PHYS 103: Fundamental Physics I
Syllabus - Fall 2020

Location: Fintel Lib 01   **Time**: MWF 09:40 – 10:40
Instructor: Dr. Hiba Assi   **E-mail**: assi@roanoke.edu
Office Hours: MWF 11:00-12:00   **Office**: Trexler 264B
         Mainly virtual via Zoom- see below   **Phone**: (540) 375-2570

This course will start online until in-person instruction resumes. Meetings will be held during normal class time via Zoom, please see the integrated Zoom link on Inquire or use
https://roanoke-edu.zoom.us/j/99033081698
Meeting ID: 990 3308 1698
Passcode: PHYS103

When in-person instruction resumes at Roanoke College, the class will operate in a more hybrid way: Due to the number of students in this course, students will be divided into two groups: Group-A: students whose last name starts with the letter A through K. Group-B: students whose last name starts with the letter L through Z.

On Mondays, Group-A will attend in-person while Group-B will be attending the class session live via Zoom. On Wednesdays, Group-B will attend in-person while Group-A will be attending the class session live via Zoom. On Fridays, the whole class will meet live via Zoom or we will have asynchronous activities. On test days, the whole class will meet via Zoom.

During in-person meetings: We all are required to wear face coverings/masks over the mouth and nose in classrooms and hallways of academic buildings. By wearing face coverings, we protect our college community and its most vulnerable members. Students who come to class without a face mask that is being worn properly will be asked to leave and will be readmitted only after they are wearing one. Also, social distancing needs to be maintained, so please refrain from rearranging the furniture in the classroom and keep them in their pre-assigned spots. If you have a temperature of 100.4 or higher or other coronavirus symptoms, do NOT come to class, more on that in the Attendance section below.

If the college is forced at any point to suspend in-person meetings, this class will continue to meet via Zoom at our regular time.

Office Hours: Due to limited office space that will hinder social distancing guidelines, all office hours will he held via Zoom. Please see the integrated Zoom link for office hours on Inquire, or use:
https://roanoke-edu.zoom.us/j/91676005828
Meeting ID: 916 7600 5828

No Passcode is required. No appointment is necessary; the waiting room feature on Zoom will be enabled. If the student in the session and the student in the waiting room are in agreement to work together with me at the same time, both will be allowed in and assisted simultaneously.

Course textbook: James S. Walker, *Physics,* 5th ed., Pearson, 2016
ISBN-10: 0321976444
ISBN-13: 9780321976444
A copy of the textbook is on course reserve at Fintel library. Regular homework problems will be mainly assigned from the textbook.

Prerequisites: None

Other required materials: You will need graph papers, a working scientific calculator for class sessions, assignments, and exams. For online meetings, you will need a laptop or a tablet with a functioning webcam, speaker, and microphone.

Course Description: This algebra-based course is the first part of the two-semester introductory physics sequence. During the fall semester, it introduces fundamental physical principles covering topics in classical mechanics, waves, solids and fluids, and thermodynamics.

Learning Outcomes: Upon successful completion of the course, students will be able to:
• Identify relevant physical principles which underlie the dynamics of real-world situations
• Manipulate units as a viable source of knowledge about the physical world
• Construct organized physical analyses that demonstrate logically connected steps of thought
• Synthesize numerical information, physical assumptions, and previous concepts to correctly describe physical systems
• Apply analytical thinking and physical modeling to other scientific arenas

Required Laboratory Course: You must be enrolled in the laboratory portion *PHYS 103L* of this course. Although PHYS 103L operates as a separate course, it counts as 25% of the course grade for PHYS 103. Please refer to the lab course syllabus for important information about the lab specifics and final grade. Note that if any lab experiment is not completed by the end of the semester, your course grade will be reduced by one whole letter grade. Lab does not meet during the first week of classes.

Lecture Periods: The lecture will cover topics outlined in the course schedule and will involve solving sample problems in groups, so teamwork and student involvement are expected. Any question is welcomed in class at any point! You are strongly advised to read the corresponding sections before coming to class to benefit the most from the lecture that day.

