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**WBUonline**

**School of Mathematics & Sciences**

**UNIVERSITY MISSION STATEMENT**

Wayland Baptist University exists to educate students in an academically challenging, learning-focused and distinctively Christian environment for professional success and service to God and humankind.

# COURSE NUMBER & NAME:

PHYS 1403 VC01 Physics for Educators

## TERM:

Fall 1 2021

## INSTRUCTOR:

Dr. Elise Adamson

## CONTACT INFORMATION:

Office phone: 806-291-1129

WBU Email: adamsone@wbu.edu

**ALL** emails submitted to me **MUST** contain **PHYS1403** in the subject line. If you do not include this in the subject line, you **may not** receive a response!!

A WBU email account is one of the requirements for this class. ALL class correspondence MUST be sent using the email account provided to all students by the university (either @wbu.edu or @wayland.wbu.edu). Emails sent through other accounts may NOT receive a response. Also, information required to access class material, will be sent only to the WBU email account.

## OFFICE HOURS, BUILDING & LOCATION:

Starting Aug 18:

MW 8-11, 1:35-3:05

F 8:30-9:30 From Aug 9-17, please email to request a conference if needed

Room 123 Moody Science Building, Plainview campus. 806-291-1129

Mail: WBU 1900 W 7th ST, CMB #1301, Plainview, TX 79072

## COURSE MEETING TIME & LOCATION:

Online, asynchronous. Weekly tasks generally due the following Monday by noon, but Discussion Board may be due on Saturday. Quizzes are due Monday night by midnight.

## CATALOG DESCRIPTION:

designed for the student seeking to be an elementary teacher. Emphasis on simple machines, forces and motion, electricity, magnetism, sound, light, and thermodynamics, development of grade-level, hands-on exercises for students.

## PREREQUISITE:

## [MATH 1304](http://catalog.wbu.edu/content.php?catoid=3&catoid=3&navoid=86&filter%5Bitem_type%5D=3&filter%5Bonly_active%5D=1&filter%5B3%5D=1&filter%5Bcpage%5D=10#tt7990)  and declared major of BSIS or BAS degree.

The College Algebra requirement refers to the ability to work with formulas, as this is necessary to do well.

## REQUIRED TEXTBOOK AND RESOURCE MATERIAL:

**Conceptual Physics, Paul Hewitt**, Addison Wesley;(black cover, shows International Space Station)

Edition: 11, ISBN 978-0-321-78795-8 (**older edition is acceptable**- content may be in different order, check chapter titles)

**McMillan’s Achieve online one-term access**.This should automatically be available through course in Blackboard, as part of Inclusive Access. You may choose to opt out and pay for access on your own, but it will probably cost more this way.

Note: I have chosen a slightly older textbook, so you can find less expensive used copies, but you MUST HAVE access to Achieve; this is available in Blackboard, do not purchase separately. It is automatically charged to your WBU account, like tuition. If needed, Achieve course code is PHY1403 F 21, course title is PHYS 1403 Physics for Educators Fall 2021.

Also required**:** scientific calculator, internet access, cell phone camera, and these specific materials: 3 deflated standard balloons, hot & cold water, cups/bowls, spoons: metal, plastic and wooden( or a wooden craft stick), ruler (with a pencil groove), string, tape, marbles, battery (6V preferred), insulated wire, shoebox or similar, cornstarch, mirror, protractor, laser pointer (cheap), butter, baking chocolate square, large nails or bolt, metal paperclips, foil pie pan. If you do not have some of these materials, please check with me before buying them- for some we can adapt other items. I will plan to send you a few specialty items (polarizers, diffraction grating, etc.), and can include some of the ones above if they are not easy to obtain. **You must do the Materials Inventory by Wed of Week 1**, so I know what you still need. This will document you participation in the course- otherwise, you will be reported as a “No-Show”

**Proctor required** for final. If online testing is required, **webcam** required to allow online proctoring

## COURSE OUTCOMES AND COMPETENCIES:

## Students will be able to:

1. Take written information, translate it into equations, and solve for requested quantity.
2. Explain and apply conservation laws and energy transformations to situations.
3. Demonstrate an understanding of the history and development of physics
4. Identify and correct common misconceptions about physics principles.

## ATTENDANCE REQUIREMENTS:

Any student who misses 25 percent or more of the regularly scheduled class meetings may receive a grade of F in the course. Additional attendance policies for each course, as defined by the instructor in the course syllabus, are considered a part of the University’s attendance policy. Attendance in an online course is determined by participation in activities, not just logging into Blackboard. Any student who fails to complete activities for 3 weeks, or who does not complete the required assignment during week 1, may be dropped.

## STATEMENT ON PLAGIARISM & ACADEMIC DISHONESTY:

Wayland Baptist University observes a zero tolerance policy regarding academic dishonesty. Per university policy as described in the academic catalog, all cases of academic dishonesty will be reported and second offenses will result in suspension from the university.

## DISABILITY STATEMENT:

In compliance with the Americans with Disabilities Act of 1990 (ADA), it is the policy of Wayland Baptist University that no otherwise qualified person with a disability be excluded from participation in, be denied the benefits of, or be subject to discrimination under any educational program or activity in the university. The Coordinator of Counseling Services serves as the coordinator of students with a disability and should be contacted concerning accommodation requests at (806) 291-3765. Documentation of a disability must accompany any request for accommodations.

