

# COLLEGE OF INTEGRATIVE SCIENCES MAJOR

## MAJOR DESCRIPTION

The College of Integrative Sciences (CIS) offers a linked major that equips students with the skills needed to address current and emerging global challenges. These multifaceted challenges require flexible, innovative problem-solving approaches that draw upon scholarship in science, technology, and other perspectives. With a key focus on research, students are transformed from consumers into creators of knowledge. Guided by a faculty mentor, students explore open questions and develop new perspectives on the frontiers of science.

A linked major in CIS enables creative synergies among faculty and students of disparate disciplines and departments. Curious, ambitious students with a wide range of interests in the STEM fields may be attracted to this broad investigative approach of the CIS combined with the intellectual depth of a major in the Natural Science and Mathematics (NSM) program.

Graduates of the College of Integrative Sciences are primed to take a 'big picture' approach to solving complex, real-world problems that involve and contribute to multiple domains of knowledge and industry.

## ADMISSION TO THE MAJOR

Students must apply for admission to the College of Integrative Sciences (CIS) by completing the following application materials ([https://forms.office.com/Pages/ResponsePage.aspx?id=eWz9qXFt80mREQyOWR3D0RcLGAhK\\_YRHoLsNINfMlQlUQTIRQUdOS0JYNjJWlGxUkVNR1E1RkFXOSQlQCN0PWcu](https://forms.office.com/Pages/ResponsePage.aspx?id=eWz9qXFt80mREQyOWR3D0RcLGAhK_YRHoLsNINfMlQlUQTIRQUdOS0JYNjJWlGxUkVNR1E1RkFXOSQlQCN0PWcu)),

which include:

- A description of the proposed research project
- A description of the proposed course of study
- A letter of reference from the proposed faculty mentor

Normally, the deadline for applications is the Friday immediately prior to spring break. Please allow time to prepare your project description prior to the application deadline. If you miss the deadline, contact the director of the CIS to submit your application.

Students are eligible for the CIS linked major if they have chosen a Natural Sciences and Mathematics (NSM) major and have completed or are enrolled in at least one semester of the Research Frontiers Seminar (CIS221 or CIS222). Students should have an interest in interdisciplinary scientific research.

## MAJOR REQUIREMENTS

In addition to majoring in one department or program in NSM, students in the CIS must take a minimum of six and a maximum of nine credits from the following courses:

### OUTLINE OF THE LINKED MAJOR

- **CIS221 and/or CIS222 (0.5 credits/semester).** This course is designed to introduce students to ongoing research projects in the NSM division.

Potential CIS students are encouraged to take the course as early as their first year or during their sophomore year to get exposure to the variety of research conducted in the NSM division.

- **Two interdisciplinary electives (2 credits).** These courses provide core skills from a discipline and department outside the primary major. Selections are made in consultation with your CIS linked-major advisor. The elective courses must be in Division III, outside the host major, and have a theme.
- **Two semesters of a journal club or seminar (0.5–1 credit).** The two journal clubs/seminar series must be in different disciplines. CIS221/CIS222 cannot be used to fulfill this requirement.
- **CIS321 and CIS322 Senior capstone colloquium (0.5 credits/semester).** Two semesters of the capstone colloquium are required. In this course, students learn about and discuss inherently integrative scientific topics, such as the Drake Equation. The capstone course also focuses on developing writing and presentation skills that will be useful going forward. Senior CIS majors present their research to their peers, junior CIS majors, and potential CIS majors.
- **Research (2–4 credits).** Research credits are typically earned in an Advanced Research Seminar or Senior Thesis Tutorial. Two credits of research is the minimum requirement. Four research credits are achieved by taking research for a full credit each semester in the junior year and the senior year. Students are strongly encouraged to write a thesis based on their research during their senior year. In unusual cases, the two-credit minimum can also be satisfied through credits for summer research.
- **One summer research experience.** All students are required to spend at least one summer performing research (<https://www.wesleyan.edu/cis/summer-program/>), preferably the summer after their sophomore year, immediately following acceptance to the College. Students are supported during the summer by a CIS fellowship or doing research for credit.

## STUDENT LEARNING GOALS

Students in the College of Integrative Sciences will acquire the following knowledge and capabilities:

- A breadth of knowledge and creative synergies across various scientific disciplines.
- Skills related to scientific research such as developing a testable hypothesis, formulating research questions, evaluating experimental approaches, troubleshooting, analyzing data, and synthesizing conclusions.
- Applying quantitative and creative tools to address challenges in science and technology.
- Using primary scientific literature.
- Scientific communication in writing (research proposal and final paper), visuals (scientific posters, slideshows), and oral presentations.

Students will demonstrate their knowledge and abilities through research projects, critical analysis papers, participation in class discussions, collaborative group work, and multimedia presentations. Written exams, faculty review, peer review, and self-assessments will also evaluate their class performance.

## RELATED PROGRAMS

Students are eligible for the CIS linked major if they have chosen a Natural Sciences and Mathematics (NSM) major. Students should have an interest in interdisciplinary scientific research. There are many established and emerging fields of study that lie at the intersection of two or more disciplines. Examples of pathways to completing the CIS major that include synergies across departments

are available on the CIS web page (<https://www.wesleyan.edu/cis/about/pathways.html>).

## **HONORS**

Students pursuing a CIS linked major can pursue a senior thesis in either CIS or the department of their linked major. Honors in CIS requires completion of a senior thesis. Three thesis readers will evaluate the thesis work. One reader must be your research mentor, and the readers cannot all be from the same department.

## **CAPSTONE EXPERIENCE**

Research is a cornerstone of the CIS major. A minimum of two credits of research and participation in at least one summer research program (<https://www.wesleyan.edu/cis/summer-program/>) constitutes the Capstone Experience in CIS.