



Department of math, computer science and physics

## PHYSICAL SCIENCE I

### COURSE INFORMATION

CLASS: PHYS1011K, 4.0 credit hours

CRN: 22372

Class meeting: MWF9:00-9:50Pm, BCB139

Lab time: Lab: T: 8:00-10:50Pm BCB232

During this pandemic time, lectures will be delivered in a face to face mode, at the same time, will be synchronously live-streamed through webex unless otherwise stated.

### INSTRUCTOR

Dr. Liqiu(Lily) Zheng

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office hours: MWRf: 8:00am-9:00am; MW: 1:00-3:00pm, or schedule for virtual hours for Webex and chats, by appointments

**No late work would be accepted unless you have legitimate excuse(s). For any missed work, if you have a valid excuse from Ms.Jordon's office, you need contact the instructor right after you get back and bring the written document with you. The time window to make up missed work must be in the following two weeks (two weeks right after your absence just in case you are sick for more than one week). After these particular 2 weeks, even if you have a legitimate reason, you would lose the chance to make up for your missed work!**

All class tasks (HW-assignments, in-class quizzes, and labs) will be made available only to those who attend the class. Without the valid excuse(s) from Ms.Jordon's office(Angelique Jordan, MPA, Associate Dean of Student Support), no one would be allowed to make up for any missed work.

### COURSE DESCRIPTION

**This course is a brief survey of the important aspects of chemistry and Astronomy. The goal is to provide**

This course is a brief survey of the important aspects of Physics, chemistry and Astronomy. The goal is to provide students with a solid background concerning basic topics in physics, chemistry and Astronomy. This course is for

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students not majoring in mathematics or science and will not count toward graduation if physics or chemistry is presented for graduation. Laboratory exercises supplement the lecture material. This course cannot be used with PHYS1111 PHYS1112, CHEM 1100 or CHEM 1211 to satisfy Area D for students majored in sciences.

### Course materials

1. Free chapter contents posted on Geogaview.
2. Physical Science, 11th Edition, Bill W Tillery, McGraw Hill Education, ISBN-13: 978-0077862626 ISBN-10: 9780077862626

### Prerequisites:

Since many of the concepts and principles of physics and chemistry are presented in mathematical terms students must have a thorough understanding of basic math. This includes simple algebra (manipulating and solving linear equations); knowing how to use a basic scientific calculator; knowing how to add, multiply, subtract and divide numbers, rounding off and significant figures.

Prerequisite: READ 0099, ENGL 0099, ENGL 0989 or satisfactory English scores to place into co-requisite remediation or higher; MATH 0099, MATH 0987, MATH 0989 or satisfactory math scores to place into co-requisite remediation or higher.

### Learning objectives and outcomes:

#### Institutional Student Learning objectives:

- The outcome for communication
  - The outcome for problem solving
  - The outcome for critical thinking
1. Students nearing completion of their educational program demonstrate effective communication skills that are appropriate for their major field of study, depth of study, and degree level.
  2. Students nearing completion of their educational program demonstrate effective analytical problem solving skills that are appropriate for their major field of study, depth of study, and degree level.
  3. Students nearing completion of their educational program demonstrate sufficient expertise in their major field of study or disciplinary specialization as appropriate for their depth of study in the field and degree level

#### Expected Student Learner Outcomes:

As a result of completing this course the student should be able to:

1. Upon completion of the program, students will be able to demonstrate effective oral and written communication skills pertaining to introductory Physics, Chemistry and Astronomy topics.
2. Upon completion of the program, students will be able to demonstrate effective analytical problem-solving skills pertaining to the field of Physics and Chemistry. Students will have an understanding of the basic concepts of chemistry and Astronomy including selective topics relating to theoretical principles and descriptive chemistry and Astronomy; students will be able to solve basic chemistry and Astronomy problems with speed and accuracy; students will be familiarized with basic chemistry and Astronomy laboratory tools and techniques and have practical experience performing chemistry and Astronomy experiments; students will have a sound background in fundamental chemical and Astronomy principles in preparation for subsequent courses in chemistry and Astronomy.

