

Physics 101 - Section 04

Introduction to Mechanics Spring Semester 2021

- Room/Time:* Online Zoom Lectures – MW 4:00 - 5:30pm, Pacific Time (synchronous - recorded)
All Zoom meetings at: <https://lmu.zoom.us/my/gvarieschi.spring2021>
- Lab Sections: (asynchronous – independent work)
- Instructor:* Dr. Gabriele Varieschi
Office: Seaver Hall - 110
Phone: (310) 338-7632 (can leave a message)
E-mail: gvarieschi@lmu.edu (I will reply by the next day)
Office hours: T 2:00 - 4:00pm, Pacific Time (Zoom office hours – other times available by appointment)
Course Webpage: <https://brightspace.lmu.edu/d2l/home/130235> (for all course materials)
Personal Webpage: <http://gvarieschi.lmu.build>
- Textbook:* Ling, Moebs, and Sanny – University Physics, Vol 1 – Openstax
Free textbook available for download at:
<https://openstax.org/details/books/university-physics-volume-1>
- Objectives and Topics:* From Chapter 1 to Chapter 13 (tentatively). Physics, measurement and units. Motion in one dimension: velocity and acceleration. Vectors and components. Projectile motion and circular motion. Newton’s laws and applications. Free body diagrams. Kinetic and potential energy: conservation of energy. Linear momentum and collisions. Rotational motion and angular variables. Static equilibrium. Newton’s law of universal gravitation. Laboratory experiments pertaining to mechanics. Calculus based course for engineers and scientists.
- Prerequisite or concurrent enrollment:* *Math 131 – Calculus I.*
- Learning Outcomes:* Understand the phenomenology of mechanics. Understand the concepts of kinematics: position, velocity, acceleration and the related use of vectors. Conceptually understand the idea of force and the three fundamental laws of mechanics. Be able to solve problems of increasing complexity involving different forces and master the technique of free body diagrams. Understand the theoretical framework of conservation principles (such as conservation of energy and linear momentum). Understand more advanced applications of rotational dynamics and statics. This course serves as a prerequisite for PHYS 201.
- Tests:* There will be **three tests** during the semester. **They will all count toward your final grade, so please try not to miss any of them.** There will be **no make-up tests** given. Tests are open-book/open-notes, and will be administered online (more information to follow)
- Test Dates:* TBA
- Final Exam:* **SECTION 04: TBA.**
The final exam is cumulative and is equivalent to 2 tests.
- Homework:* Weekly homework will be assigned but will not be graded. Some problems will be worked out in class during break-out Zoom sessions. All solutions will be posted online.

Laboratory: The laboratory is an integral part of this course. The experiments will complement the topics of the lectures. The laboratory will count for 15% of your final grade. **The labs will be asynchronous and you will work on them independently, using all the lab materials posted in Brightspace.** You can work on you own, or in a small group (no more than three students) in self-organized Zoom meetings. Lab reports will be submitted through Brightspace and graded by a TA. Missing 2 or more lab sessions will result in a failing grade for the course. See lab schedule below for more information.

DOWNLOAD LAB MATERIALS AT:
<https://brightspace.lmu.edu/d2l/home/130235>

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|-----------------|---------------|------|
| <i>Grading:</i> | Laboratory | 15 % |
| | Participation | 10 % |
| | Test 1 | 15 % |
| | Test 2 | 15 % |
| | Test 3 | 15 % |
| | Final Exam | 30 % |

Test Grading (approx.): 0-50%=F; 50-55%=D; 55-60%=C-; 60-65%=C; 65-70%=C+; 70-75%=B-; 75-80%=B; 80-85%=B+; 85-90%=A-; 90-100%=A.

Zoom Conduct Advisory: You are expected to attend synchronous lectures and submit work by the respective deadline, unless prohibited by location. Treat Zoom sessions as you would a regular classroom experience in terms of personal appearance and comport. Unless you are asking a question, please keep yourself muted. Minimize any visual distractions in your background if they might detract from the learning experience. Please keep your camera on so that I and others can see you, unless this creates bandwidth problems.

Academic Honesty: Academic dishonesty will be treated as an extremely serious matter with severe consequences that can range from receiving no credit for assignments/tests, failing the class, to expulsion. It is never permissible to turn in any work that has not been authored by the student, such as work that has been copied from another student or copied from a source (including Internet) without properly acknowledging the source. It is your responsibility to make sure that your work meets the standard set forth in the "[Academic Honesty Policy](#)".

Special Accomodations: Students with special needs who require reasonable modifications, special assistance, or accommodations in this course should promptly direct their request to the Disability Support Services (DSS) Office. Any student who currently has a documented disability (ADHD, Autism Spectrum Disorder, Learning, Physical, or Psychiatric) needing academic accommodations should contact the DSS Office (Daum Hall 2nd floor, 310-338-4216) as early in the semester as possible. All discussions will remain confidential. Please visit <http://www.lmu.edu/dss> for additional information.

Syllabus changes: If necessary, this syllabus and its contents are subject to revision; students are responsible for any changes or modifications announced in class.

Have a nice semester. Good luck!

Phys 101 - Laboratory Schedule Introduction to Mechanics, Spring 2021

| Lab Instructor | Section | Day | Time | Room |
|------------------|---------|-----|--------------|------------------|
| Dr. G. Varieschi | 03 | N/A | Asynchronous | (online labs) |
| Dr. G. Varieschi | 04 | N/A | Asynchronous | |

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| | <i>Jan 11</i> | <i>M</i> | <i>Classes begin</i> |
| | <i>Jan 18</i> | <i>M</i> | <i>University Holiday – M.L. King Day</i> |
| 1. | Jan 25 | M | Motion |
| 2. | Feb 1 | M | Free Fall |
| 3. | Feb 8 | M | Projectile Motion |
| 4. | Feb 15 | M | Newton's 2nd Law |
| 5. | Feb 22 | M | Newton's 2nd Law - 2 Bodies |
| | <i>Mar 1 – 5</i> | <i>M-F</i> | <i>No Classes – Spring Break</i> |
| 6. | Mar 8 | M | Friction |
| 7. | Mar 15 | M | Conservation of energy |
| 8. | Mar 22 | M | Energy – nonconservative forces |
| | <i>Apr 1 – 2</i> | <i>R-F</i> | <i>No Classes – Easter Holidays</i> |
| 9. | Apr 5 | M | Momentum |
| 10. | Apr 12 | M | Rotation |
| 11. | Apr 19 | M | Static Equilibrium |
| | <i>May 3 – May 7</i> | <i>M-F</i> | <i>Final Examinations</i> |

Lab materials are available for download at:

<https://brightspace.lmu.edu/d2l/home/130235>