Attendance Policy: If you have a temperature of 100.4 or higher or other coronavirus symptoms, do NOT come to class. Call Health Services IMMEDIATELY. Do not come to class or go to any public area on campus. Keep up with all class meetings (via Zoom while you are away), assignments, and deadlines. In order for your absence to be excused, you must give Health Services permission to notify me that you have consulted them about coronavirus symptoms. If Health Services informs you that you should isolate and not attend class for multiple days or weeks, inform me so that we can make a plan to keep you current in the course. All absences caused by consultation with Health Services about coronavirus symptoms or isolation ordered by Health Services will be excused.

Attendance will be formally taken in the beginning of class and will count towards your final grade. Other than the excused absences detailed above, you have three freebies during the semester. You are fully responsible for the material that was covered and for any announcements made during class meetings.

Homework: Problem sets will be regularly assigned, mainly from the textbook. The due dates will be announced in advance. Homework solutions will need to be submitted electronically as a pdf file on the assignment link on Inquire. You can download a free scanning app that will enable you to save multiple pages as a single pdf file; other formats will not be accepted. You can view your graded work on Inquire.

Some of the exercises in each set will be graded on correctness to provide you with detailed feedback on your work, and the others will be graded on completion. Detailed solutions will be posted on Inquire for your use.
No late submissions will be allowed unless an extension is discussed and granted beforehand.

Exams: There will be four one-hour mid-term exams and a non-comprehensive final exam, with their dates specified in the course schedule. Exam make-up for excused reasons (family or medical emergencies, and university-recognized commitments) must be discussed and arranged with me at least two weeks in advance, unless it is an emergency. If your missed exam is unexcused, you will receive a zero on that exam. Exams are open-book and open-notes, see more below in the Academic Integrity section. The lowest mid-term exam grade will be dropped.

To limit your time commitment to this class, exams will be held "in class" during our class meetings on Zoom. This way I can answer your questions if any come up while you are taking the exam. An empty test copy will be posted on Inquire on the assigned test date, please download it (print it if possible). You have the allotted time to finish it and scan/upload your solutions to the appropriate test link as a single pdf file. If you receive academic accommodations or you cannot "make it to class" that day, you can complete the test at a different time, but please communicate this with me ahead of time.

Grading: Class grades will be calculated according to the following distribution
- Lab   25%
- Attendance   5%
- Homework   27%
- MCSP Talk   3%
- Three Mid-term Exams   10% each
- Final Exam   10%

Furthermore, letter grades will be assigned at the end of the semester according to the following scale

A-	90-92	A	93-100				
B-	80-82	B	83- 86	B+	87-89		
C-	70-72	C	73- 76	C+	77-79		
D-	60-62	D	63- 66	D+	67-69	F	<60

You should expect to spend at least 12 hours inside and outside of class each week on this course.

MCSP Conversation Series/Extra Credit: You are required to attend ONE talk in the MCSP Conversation Series (schedule available at https://www.roanoke.edu/inside/az_index/math_cs_and_physics/conversation_series/fall_2019) and submit a well-written reflection on the talk <u>within one week of the presentation</u>. The submission must present a brief summary of the key ideas of the talk and include a description of the parts of the presentation that were interesting, confusing, and relevant to this course. Your work must be grammaticallycorrect, typed, double-spaced, and between one and two pages in length. Note that a simple summary of the talk is not sufficient to receive credit.
For extra-credit, you may attend one more MCSP talk during the semester, and the submitted paper will earn 0, 0.25, or 0.5 percent added to your final grade.

Use of Electronic Devices: Due to the hybrid nature of this course, you will need to use personal laptops and/or tablets for class meetings and taking notes. Scientific calculators can also be used during class when needed and during exams. While in a class meeting (whether in-person or online), your phones must be on silent mode and out of reach to limit distractions and must be turned off during exams.

Subject Tutoring: located on the lower level of Fintel Library (Room 5), is open 4 pm – 9 pm, Sunday – Thursday. Subject Tutors are friendly, highly-trained Roanoke College students who offer free, one-on-one tutorials in a variety of general education and major courses such as: Business, Economics, Mathematics, INQ 240, Modern Languages, Lab Sciences, INQ 250, and Social Sciences (see all available subjects at www.roanoke.edu/tutoring). Tutoring sessions are available in-person or online in 30 or 60-minute appointments (please specify if you prefer to meet with a tutor online or in-person when you make your appointment). All in-person appointments will maintain at least 6 feet of physical distance, desks will be cleaned between

appointments, and masks must be worn in all indoor, public spaces. In the event that all classes go online this semester, Subject Tutoring will remain available online. Schedule an appointment at www.roanoke.edu/tutoring, or call 540-375-2590 or email subject_tutoring@roanoke.edu.

