Syllabus for
LPSC 101—Principles of Physical Science Lecture
3 Credit Hours
Online Learning

I. COURSE DESCRIPTION

An introduction and overview to the physical sciences of astronomy, physics and chemistry. (Not applicable to major or minor in science. Not open to students with previous college-level course in physics.)
Prerequisite: Entry-level knowledge of high school algebra is recommended.
Corequisite: LPSC 101 Lab.

II. COURSE GOALS

The purpose of this course is to enable the student to be able to do the following:

A. Recognize critical factors in problems and understand the process for solving problems using abstract mathematical means.

B. Express ideas coherently and effectively in written form.

C. Recognize worldwide concerns and how they apply to him or her.

D. Discover the types of human behavior that create stress on the physical environment.

III. STUDENT LEARNING OUTCOMES FOR THIS COURSE

A. Terminal Objectives:
As a result of successfully completing this course, the student will be able to do the following:

1. Use algebra to solve word problems in the area of physics.
2. Predict physical and chemical behavior based on conceptual models.
3. Describe the structure, balance, and organization in the physical universe.
4. State the factors that govern physical and chemical threats to the environment and identify how he or she can help mitigate the problems.

B. Unit Objectives
As a result of successfully completing each unit, the student will be able to do the following:
Unit I:

1. Define the chapter terms.
2. Express the following in mathematical and conceptual terms: large or small numbers using power of 10 notation, the law of conservation of angular momentum, the acceleration of gravity, the metric system of units, Newton's three laws of motion, conservation of linear momentum, the relationship between distance, velocity, and time for uniformly accelerated motion.
3. Express the following in mathematical and conceptual terms: gravitational potential energy; law of conservation of energy; law of universal gravitation; Fahrenheit, Celsius, and Kelvin temperature scales; the ideal gas law; Boyle's law; laws of thermodynamics; and wave theory and how it applies to sound, light, and other forms of electromagnetic energy. The relationship of wave theory to music will be

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presented in terms of vibrating strings and resonating pipes. The Doppler Effect will be explained and related to applications in physics, meteorology, and astronomy.

Unit II:

1. Define the chapter terms.
2. Describe the following in conceptual terms: Rutherford's model of the atom, Bohr's model of the atom, quantum theory, Paul's exclusion principle, electron energy levels, law of definite proportions, periodic table, periodic law, chemical reactions, hydrocarbons, fats, proteins, carbohydrates, and nucleic acids. Describe the nature of the atomic nucleus and how it affects radioactivity, radioactive decay, as well as nuclear fission and fusion.

Unit III:

1. Define the chapter terms.
2. Describe the following in conceptual terms: Heliocentric theory, Geocentric theory, Kepler's Laws of Planetary Motion, Special Relativity, and General Relativity.
3. Describe the relative motion of the earth, moon, planets, comets, and asteroids.
4. Describe the main features of each planet, including any peculiarities.
5. Describe the types of data that can be gathered from stars and the theories for star formation based on these data.
6. State the observations on which cosmology is based.

IV. TEXTBOOKS AND OTHER LEARNING RESOURCES

A. Required Materials

1. Textbooks(online)

   Bill W. Tillery, *Physical Science Connect Plus (w/LearnSmart Access Card)*, 10th Edition. McGraw-Hill Education.
   ISBN-13: 9780077515164

2. Other

   None

B. Optional Materials

1. Textbooks

   None

2. Other

   None

V. POLICIES AND PROCEDURES

A. University Policies and Procedures

1. Participation in each online class through discussion forums, assignments, or any other course activity is mandatory at Oral Roberts University. This counts as your attendance in the course.
2. Students taking a late exam because of an unauthorized absence are charged a late exam fee.
3. Students and faculty at Oral Roberts University must adhere to all laws addressing the ethical use of others' materials, whether it is in the form of print, electronic, video, multimedia, or computer software. Plagiarism and other forms of cheating involve both lying and stealing and are violations of ORU's Honor Code: "I will not cheat or plagiarize; I will do my own academic work and will not inappropriately collaborate with other students on assignments." Plagiarism is

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usually defined as copying someone else's ideas, words, or sentence structure and submitting them as one's own. Other forms of academic dishonesty include (but are not limited to) the following:

a. Submitting another's work as one's own or colluding with someone else and submitting that work as though it were his or hers;
b. Failing to meet group assignment or project requirements while claiming to have done so;
c. Failing to cite sources used in a paper;
d. Creating results for experiments, observations, interviews, or projects that were not done;
e. Receiving or giving unauthorized help on assignments.