#### As a result of completing this course the student should be able to:

1. Solve problems by utilizing the scientific method / Employ the scientific method to carry out laboratory exercises.
2. Demonstrate how to interconvert and use various units/systems of measurement.

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3. Demonstrate the use scientific notation and significant figures.
4. Recognize and explain common chemical symbols, chemical formulas, and chemical equations.
5. Describe the periodic table of elements and use the periodic table to provide information on the physical and chemical properties of the elements.
6. Describe chemical reactions and explain the factors that can influence the rate of chemical reactions.
7. Describe the characteristic properties of acids and bases.
8. Demonstrate knowledge of chemical bonding.
9. Describe the properties of rock formations (igneous, metamorphic, and sedimentary) and discuss their relevance to the rock cycle.
10. Compare and contrast the various types of plate motion according to the theory of plate tectonics.
11. Identify and discuss the various aspects of igneous activity.
12. Describe the composition and structure of the atmosphere.
13. Discuss the various types of storms and restate the atmospheric effects that give rise to storms.
14. Demonstrate an increased understanding of laboratory safety procedures and use of the scientific method to safely carrying out laboratory experiments.

### Course materials

1. Scientific method and measurements  
Measurement is the key to science.

2. Structure of the Universe, from atoms to cosmos  
Material world is composed of matter, which as appears as tiny particles. These mass particles organized in various ways to form the world and universe as we know of. Miraculously, there are rules to this organization. (Java Applets or YouTube maybe used to enhance this understanding)

3. Motion, force, and energy.  
In simple term, the universe is made up of matter and energy. The simplest way to demonstrate the concept of energy is motion. Motion is a form of energy possessed by matter. A force is something required changing the state of motion. A universal form of force is gravity. According to Einstein, energy and matter are convertible, i.e.  $E= MC^2$ . (Java Applets or YouTube Video will be used to enhance this understanding)

4. Thermal energy (Heat and Temperature)  
When energy is in transient, i.e. flows, it is called heat energy. A glass of hot water cools down because its thermal energy "flows" away. Since heat is a phenomenon that is closely associated with everyday life, it deserves our attention. Heat energy can at best explained by motions at molecular level. (Java Applets or YouTube will be used to enhance this understanding)

5. Waves, Sound, and Light  
When energy is dumped forcefully into a media, the energy is usually absorbed by the media in the form of wave propagation. Sound waves such a form of energy propagation in air. Light is electromagnetic wave (a form of energy) due to "dancing" charges. Though sound and light waves are quite different in nature, they share common characteristics such interference, reflection, refraction, and diffraction.

6. Electricity and Magnetism  
Electricity and magnetism are phenomena related to the interaction and motion of charges. Electric current is a result of moving current of charges. Moving charges generate magnetic field, which in turn affects the motion of charges. Electricity is a wonderful source of energy to help us does work, i.e., motor to power automobile, for us and to keep our house in winter and cool in summer, to let information instantly appear on our computer via the Internet. Our modern civilization is based heavily on our understanding of these phenomenon. Image there is no electricity today (Java Applets will be used to enhance this understanding)

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## EVALUATION & GRADING

Grade policy		Weight
Participation	Daily attendance	5%
HW/quizzes	Assignments/quizzes	40%
Lab	Lab reports	25%
Two exams	Comprehensive exam	30%

Grade	
A	90% above
B	80-89
C	70-79
D	60-69
F	Below 60

## Class attendance policy

### CLASS ATTENDANCE POLICY

Class attendance is mandatory at Albany State University. ASU attendance policy states that “All students are expected to be in class on time for all class meetings. Attendance begins the first day of class period. Students' grades are based on daily class participation and performance. Instructors will not administer examinations and quizzes to students who have been absent from class for reasons other than official business of the University, sickness, emergencies such as death in the immediate family, jury duty, court summons, etc. **When students are absent for emergency reasons as stated above, the number of excused or unexcused absences permitted should not exceed the number of credit hours of the course.**

