Physical Science 304

Fall 2016

Instructor:	Harish Potti	**Time:**	MW 1200 – 0200PM
Email:	harish.potti@utexas.edu	**Place:**	RLM 8.π (8.314)

Course Pages:

1. http://ph.utexas.edu/~pottiharish/ps304.html

Office Hours: Fridays 2:00 PM – 3:00 PM in RLM 6.116, or by appointment

Objectives: This is a lab-based course that aims to provide knowledge and understanding of some basic physics phenomena. There will be little lecturing in the course. Rather, most of the learning will (hopefully) occur through semi-guided experimentation and discussion. You will be divided into groups and given several questions that you will need to find answers for. You will experiment for roughly the first half of the class period, and during the second half you will answer the questions.

Prerequisites: Physical Science 303

Grading Distribution: Attendance (10%), Participation (30%), Quizzes (30%), Final Exam(30%).

Grading Policy:

- **Attendance:** Attendance will be taken during each class session. Attendance will be graded as follows: 0 or 1 unexcused absence will yield 100 points. For every following unexcused absence 10 points will be subtracted.
- **Participation:** Your class participation grade will be based on the quality of the whole class's discussion and participation in experiments assigned throughout the semester, as well as your individual participation. A maximum of 10 points will be assigned each class period. [Note: the determining factor is not whether or not answers are correct, more how motivated everyone is to participate. An initially wrong contribution will yield an equally high participation grade.]
- **Quizzes:** There will be 2-4 quizzes throughout the semester. For each student, the quiz with the lowest grade will be dropped. Quizzes will be announced at least one class day in advance. 100 points will be possible on each quiz. [Extra credit: During the classes leading up to a quiz, the instructor will occasionally provide optional questions/activities requiring a particular creative and/or involved solution. By completing these questions, students may earn extra credit counting towards the grade on the next exam.]
- **Final Exam:** There will be a cumulative final exam. The final exam will be held on the university-scheduled final exam date & time (TBA). 100 points will be possible on the final exam. Students who are absent for the final exam will receive no credit for it. Students who achieve an A on all quizzes are exempt from the final exam (dropping a quiz is not allowed for this purpose). In this case, the quizzes count as 60% of the final course grade.

Course Policy

- **Attendance:** Attendance in this class is critically important. If you miss a class unexcused more than once, you will receive a zero for that day's class participation grade and have 10 point subtracted from your attendance grade. The only way to avoid this penalty is to obtain a certified excused absence from the Student Emergency Services group. Check the link at

  http://deanofstudents.utexas.edu/emergency/

  for more information on obtaining an excused absence. Students who are unable to attend class on the day of a quiz will have to schedule a make-up date with the instructor within one week of the original date. Students who miss the first two class days will be automatically dropped from the course. Students who miss more than six regular class days (excused or unexcused) will not receive a passing grade and are encouraged to drop the course.

- **Tardiness:** Arriving late to class is a sign of disrespect for your instructor and your lab group. More importantly, arriving late forces your lab group to stop what they are doing and go back to the beginning of the day's exercise so that you can be included. If you are late to class, you will lose one point from that day's participation grade for every five minutes you are late. If you are more than 20 min late to class, you will be counted as absent.

- **Classroom Decorum:** Please do not bring food or drinks (other than water) to class. Headphones, laptops, and cell phones should not appear on your desk during class. If I see any of these items out, you will lose points. More serious disruptive or disrespectful behavior will result in dismissal from the classroom. Academic consequences for these actions will be dealt with on a case-by-case basis.

- **Lab Groups:** In-class activities will take place in groups of two to four students. I will rearrange lab groups at the beginning of every unit.

- **Academic Integrity:** Scientific discovery benefits and thrives through collaboration. The above mentioned lab groups should encourage you to work together, helping each other learn and understand while learning from others. Lab instructions and homework questions are there to be discussed and shared. Nevertheless, there will be quizzes and an exam to test each individual students knowledge during which the instructor expects the students to work alone and complete the questions with utmost honesty. Check the link for more info:

  http://deanofstudents.utexas.edu/sjs/acint_student.php

  Any suspected academic dishonesty will be referred to Student Judicial Services. Sanctions for academic dishonesty range from half credit on individual assignments to expulsion from the university.

Topics to be Covered

- Static Electricity
  - Electric charge
  - Conductors and Insulators
  - Electrostatic Induction
  - Electric Forces and Fields
  - Electric Potential Energy
- Electric Circuits
  - Voltage
  - Electric Current
  - Resistors & Ohm's law
  - Electric Power
  - Capacitors
- Magnetism
  - Magnetic Poles
  - Magnetic properties of Materials
  - Magnetic Fields
  - Magnetic Forces
  - Electric Motors
- Electromagnetic Induction
  - Faraday's law
  - Electric Generators
  - Transformers
  - Electromagnetic Waves
- Waves
  - Properties of Waves
  - Standing Waves
  - Sound Waves
  - Resonance
- Optics
  - Reflection
  - Refraction
  - Lenses
  - Diffraction

Please note: this list of topics is only meant as an approximate guideline. The order or amount of topics covered might change at any time.

Additional Information

- **Religious Holidays:** If you will miss class due to a religious holiday or sporting event, you are required to notify the instructor in writing at least 14 days prior to the event in order to receive an excused absence. The same applies to scheduling conflicts with other classes which should be kept to a minimum by the student as much as possible.

- **Students with disabilities:** Students with disabilities may request appropriate accommodations from the Division of Diversity and Community Engagement, Services for Students with Disabilities. If you anticipate requiring any such accommodation, you must present appropriate documentation to me by the 12th day of class. More information can be found at:

  http://www.utexas.edu/diversity/ddce/ssd

- **Campus Carry:** In 2015 the Texas state legislature passed Senate Bill 11 (SB 11) also known as campus carry, which went into effect August 1^{st} 2016. This bill allows properly licensed individuals over 21 years of age to carry concealed handguns into university buildings like this class room. As the instructor of this course, I cannot prohibit a licensed individual from exercising their right, nevertheless **I strongly discourage anyone from bringing a lethal weapon to class**. The classroom should be a safe space, where opinions are shared and discussed. The presence of a lethal weapon on the other hand fosters an environment of fear. Additionally, P S 304 is a very active class where you will be moving around the room and performing experiments, which poses additional risks for accidents if a weapon were to be present. If you do decide to carry a handgun, please note that your weapon must be concealed at all times. I will not hesitate to contact police immediately should your handgun become visible. Please come talk to me if you have any questions or concerns.