

University of Massachusetts Boston
Fundamental of Physics I (Physics 113)
Spring 2022

Lecture:

Discussion:

1. Instructor:

2. Teaching Assistant:

3. Registration: All students are required to register for the course.

4. Textbook: The required text is Wolfson, *Essential University Physics*, Volume 1, Pearson/Addison Wesley, (4th Ed.)

5. Course Description: This is the first part of a two-semester, calculus-level, introductory course in basic physics, intended for students in the physical sciences, engineering, biochemistry, computer science and mathematics. Topics in mechanics, wave motion, and heat are treated in this first semester. Students should bring to the course an elementary but working knowledge of arithmetic, algebra, geometry, trigonometry, and calculus.

6. Course webpage: All students who are registered for the course will have access to the Blackboard page at <http://umb.umassonline.net> and should check routinely throughout the semester for course updates and announcements.

7. Homework: Homework will be assigned once a week, which will be posted on Blackboard on Fridays and will be due on the following Friday by 11:59 pm. **No late assignments will be accepted under any circumstances**, but the worst two assignments will be excluded from your final grade. Please address any questions about the homework and its grading to the TA

8. Exams: There will be *two midterm exams* and a *comprehensive (all inclusive)* final exam. Each exam will be of closed book. Exam questions are to be answered by each student independently and without unauthorized outside aid. You may, however, bring a sheet of paper on which you can write necessary equations and values of physical constants. **Make-up exams will be strongly discouraged.**

Tentative dates for exams: Midterm-1 (March 7), Midterm-2 (April 11) and Final Exam (date to be announced).

9. Hand calculators: You will need a hand calculator for problem solving throughout this course. It should be a scientific model, that is, it should have at minimum in addition to the arithmetic operations, the trigonometric functions, natural logarithm, the exponential function, as well as their inverse operations.

10. Office hours:

11. Grading: The final grade is computed as follows:

Homework – 30%

Midterm-1 – 20%

Midterm-2 -- 20%

Final Exam – 30%

Your letter grade for the course will be based on the following:

Above 93.33 = A 80.00 – 83.32 = B- 66.66 – 69.99 = D+

90.00 – 93.32 = A- 76.66 – 79.99 = C+ 63.33 – 66.65 = D

86.66 – 89.99 = B+ 73.33 – 76.65 = C 60.00 – 63.32 = D

83.33 – 86.65 = B 70.00 – 73.32 = C- Below 60.00 = F

12. Accommodations: UMass Boston is committed to creating learning environments that are inclusive and accessible. If you have a personal circumstance that will impact your learning and performance in this class, please let me know as soon as possible, so we can discuss the best ways to meet your needs and the requirements of the course. If you have a documented disability, or would like guidance about navigating support services, contact the Ross Center for Disability Services by email (ross.center@umb.edu), phone (617-287-7430), or in person (Campus Center, UL Room 211). To receive accommodations, students must be registered with the Ross Center and must request accommodations each semester that they are in attendance at UMass Boston. For more information visit: www.rosscenter.umb.edu. Please note that the Ross Center will provide a letter for your instructor with information about your accommodation only and not about your specific disability.

13. Academic Integrity and Student Code of Conduct: Education at UMass Boston is sustained by academic integrity. Academic integrity requires that all members of the campus community are honest, trustworthy, responsible, respectful, and fair in academic work at the university. As part of being educated here, students learn, exercise, increase, and uphold academic integrity. Academic integrity is essential within all classrooms, in the many spaces where academic work is carried out by all members of the UMass Boston community, and in our local and global communities where the value of this education fulfills its role as a public good. Students are expected to adhere to the Student Code of Conduct, including policies about academic integrity, delineated in the University of Massachusetts Boston Graduate Studies Bulletin, Undergraduate Catalog, and relevant program student handbook(s), linked at www.umb.edu/academics/academic_integrity.