To ensure uniformity among courses of the same credit but with a different number of meeting days per week, an absence will correspond to a contact hour for the course.

e.g. For a 3 credit course meeting 3 days per week- missing three days counts as three absences (3 contact hours)

3 credit course meeting 2 days per week -missing one day is equivalent to 1.5 absence; two days absent will be count as 3 absences (3 contact hours)

3 credit course meeting 1 day per week –missing one day is equivalent to 3 absences (3 contact hours)

For a 2 credit course meeting 2 days per week- missing two days counts as two absences (2 contact hours)

2 credit course meeting 1 days per week -missing one day is equivalent to 2 absence (2 contact hours)

For a 1 credit course meeting 1 days per week- missing one day counts as one absences (1 contact hour)

**It is student’s responsibility to monitor class absences to ensure that he/she does not exceed the maximum allowed absence in this course.** However, instructor’s official record of class roster will be considered valid for such penalties. Therefore, it is being suggested that student will check with the instructor to certify all absences. Students will be responsible for the material covered in the class during his/her absence (excused or unexcused) and any work assigned during the missed classes.

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A student must not be absent from mid-term or final exams. Instructor may allow to make up the missed work (determined by the instructor based on the valid original documentary proof). Arrangements for any missed work due to an excused absence (excluding the mid-term and final exam) must be made up within 5 school days. No request will be considered beyond that time. No makeup work will be allowed for unexcused absence. **Students will receive a grade of zero for any missed work due to unexcused absence. Make up questions may NOT be same as original ones.**

If a student enters the class 5 minutes late, he/she will receive a tardy and for 15 minutes late, the student will receive an absence for that respective class. Three tardies will constitute one absence. If a student leaves the class early, he/she will receive an absence for that class meeting. Should a student's late entry into a class disrupt the learning environment, he/she will be asked to leave without discussion.

### **Sanctions**

**If the number of absences exceed from the allowable number, it will affect the student's FINAL grade. After that permitted number of absences, a policy of 2% reduction in the final grade will be applied for each absence.**

- For each extra absence (excused or unexcused) above the permitted number, student will suffer a deduction of 2% of total overall points. For example, for a 4 credit hour course:

For 4 absences, deduction is 0%

For 5 absences, deduction is 2%

For 6 absences, deduction is 4%

For 7 absences, deduction is 6%

For 8 absences, deduction is 8%

For 9 absences, deduction is 10% (equivalent to one letter grade down)

For example, one scores 680 points out of total 800 points in BIOL 1111k and total 9 absences are counted. The calculation of GPA will be as follows:

Before deduction overall percentage =  $680 * 100 / 800 = 85\%$  (letter grade 'B')

After deduction overall percentage =  $(680 - \text{deduction}) * 100 / 800 = (680 - 10\% \text{ of } 800) * 100 / 800 = 75\%$  (one letter grade down to 'C').

### **ACADEMIC DISHONESTY POLICY**

Academic dishonesty includes, but is not limited to: cheating, plagiarism and fraud,  
a. Definition of cheating: The intentional misrepresentation of one's work to deceive for personal gain, when in fact said work is not that person's or assisting another to do the same, using information or devices that are not allowed by the faculty, obtaining and/or using unauthorized materials; fabricating information, research and/or results; violating procedures prescribed to protect the integrity of an assignment, test or other evaluation; collaborating with others on assignments without the faculty's consent; cooperating with and/or helping another student to cheat; unauthorized possession of exams and other related materials, intentional falsification of information on class assignments or presentations, demonstrating any other forms of dishonest behavior, *using cell phone or sharing calculator*

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during test or quiz.

