

LABETTE COMMUNITY COLLEGE BRIEF SYLLABUS

SPECIAL NOTE:

This brief syllabus is not intended to be a legal contract. A full syllabus will be distributed to students at the first class session.

TEXT AND SUPPLEMENTARY MATERIALS USED IN THE COURSE (if any):

Please check with the LCC bookstore, <http://www.labette.edu/bookstore>, for the required texts for this class.

<u>COURSE NUMBER:</u>	PHSC 105
<u>COURSE TITLE:</u>	PHYSICAL SCIENCE
<u>SEMESTER CREDIT HOURS:</u>	5 Credit Hours
<u>DEPARTMENT:</u>	Chemistry
<u>DIVISION:</u>	General Education Division
<u>PREREQUISITE:</u>	MATH 096 Beginning Algebra, MATH 100 Intermediate Algebra (strongly recommended)
<u>REVISION DATE:</u>	12/2017

COURSE DESCRIPTION:

Physical Science is a survey course that emphasizes physics, chemistry, earth science, and astronomy. The course is designed for the student who is not majoring in a science or engineering field, but who needs to fulfill a laboratory science requirement. Not open to those who have any college credit in physics or chemistry.

COURSE OUTCOMES AND COMPETENCIES:

Students who successfully complete this class will be able to:

1. Explain measurements and matter (chapters 1 and 2)

- Be able to list the fundamental units in the SI system.
- Be able to distinguish between the English and Metric (SI) systems.
- Be able to convert numbers into scientific notation and vice versa.
- Be able to define length, volume, mass, mole, and calculate density.
- Be able to convert from one unit to another using dimensional analysis.

- Be able to define and classify matter.
- Be able to distinguish between the three physical states; solid, liquid, and gas.
- Be able to distinguish between pure substances and mixtures.
- Be able to distinguish between homogenous and heterogenous mixtures.
- Be able to distinguish between elements and compounds.
- Be able to explain filtration and distillation.
- Be able to explain elementary particles, leptons, and bosons.

2. Elucidate force, motion, energy and magnetism (chapters 3 and 4)

- Be able to explain force, motion, and friction.
- Be able to list and explain Newton's three laws of motion.
- Be able to explain gravity from Newton's viewpoint and contrast with Einstein's viewpoint.
- Be able to explain Einstein's special and general theory of relativity.
- Be able to explain the differences between kinetic and potential energy
- Be able to explain, list, and show importance of electromagnetic energy
- Be able to explain heat, temperature, work and heating curves.
- Be able to explain magnetism and electromagnetism

3. Explain and classify types of compounds and reactions (chapters 5 and 6)

- Be able to classify compounds.
- Be able to explain the meaning of and balance chemical equations.
- Be able to explain and differentiate among precipitation, acid-base, oxidation-reduction, and gas formation reactions.
- Be able to compare nuclear and chemical reactions
- Be able to explain and classify nuclear reactions as radioactive decay, fission, and fusion.
- Be able to calculate the energy released for a given nuclear reaction.
- Be able to explain the effects of radiation.
- Be able to explain the uses of nuclear reactions and materials.

4. Explain the structure and polarity of molecules, explain the chemistry of living systems and explain the organization of the universe (chapters 7 and 8)

- Be able to draw Lewis Structures and use the VSEPR model to draw the special structure of molecules.
- Be able to classify and differentiate biomolecules.
- Be able to explain the function of biomolecules in living systems.
- Be able to explain the steps in protein synthesis.

- Be able to explain how electromagnetic radiation is used to tell us about the universe.
- Be able to explain how the universe is organized into galaxies and solar systems.
- Be able to describe black holes and explain their natures.
- Be able to explain the life cycle of stars and the origin of our solar system.
- Be able to classify and describe the planets and other objects that revolve around our Sun.

5. Explain the origin of the Earth and describe the organization of its components (chapter 9).

- Explain some of the properties of Earth and why it is unique.
- Explain some of the properties of the Moon and its relationship to the Earth.
- Explain the beginnings of the Earth
- Explain the composition and properties of the atmosphere and layers within the Earth.
- Describe and explain the cause of plate tectonics.

6. Learn and apply the scientific method in lab work settings.

- Perform measurements using physical apparatus
- Analyze the collected data including appropriate treatment of errors and uncertainties.
- Generate and communicate conclusions based on the data and analysis for experimental investigations.