14. Health, Wellbeing, and Success: We are still coming through the COVID-19 pandemic. Due to the emerging COVID-19 variants, all members of the UMass Boston community — students, faculty, and staff — as well as contractors and visitors are required to wear face coverings in public indoor spaces on the UMass Boston campus. The requirement applies to vaccinated and non-vaccinated individuals. Wearing a face covering is important for the health and safety of our community, and each of us has a responsibility to do our part. While on campus, if you notice someone without a face covering indoors, you should feel free to distance yourself to the extent possible or, if you are comfortable doing so, politely remind them of the university policy requiring face coverings for all individuals indoors. As an instructor, for classes on campus, I will remind all students about the indoor masking policy. I will ask students to leave class if they do not comply and I may also refer students to the Dean of Students. If a student refuses to wear a face

covering and does not heed requests to comply with the policy, the UMass Boston Police Department may be called to assist. To safeguard your own health and safety as well as that of all students, staff, and faculty, you are reminded that vaccinations are required for all faculty, staff, and students, with limited exceptions (see www.umb.edu/healthservices/corona_virus_information/coronavirus_vaccination_requirements). Following current public health guidance from the CDC and given the protection flowing from a highly vaccinated population, enhanced HVAC and air filtration systems, and the indoor face covering mandate, we have lifted the social distancing requirement. However, if you have symptoms of COVID-19, you should not come to campus. Flexibility and support will be provided for students in such situations and are addressed in this syllabus.

UMass Boston is a vibrant, multi-cultural, and inclusive institution committed to ensuring that all members of our diverse campus community are able to thrive and succeed. The university provides a wide variety of resources to support students' overall success. As we continue to deal with the evolving impacts of the COVID-19 pandemic, these resources are more important than ever.

- Are you in emotional distress? Call 617.287.5690 to speak with a licensed clinician 24/7 who can offer support, crisis recommendations, and assistance with finding resources.
- Have a campus question or issue? Use Here4U in the UMass Boston app or via www.umb.edu/here4U.
- Want advice in navigating a university or life situation? Contact the Dean of Students Office at www.umb.edu/deanofstudents.
- Want to connect with housing and food insecurity support, student life groups and events, or recreation activities? Visit www.umb.edu/life.
- Want to access resources specifically for immigrant-origin, DACA, TPS, and undocumented students? Visit www.umb.edu/immigrant.
- Looking for additional identity-based community support? Find more resources at www.umb.edu/identity-support
- Want to make the most of your academic experience? Visit www.umb.edu/academics/vpass/academic_support.
- Unable to attend class on a specific date or participate in an exam or class requirement due to a religious observance? Fill out the excused absence form (requires 2-weeks' notice) to request religious accommodation at www.umb.edu/religiousabsence.

Tentative Lecture Schedule

Week		Topics
1	January (24, 26, 28)	Chapter 1 & 2: Physics & Motion in 1-dim
2	January (31) February (2, 4)	Chapter 2 & 3: Motion in 1-dimension Motion in 2 & 3 dimensions
3	February (7, 9, 11)	Chapter 3 & 4: Motion in 2 & 3 dimensions Force & Motion
4	February (14, 16, 18)	Chapter 4 & 5: Force & Motion Using Newton's Laws
5	February (23, 25)	Chapter 6: Work, Energy & Power
6	February (28) March (2, 4)	Chapter 7 & 8: Conservation of Energy Gravitation
7	March (7, 9, 11)	Midterm-1 Chapter 8 & 9: Gravitation System of particles
9	March (21, 23, 25)	Chapter 9: System of particles
10	March (28, 30) April (1)	Chapter 9: Rotational Motion
11	April (4, 6, 8)	Chapter 10 & 11: Rotational Motion Rotational Vectors
12	April (11, 13, 15)	Midterm-2 Chapter 12: Static Equilibrium
13	April (20, 22)	Chapter 13: Oscillatory Motion
14	April (25, 27, 29)	Chapter 14: Wave Motion
15	May (2, 4, 6)	Chapter 15: Fluid Motion
16	May (9, 11)	Intro to Heat and Kinetic Theory

Final Exam: Date to be announced.