

Liberal Studies Program

Learning Outcomes and Writing Expectations

SCIENTIFIC INQUIRY

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Scientific literacy is an essential skill in our society and a critical component of liberal arts education at DePaul University. To adequately prepare our students in scientific understanding, the Scientific Inquiry domain has two categories of courses: Science as a Way of Knowing (SWK) and Scientific Inquiry-Laboratory (SI-Lab). SWK courses are designed to help students understand the scientific worldview and the nature and process of science. In SI-Lab courses, students will understand how science serves as a mechanism for inquiry into the natural world through hands-on experience-based investigation.

Learning Outcomes for Science as a Way of Knowing (SWK) courses

Students will be able to:

1. Demonstrate understanding of the natural science content that is the focus of the course.
2. Interpret and create multiple representations of data (e.g. graphical, mathematical, pictorial/diagrammatic, and/or descriptive).
3. Use scientific evidence to support or refute predictions made by scientific hypotheses, state the limitations of the scientific method, and identify unsubstantiated claims, such as those based on pseudoscience.
4. Describe the process of scientific research, including aspects such as skepticism, ethics, collaboration, diversity of community, disparate impacts, funding, peer review, or the dissemination of results.
5. Substantiate the claim that scientific knowledge inherently evolves over time as previous understandings are revised with new evidence and perspectives.

Note: the Scientific Inquiry Domain Committee will consider proposals grounded in natural science content from any instructor.

Learning Outcomes for Scientific Inquiry - Laboratory (SI-Lab) courses

Students will be able to:

1. Pose meaningful scientific questions and generate testable scientific hypotheses.
2. Plan, design and conduct scientific investigations in a collaborative environment using appropriate tools and techniques to gather relevant data in order to test and revise scientific hypotheses.
3. Develop and use scientific models (conceptual, physical, and mathematical) to make predictions and develop explanations of natural phenomena.
4. Address variability in the data, recognize and analyze alternative explanations and predictions.
5. Communicate scientific procedures, results, and explanations and engage in arguments based on scientific evidence.

Writing Expectations for all Scientific Inquiry courses

Formal writing is essential for communicating ideas and progress in science, mathematics, and computation to experts within the field and to the broader society. Courses within the Scientific Inquiry Domain should include both formal writing (for example lab reports, essays, and written responses to questions) and supplemental elements that are appropriate for the subject of the course such as mathematical equations, computer code, figures and graphs, lab notebooks, or field journals.