INTEGRATED SCIENCE

isp.northwestern.edu

The Integrated Science Program is a highly selective curriculum of natural sciences and mathematics presented predominantly in small classes at an accelerated pace. Courses emphasize the common base and relationships between the traditional sciences, including the importance of mathematics and the development of first principles, leading to interdisciplinary topics at the forefront of science today. The goal is to provide students who are interested in careers in science and mathematics with a broad quantitative background that will give them superior preparation for further work in graduate or professional schools or permanent employment. The curriculum is composed of 25.7 units, up to 3 of which may be independent research, as well as a regular seminar series. Most students take advantage of the opportunity to pursue research in world-class laboratories at Northwestern and are able to publish peer-reviewed papers in professional journals. For Weinberg College students ISP may lead to a three-year bachelor of arts degree if, by the end of the third year, the student has completed 38.7 or more units and satisfied all other college requirements.

Students must be accepted to Northwestern to be eligible for admission to ISP, which requires a separate application to the program director. For more information on admission procedures, see Special Admission Programs (https://catalogs.northwestern.edu/undergraduate/admission/). Also see the ISP website for the required AP and achievement tests.

The ISP curriculum consists of specially designed courses taught by faculty members of science and mathematics departments. Course descriptions are found in the appropriate departments in this catalog. Though listed in a three-year format, the program is often spread over four years, particularly if a student wishes to combine an ISP major with a second major in a traditional department, such as biological sciences, chemistry, computer science, environmental sciences, earth and planetary sciences, materials science, mathematics, neuroscience, physics, psychology, or in an engineering field. Specific second-major requirements for ISP students can be found on the program website and under individual departments in this catalog.

Program of Study

- Integrated Science Major (https://catalogs.northwestern.edu/undergraduate/arts-sciences/integrated-science/integrated-science-major/)

ISP Learning Objectives

Students who complete the Integrated Science Program major are able to:

- Communicate and collaborate across STEM disciplines, emphasizing what they have in common and how they are all connected.
- Apply complex methods to problem solving in mathematical, physical, chemical, earth, and life sciences.
- Integrate scientific concepts with mathematical approaches.
- Think deeply and critically to develop and investigate scientific hypotheses. This includes having a depth of understanding of scientific methods, discoveries, and their significance across a breadth of fields.
- Conduct self-directed, independent research, critically analyze and interpret findings, and place results in a broad cross-disciplinary context.
- Communicate both the current state of scientific knowledge as well as the results of novel research. This includes having knowledge of the process of science, exemplified by the ability to read literature, probe sources, or examine data to understand the basis upon which scientific conclusions stand.
- Be prepared for advanced graduate study, as well as a wide range of career paths.

Courses

Students take courses in astronomy, biological science, chemistry, computer science, earth and planetary science, mathematics, neuroscience, physics, and statistics; course listings can be found in the relevant sections of this catalog.

INTG_SCI 398-0 Undergraduate Research (1 Unit) Advanced independent study and research. Consent of ISP director required.