By submitting an assignment in any form, the student gives permission for the assignment to be checked for plagiarism, either by submitting the work for electronic verification or by other means. Penalties for any of the above infractions may result in disciplinary action including failing the assignment or failing the course or expulsion from the University, as determined by department and University guidelines.

4. Final exams cannot be given before their scheduled times. Students need to check the final exam schedule before planning personal or professional events.
5. Students are to be in compliance with university, school, and departmental policies regarding Whole Person Assessment (WPA) requirements. Students should consult the Whole Person Assessment handbooks for requirements regarding general education and the students' majors.
   a. The penalty for not submitting electronically or for incorrectly submitting an artifact is a zero for that assignment.
   b. By submitting an assignment, the student gives permission for the assignment to be assessed electronically .

B. Department Policies and Procedures
1. A fee of $15.00 is assessed for all late exams. This policy applies to all exams taken without notifying the professor prior to the regularly scheduled exam time and to all exams taken late without an administrative excuse.
2. Any student whose unexcused absences total 33% or more of the total number of class sessions receives an F for the course grade.

C. Course Policies and Procedures
1. Evaluation Procedures:

16 D2L quizzes over material in each chapter (20 points each)	320 pts
6 D2L weekly discussions (10 points each)	60 pts
ePortfolio assignment (60 points)	60 pts
Cumulative D2L Final Exam (160 points)	160 pts
TOTAL Points	**600 pts**

Grades for the course will be assigned on the following scale:

A=540 - 600 points
B=480 - 539 points
C=420 - 479 points
D=360 - 419 points
F=000 - 359 points

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2. Whole Person Assessment Requirements
   Complete Modern Scientific Discoveries Essay as an assignment. Instructions for completing this assignment will be handed in class. Instruction on D2L website of the course
3. Other Policies and/or Procedures
   a. Students need to read appropriate chapters before each lecture and perform practice problems to prepare for examinations.
   b. Whether the student is present or absent, the student is responsible for all material and all assignments and for all exams announced by this syllabus.

VI. COURSE CALENDAR

Day	**Topic**	**Chapter**

To be set on D2L webpage at the first day of class.

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Course Inventory for ORU's Student Learning Outcomes
LPSC 101—Principles of Physical Science Lecture
ORU Online Learning

This course contributes to the ORU student learning outcomes as indicated below:
Significant Contribution – Addresses the outcome directly and includes targeted assessment.
Moderate Contribution – Addresses the outcome directly or indirectly and includes some assessment.
Minimal Contribution – Addresses the outcome indirectly and includes little or no assessment.
No Contribution – Does not address the outcome.

The Student Learning Glossary at http://ir.oru.edu/doc/glossary.pdf defines each outcome and each of the proficiencies/capacities.

OUTCOMES & Proficiencies/Capacities	Significant Contribution	Moderate Contribution	Minimal Contribution	No Contribution
1	**Outcome #1 – Spiritually Alive** Proficiencies/Capacities				
1A	Biblical knowledge			X	
1B	Sensitivity to the Holy Spirit				X
1C	Evangelistic capability				X
1D	Ethical behavior			X	
2	**Outcome #2 – Intellectually Alert** Proficiencies/Capacities				
2A	Critical thinking	X			
2B	Information literacy	X			
2C	Global & historical perspectives		X		
2D	Aesthetic appreciation				X
2E	Intellectual creativity		X		
3	**Outcome #3 – Physically Disciplined** Proficiencies/Capacities				
3A	Healthy lifestyle			X	
3B	Physically disciplined lifestyle				X
4	**Outcome #4 – Socially Adept** Proficiencies/Capacities				
4A	Communication skills		X		
4B	Interpersonal skills				X
4C	Appreciation of cultural & linguistic differences				X
4D	Responsible citizenship			X	
4E	Leadership capacity				X

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