**PRINCE SULTAN UNIVERSITY**
**Department of Mathematics & Science**
***Physical Science (SCI101) SYLLABUS***
**Term 152**


**Course Coordinator: Dr. Asif Zaidi.**

## Textbook:

- ***Conceptual Physical Science Explorations*. Hewitt, Suchocki, and Hewitt. Second Edition. Pearson/Addison Wesley (2010).**

## Goals:

- To increase the understanding of natural phenomena and laws
- To develop physical curiosity and critical thinking skills
- To enhance investigative and observational skills
- To enhance problem solving strategies and techniques
- To enhance communication skills

## Objectives:

The student is expected to become familiar with basic physical principles and concepts in mechanics and fluids. A *conceptual* rather than mathematical approach will be used. Specific objectives include:

- To understand various aspects in the motion of uniformly accelerated objects.
- To become familiar with Newton's laws of motion
- To understand the concepts of work, energy, kinetic energy, potential energy, the conservation of energy, and the conservation of momentum
- To become familiar with several concepts in fluid mechanics, such as fluid pressure, Archimedes' principle, and Bernoulli's principle.

## Grading:

Different class assessment techniques will be used. A total of 100 points will be distributed as follows:

- ***Exams***: Two major exams: 20 points *each*
  Final *comprehensive* exam: 40 points
- ***Quizzes***: 10 points
- ***Homework and other class work***: 10 points

*Note: There will be no make-ups for quizzes missed by the student. Major exam make-up may be possible only after a legitimate reason, approved by the office of student affairs.*

## Attendance and Absences:

- Attendance will be taken within 5 minutes of the start of the class. You will be considered absent if you arrive later.
- A "DN" Grade will be automatically issued to the student who misses 13 lectures. After that he will not be allowed to attend lectures or to take exams.
- There will be no makeups for the lectures missed by the student.
- If a student misses a class because of a legitimate excuse, he should notify the Student's Affairs Office within a week.

| Week | Date | Sec. | Material |
|---|---|---|---|
| 1 | January 17 – 21 | | Measurement. SI Units. Rest, Motion. Speed. Velocity. |
| 2 | January 24 – 29 | | CH2: Newton's First Law of Motion-The Law of Inertia |
| 3 | January 31 – Feb. 04 | | CH2 - continues |
| 4 | February 07 – 11 | | CH3: : Newton's Second Law of Motion-Force and Acceleration |
| 5 | February 14 – 18 | | CH4: Newton's Third Law of Motion-Action and Reaction |
| 6 | February 21 – 25 | | CH6: Energy. Work & Energy forms. Conservation of energy. |
| | **First Major Test – Tuesday, March 1 , 4:00 PM , Auditorium** | | |
| 7 | February 28 – March 03 | | CH6 - continues |
| 8 | March 06 – 10 | | CH8: Fluid Mechanics |
| | March 13 – 17 | | **Midterm Vacation** |
| 9 | March 20 –24 | | CH8 - continues |
| 10 | March 27 – 31 | | Selected topics: Heat. Temperature scales. calorimetry. |
| | **Second Major Exam , Monday, April 11 , 4:00 PM , Auditorium** | | |
| 11 | April 03 – 07 | | Selected topics: Heat |
| 12 | April 10 – 14 | | Selected topics: Waves. Type of Waves. |
| 13 | April 17 –21 | | Selected topics: Waves. Interference of waves. Standing waves. |
| 14 | April 24 – 28 | | Selected topics: Chemistry |
| | | | |
| 15 | May 01 – 05 | | Final Exam Preparation Period |
| 17 | **May 10 –26** | | **Final Exams** |

## Learning Management System (LMS):

We will use LMS throughout this course for several purposes, such as for downloading and uploading files (lectures, presentations, homeworks), exchanging information (announcements and other details), taking exercises and quizzes, and communicating (email). Please make sure that you can login to the LMS website (https://lms.psu.edu.sa) (note the https not http), and that the course SCI101 is among your courses and you can access it. If you have any access issues please contact the responsible department.

## Homework and Quizzes:

- There is a homework assignment at the end of each chapter. You are required to do the homework within a week after finishing each chapter, but you are not required to submit your homework. Your homework will be evaluated using a homework-quiz. That is, one week after finishing the chapter, you will be given a number of problems from your homework to solve in the class.
- In addition, a number of quizzes will be given to monitor student understanding and progress, and to put emphasis on important concepts.

## Classroom Policy:

For the benefit of your fellow students and your instructor, please practice common courtesy with regard to all course interactions. For example:

- Be considerate toward your classmates and instructor, arrive to class on time and do not leave early.
- Avoid classroom distractions. Be attentive, stay awake, and take notes.
- If you must leave early please inform your instructor in advance (enter or leave quietly, don't walk across the front of the classroom)
- ***Cell phones must be turned off during class.***

## Additional Reading:

1. *Physics*. James Walker. 4th Edition. Pearson/Addison-Wesley (2010).
2. *Fundamentals of Physics*. Halliday, Resnick, and Walker. John Wiley & Sons, INC.