#### Minimum Sanctions-Cheating:

First Offense – a ‘zero’ for the activity that will not be dropped in tabulation of final grade.

Second Offense - an “F” in the course with a report of misconduct to the university for possible dismissal.

b. Definition of Plagiarism: directly quoting the words of others without using quotation marks or indented format to identify them; using sources of information (published or unpublished) without identifying them; paraphrasing materials or ideas without identifying the source; unacknowledged use of materials prepared by another person or agency engaged in the selling of term papers or other academic material.

#### Sanctions-Plagiarism:

Any form of plagiarism which includes improperly documenting quotations or not identifying sources will result in *10% grade reduction in the assignment*.

c. Definition of fraud: Knowingly furnishing false information to the University and forgery, alteration, or misuse of miscellaneous documents, equipment (including computers), records or identification.

#### Minimum Sanctions-Fraud:

First Offense – a ‘zero’ for the activity that will not be dropped in tabulation of final grade and official report of misconduct to Student Affairs

Second Offense - an “F” in the course and official report of conduct to Student Affairs.

## **CLASS DISRUPTION POLICIES**

(1) Cellular phones, pagers, lap tops/computers, audio and or any other high tech devices can be disruptive when activated or used in classrooms and laboratories.

- University Policy: “For security purposes only, cell phones should be placed on vibrate mode upon entering the classroom and may be used only in an emergency. Social contacts by phone calls are discouraged during class time, as unauthorized and non-emergency use of cell phones is prohibited.”
- All other devices should be turned off and placed in a bag or pocket during the times that learning is taking place. If there is an emergency call expected, student(s) must take permission from the instructor and cell phone may be allowed to be kept on.

(2) Inappropriate clothing by students (**both male and female**) also distracts others in the classroom. These include but are not limited to:

- Sun glasses, caps, hats or do-rags. Please remove before entering the classroom.
- Revealing attire (clothing too tight or skimpy clothing that reveals physical attributes) - Beach attire.

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- Students in inappropriate attire will be asked to leave the class and will be marked absent for that day. They will be responsible for all the missing work/assignments.

(3) Children, other individuals not enrolled in the course or pets are not permitted in the lecture or laboratory rooms during the scheduled class time.

(4) Insubordinate behavior is also a serious offence.

#### Sanctions

First Offense – Verbal Warning

Second Offense – Removal from the Classroom. Allowed to return only with signed statement of contrition, and oral apology to class and faculty

Third Offense - Removal from the course

### **CLASS CANCELLATION POLICY**

If class is canceled, the professor will notify students in the most effective manner possible.

### **LAB POLICY**

- 15 minutes late will be considered as absent and will get some point (10%) deduction for that Lab. Silence should be maintained.
- Each Lab report must be turn in at the moment you walk into the classroom. Each day late will cost you 10% of that Lab.
- Each student will take data independently.
- You will get your work signed before you leave. After date of submission, each day late will cost you one point out of 10.
- Copying of Lab report will result in 0 point.
- Lab report should have cover page, which should show Lab number, Lab title, student name, group partner's name, date of experiment, date of submission. You will be provided the format of the cover page. Page 2 will contain abstract. Page 3/4 will contain Tables, graphs and calculations and last page is for results and discussion.
- The abstract should be typewritten in an impersonal (3<sup>rd</sup> person) narrative style. Use past tense. Formulas should be mentioned in complete sentences that explain their relevance. Always proof - read, what you have written and check for proper spelling and grammar. Your abstract should be organized for clarity. Be concise. Combine items that make better sense when read together. Your abstract should include statements that describe and/or explain:

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- (1) What you hoped to discover or confirm and a brief explanation of how your equipment was used to accomplish this
- (2) Which aspect(s) of the phenomenon (event) your attention was focused on and what were the most important measurements (or observations) that you made?
- (3) What you expected to happen? Why?
- (4) What is (are) your most important finding(s).

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