

PSC 1121L Course Competencies **General Education Physical Science Laboratory**

Course Description: A laboratory course designed to accompany PSC1121 in the study of the major concepts and principles from each of the following areas: physics, chemistry, and astronomy.

This course is designed primarily for elementary and middle school education majors.

1 credit

Prerequisite: MAT 1033

Co-requisite: PSC1121

Course Competencies:

Competency 1: The student will acquire knowledge of the following areas of scientific concern by performing and completing 12-14 experiments in the following areas:

General (2 experiments or exercises)

- Measurements and Significant Figures
- The Scientific Method: observations, data collection, making a hypothesis, causal relationships, and related topics

Physics (4-5 experiments or exercises from the following)

- Speed and Acceleration
- Newton's Laws of Motion
- Work and Energy
- Temperature and Heat Transfer
- Waves
- Electricity
- Magnetism

Chemistry (4-5 experiments or exercises from the following)

- Atomic Spectra
- Types and Properties of Solutions
- Acids and Bases
- Chemical Reactions
- Physical and Chemical Properties and Changes in Matter

Astronomy (2 experiments or exercises from the following)

- Reading a Star Map
- Absorption Spectra and the Classification of Stars
- Observing the Phases of the Moon

Competency 2: The student will become familiar with a variety of laboratory techniques by

1. Measuring: the volume of a liquid using a graduated cylinder, the mass of a solid using a balance, and a distance using English and metric rulers.
2. Operating and manipulating laboratory equipment in a manner that achieves both accuracy and precision.
3. Handling laboratory equipment appropriately and with confidence.
4. Recording data in a manner consistent with accepted scientific practice.
5. Using graphs to represent and interpret data.

Competency 3: The student will be able to use the scientific method to gather information by

1. Making observations and drawing conclusions reflecting his/her actual observations even if they conflict with his/her preconceptions.
2. Hypothesizing by predicting an outcome.
3. Displaying a commitment to safety.
4. Appreciating the experimental nature of science.