COURSE SYLLABUS, FALL 2020  
PHYSICS 198  
SEMINARS IN PHYSICS  
MILLERSVILLE UNIVERSITY

Note: Since the course is being offered online due to COVID-19, I will make use of all the relevant technologies available including Zoom meetings, D2L, etc. Most of the lectures will be Asynchronous, however there will be some synchronous part, means students must be present during synchronous activities. All students must be present on the first day of the class. The rest of synchronous activities will be decided as class progresses.

Instructor: Tariq H. Gilani
Office Hours: Virtual office hours only
Office: On Zoom
Phone: Tuesday 2 – 3 PM
E-mail: tariq.gilani@millersville.edu
Location: Online

Text: None

Required: Internet access

Recommended: A Bound Notebook, quad ruled, (9.75” x 7.5”) so that you can take notes. Also a calculator is recommended for arithmetic which can handle scientific notation.

Reference Books:


www.unc.edu/%7Erowlett/units, www.physicsweb.org,
**Purpose and objectives:** An overview of history, philosophy and unity of physics and its applications to other disciplines. The goal of this course is to orient beginning physics majors to the study of physics. The course is mandatory and is open to only physics majors in their freshman year. Offered only in fall semester.

This seminar is intended to present an overview of physics to incoming physics majors and prepare them for coming years. The broad treatment will cover the fundamental ideas of physics, relating them to the philosophy, the historical developments, and the contemporary applications of the concepts. The course is also intended to provide the students with an appreciation of the relationship of physics concepts to mathematical concepts and to relate physics to their career objectives.

**Method of Conducting Course:** Class period will include lectures, discussion, problem solving and occasional demonstrations. Supplementary topics and problems will be assigned for study outside of class. **Homework assignments must be turned in on time.** Lectures will be posted online, where students can have access. Students are expected to take the major role in the discussions.

**Exams and Method of Grading:** There will be no exam during the semester. Students’ performance will be judged by their participation, homework assignments and quizzes. All the quizzes will be on D2L. Homework will be assigned throughout the semester. Students will also be assigned topics to prepare their presentations and deliver online on specified dates. Everyone must be present during these presentations (this will be considered as participation).

**Grading Scale:** This is a pass/fail course

**Following topics will be covered in PHYS 198**

**Physics,** Scientific Method, Measurements.

The scope of Physics and a Physicist.

**Problems in our society** --- How physics can help?

- Energy and energy resources.
- Future of the energy.
- Environment.
- Nuclear energy and weapons.
- Radioactivity.

**Matter, Atom** --- Historical background.

**Newtonian Physics** --- Philosophy and history

- Our understanding

**Theory of relativity** --- **Galilean relativity**

--- **Einstein**’s Theory of relativity.

**Quantum Theory**

**Light**--- Waves and Particles

**Thermodynamics** --- Basic heat and thermodynamics