

Scientific Ways Of Knowing Outcomes

(Jerry Hinnefeld from IUSB will serve as the IU spokesperson on Sept. 7th.)

Educated persons in every discipline should have a basic understanding of the scientific infrastructure that explains the foundations of life and the physical universe. Paired with this is the understanding of the foundational scientific logic that allows educated persons to assess the quality of evidence in drawing reasonable conclusions with scientific integrity. With these essential purposes of science in mind, students should be able to:

NATURE OF SCIENCE

1. Demonstrate an understanding of how scientific theories are formulated, tested, and validated.
2. Analyze problems using scientific methods, which include defining parameters of a problem, seeking relevant information, subjecting proposed solutions to rigorous testing, and drawing conclusions based on the process.
3. Distinguish between strong and weak evidence.
4. Explain how scientific knowledge changes in response to new information.
5. Recognize the self-correcting nature of science.
6. Recognize the complexity of the physical universe.

DEVELOPMENT AND DEMONSTRATION OF SKILLS

1. Demonstrate competence in laboratory techniques, including measurement, observation, OR field techniques.
2. Find, interpret, and evaluate scientific information.
3. Distinguish between belief and opinion versus theory, recognize what constitutes scientific evidence, and recognize the need for objectivity in data collection and treatment.
4. Illustrate connections between topics and apply principles to new situations or current events.

CONTENT

1. Demonstrate understanding of scientific concepts appropriate to the topic being studied. The specific concepts to be learned will depend on the topic being studied; but the need to establish a common set of underlying definitions and principles is applicable to all scientific topics.