district has a vaccine requirement for employees and students that attend in-person classes. Those with vaccine exemptions are required to take two PCR COVID-19 tests each week and upload them to the MyVCCCD app by noon on Sunday. Masks are required at all times when indoors on campus. The wellness application, MyVCCCD app, must be completed before arriving at the screening tents to be allowed on campus. I will scan the QR codes when on campus to help keep everybody safe. More information is available on the Moorpark College COVID-19 website.

Final Note:
Syllabus is subject to change due to unforeseen circumstances.