Accessible Education Services (AES): located in the Goode-Pasfield Center for Learning and Teaching in Fintel Library. AES provides reasonable accommodations to students with documented disabilities. To register for services, students must self-identify to AES, complete the registration process, and provide current documentation of a disability along with recommendations from the qualified specialist. Please contact Laura Leonard, Assistant Director of Academic Services for Accessible Education, at 540-375-2247 or by e-mail at aes@roanoke.edu to schedule an appointment. If you have registered with AES in the past and would like to receive academic accommodations for this semester, please contact Laura Leonard at your earliest convenience to schedule an appointment.

Academic Integrity: The Academic Integrity (AI) policy at Roanoke College will be thoroughly followed in this course, and I expect you to abide by all the outlined rules to avoid any questionable conduct.

General concepts related to the homework sets may be clarified through conversations with other students, but you should solve the problems on your own.

Exams are open-book and open-notes, i.e only this course textbook and your class notes are permitted. NO discussion among students is allowed after an exam in case a student has not taken the exam. I will explicitly inform you if/when you can start discussing exams with others. You are allowed to use a calculator ONLY to compute numerical quantities.

Consulting any unauthorized person(s) or any online resources will be a violation to the AI policy, whether for a homework assignment or an exam. This includes (but not limited to) past students in the course or any related course, Chegg, Course Hero, and similar "homework help" sites.

If I become aware of a possible violation of these guidelines, I am obligated to report it to the Academic Integrity committee. Student resources on the AI policy can be found online at: https://www.roanoke.edu/inside/a-z_index/academic_affairs/academic_integrity/resources_for_students

Class Environment: Each member of this class is valued, and is expected to 1) treat everyone else with respect and 2) contribute to a welcoming and inclusive environment.

PHYS 103: Fundamental Physics I, Fall 2020- Daily Schedule

The following schedule outlines the tentative timeline for the covered topics and exam dates:

Day	Chapter	Sections	Topic
19 Aug	1	1.1-1.8	Introductions + brief lecture
21 Aug	2	2.1-2.7	One-Dimensional Kinematics
24 Aug			
26 Aug	3	3.1-3.6	Vectors in Physics
28 Aug			
31 Aug	4	4.1-4.5	Two-Dimensional Kinematics
02 Sep			
04 Sep	5	5.1-5.7	Newton's Laws of Motion
07 Sep			
09 Sep	*Test 1: Chapters 2-4*		
11 Sep	6	6.1-6.3, 6.5	Applications of Newton's Laws
14 Sep			
16 Sep	7	7.1-7.2, 7.4	Work and Kinetic Energy
18 Sep			
21 Sep	8	8.1-8.4	Potential Energy and Conservation of Energy
23 Sep			
25 Sep	9	9.1-9.7	Linear Momentum and Collisions
28 Sep			
30 Sep	*Test 2: Chapters 5-8*		
02 Oct	10	10.1-10.6	Rotational Kinematics and Energy
05 Oct			
07 Oct	11	11.1-11.3, 11.6-11.7	Rotational Dynamics and Equilibrium
09 Oct			
12 Oct	13	13.1-13.2, 13.4-13.6	Oscillations about Equilibrium
14 Oct			
16 Oct	*Test 3: Chapters 9-11*		
19 Oct	14	14.1-14.2, 14.4-14.8	Waves and Sounds
21 Oct			

23 Oct	15	15.1-15.8	Fluids
26 Oct			
28 Oct			
30 Oct	16	16.1-16.5	Temperature and Heat
02 Nov			
04 Nov	*Test 4: Chapters 13-15*		
06 Nov	17	17.1-17.3, 17.5-17.6	Ideal Gases and Kinetic Theory
09 Nov			
11 Nov	18	18.1-18.5, 18.8-18.9	The Laws of Thermodynamics
13 Nov			
16 Nov			
21 Nov	*08:00-12:00*	*Final Exam- Chapters 16-18*	