## COURSE REQUIREMENTS and GRADING CRITERIA:

Generally, each week will include

* **chapters** to read from the text (four to five each week)
* **notes** for each chapter -you can choose to just read the book and not the notes, but be sure to check for additional content such as simple machines (week 2) and space exploration (week 3)
* **videos** to watch, usually no more than an hour or two per week (some are 3-5 min long, others up to 20 min or so). Some videos are from outside sources, some I have recorded, and some are about specific demos or experiments.
* an **assignment in Achieve** (graded)(online homework system) by noon Monday of following week
* two to four **lab activities** (some virtual, some physical) (graded) by noon Monday

(following week)

* a **Discussion Board** prompt (graded) due by Saturday(if peer response required) or noon Monday
* **weekly quiz** in Blackboard (graded and timed) by midnight Monday

There is also one **proctored comprehensive final exam**, and **three projects** (due 8/23, 9/7, 9/20).

Weekly assignments will be due on Mondays at noon, CDT, except Discussion Board may require a post by midnight Saturday, if peer comments are required-(quizzes due Monday night)

In addition, there will be a **proctored final**, and **three projects** (fairly easy, due midnight Monday). **Please try to complete the week’s activities by Sunday night; they’re due on Monday so I can reply to any problems from the weekend.**

Final exam (proctored) 25% 90-100----A

Homework- mostly through Achieve 22% 80-89-----B

 Discussion board 10% 70-79-----C

 3 projects 18% 60-69-----D

 Labs 10% below 60—F

 Quizzes (open book, but timed) 15%

### Test**:**

The final exam requires a proctor approved by WBUonline. Proctor approval should be done at least 3 weeks before final- see link “Proctor Request” in Blackboard. If you are taking the test at a WBU campus, you do not need to get proctor approval, but you need to schedule in advance **with your proctor**. The proctor will be given access to a website with a link to the test, so proctor can print it off for you. Proctor will scan and email the test for grading. There will be a one-hour time limit on the test. An in-person proctor is preferred- if online proctoring is required for the final, it must be requested **no later than week 4**, and you must have a webcam and good internet connection, and you will pay a fee to the proctoring service.

*Quizzes:*

Each week’s material will be followed by a quiz in Blackboard. It will be due no later than Monday at midnight, CDT. (The quiz over Week 1 is due on Monday of Week 2, etc.). The quizzes are open-book, open-note, but are timed, with a 45 minute time limit.

### Homework**:**

Homework is primarily made of assignments in **Achieve**, but additional work may be assigned as the course progresses. There will be one assignment each week, over all the chapters covered that week. Homework problems may be repeated until the due date, but each repeated attempt of a problem will decrease the maximum possible grade by 5% of the points for the problem. The expectation is for homework grades to be in the 80s-100, as the system provides feedback for incorrect responses. If you attempt a question 3 or 4 times and still don’t understand, you can email me for hints or an explanation BEFORE you give up (unless it is too late in the assignment window. I check email less frequently on weekends, so start early if you want help) Due by Monday at noon (CDT). (Week 1 homework is due by noon on Monday of Week 2, etc.)

### Discussion Board:

Each week there will be a topic for discussion or response. If that week’s post requires peer response, an initial post will be due by midnight Saturday CDT, to allow time for peers to respond by Monday at noon.

### Projects**:**

One topic in physics that usually interests elementary students is space, so the projects are about astronauts, the space program, and real or fictional space travel. These should be enjoyable and build your background knowledge in this area. You choose your 3 topics from 6 possibilities. (Three of the options are books or movies.) See the Project instruction sheet. Each project counts equally. A project is due every two weeks (due at the start of weeks 3, 5, and 7). Any project submitted late will lose 15 points per day.

### Labs:

Each week will have two to four labs, either virtual, or ones you do with simple materials. By Wed of week 1, you must let me know if you cannot obtain some of the materials on the list. I also MUST have your mailing address, as I hope to send a small package of other materials. If you have a problem with performing a lab, let me know ASAP. Labs will generally require some sort of report or response, which will depend on the specific lab, and will be uploaded as an assignment in that Week’s folder.

**Grade Appeal Statement**: “Students shall have protection through orderly procedures against prejudices or capricious academic evaluation. A student who believes that he or she has not been held to realistic academic standards, just evaluation procedures, or appropriate grading, may appeal the final grade given in the course by using the student grade appeal process described in the Academic Catalog. Appeals may not be made for advanced placement examinations or course bypass examinations. Appeals are limited to the final course grade, which may be upheld, raised, or lowered at any stage of the appeal process. Any recommendation to lower a course grade must be submitted through the Vice President of Academic Affairs/Faculty Assembly Grade Appeals Committee for review and approval. The Faculty Assembly Grade Appeals Committee may instruct that the course grade be upheld, raised, or lowered to a more proper evaluation.”

## TENTATIVE SCHEDULE

Week 1

 Materials Inventory- due by Wed of week 1- must include mailing address

About science

 Newton’s First Law

 Linear motion,

 Newton’s Second Law

 Newton’s Third law

 Discussion Board- introduce yourself

 Week 1 homework & quiz

Week 2

 Momentum

 Energy

 Simple Machines

Vibrations and Waves

 Sound

 Discussion Board

 Week 2 homework & quiz

Week 3 Project 1 due Monday

Rotation

Gravity

 Projectile and Satellite Motion

Space science

 Discussion Board

Week 3 homework & quiz

Week 4

 Atomic Nature of Matter

Solids

 Liquids

 Gases

 Discussion Board

 Week 4 homework & quiz

Week 5 -Project 2 due Tuesday (Monday is Labor Day)

Temperature, Heat and expansion

Heat Transfer

Change of Phase

Thermodynamics

Discussion Board

Week 5 homework & quiz

Week 6

Electrostatics

 Electric Current

 Magnetism

Electromagnetic Induction

Discussion Board

Week 6 homework & quiz

Week 7 Project 3 due Monday

 Properties of Light

 Color

 Reflection and Refraction

Light Waves

 Light Emission

 Discussion Board

 Week 7 homework & quiz

Week 8- ***proctored final- comprehensive***

Syllabus revised 6/30/21, subject to change if needed