

## **Designation of Courses to be Considered for Inclusion in Physical Sciences Breadth Category (BPS)**

### Content/Subject Matter

Physical Sciences courses involve study of the physical world. Analysis of the structure and properties of matter, chemical reactions, the interaction of energy and matter, electromagnetics and wave phenomena, and the interactions between force and motion are subjects generally studied in physical science courses. Courses focusing on discussion of definitions and manifestations of physical laws, development of descriptions of the physical world, the solar system and the Universe, and analysis of environmental processes would also be considered physical science courses. Physical Sciences courses may also develop quantitative or analytical tools to describe static and dynamic relationships among variables and entities, and may study algorithms and logical rules used to apply these relationships. Physical Sciences courses may include analysis of the interaction between the physical world and biological entities, but their focus should be on the physical phenomena underlying such interactions and not on the biological entities themselves.

### Methodology

Physical Sciences courses focus on knowledge and concepts gained and understood using scientific, hypothetico-deductive, evidence-based approaches. Information is typically organized and presented as being the result of a series of hierarchical, problem-solving exercises, in which the central roles of observation and data evaluation in the testing of alternative hypotheses may be emphasized. Demonstrated cause-and-effect relationships among variables, and the algorithms to understand and apply these relationships, are emphasized. Students are exposed to the most current understanding of physical phenomena, to the quantitative, analytical or statistical techniques which may be used to understand these phenomena, as well as to the dynamic nature of this understanding.

### Course Goals

- familiarity with a subset of physical phenomena or material entities, or tools to describe physical phenomena;
- an understanding of the value of hypothetico-deductive cause and effect approaches to gaining knowledge and understanding;
- experience in problem-solving using quantitative or logical algorithms.