



## St. Olaf College General Education Curriculum Studies in Natural Science - Scientific Exploration and Discovery (SED) Requirement

### Description:

One of two courses, each from a different department or program, that develop an integrative understanding of scientific content, scientific principles, and the methods of contemporary natural science.

*Administrative guideline:* A course may be designated as a Scientific Exploration and Discovery (SED-x) course, an Integrated Scientific Topics (IST-x) course, or both. Students must complete at least one SED course and one IST course, or one course with both attributes and a second course with either attribute, in order to fulfill the two-course Studies in Natural Science requirement. In addition, the two natural sciences courses must be from different departments or programs.

### Intended learning outcomes:

*Students will demonstrate:*

1. knowledge of scientific content and scientific principles in a disciplinary or interdisciplinary field within the natural sciences.
2. proficiency in the application of the scientific method, including the appropriate collection, analysis, and interpretation of data, and effective communication of findings.
3. an ability to use scientific terminology appropriately in meaningful scientific dialogue.
4. an understanding of the process of science as an intellectual pursuit and of the ways in which scientific ideas evolve and come to be accepted.

### Course guidelines with Curriculum Committee comments:

1. Courses must focus on scientific content and scientific principles in a disciplinary or interdisciplinary field within the natural sciences.

*Comment:* SED courses are intended to promote scientific literacy by developing an understanding of a specific disciplinary or interdisciplinary field

within the natural sciences. Courses should introduce concepts and theories such that students are able to use scientific language appropriately, think coherently about science, engage in meaningful scientific conversation, and place their knowledge into a context of broader scientific understanding.

In addition, SED courses should illustrate the nature of scientific understanding. They should make explicit that ideas, theories and hypotheses are subject to experimental test, and convey an understanding of scientific knowledge as the product of a working consensus.

2. Courses must engage students in the methods of contemporary natural science by providing a project-based exploration and discovery experience.

*Comment:* Project-based exploration and discovery experiences consist of hands-on exercises through which students learn to formulate scientific questions, design and conduct appropriate experiments, and collect, analyze, interpret, and communicate data. These experiences should also help students develop an appreciation of the relationship between technology and scientific advancement through the appropriate and thoughtful use of scientific instrumentation to make measurements or assist in observations. Courses that carry the SED attribute require that students spend time in a laboratory and/or field setting; a minimum of 20 hours per semester is suggested. Thus, SED courses will have laboratory hours and spaces assigned, although some courses may schedule blocks of time in appropriate spaces in order to facilitate a seamless lecture, discussion, and experimentation environment.

3. Courses must engage students in the written and/or oral communication of scientific findings.

*Comment:* The natural science requirement is also intended to develop skills in effective scientific communication. Students' oral and/or written presentation assignments should provide students with opportunities to place facts, findings, and ideas into a conceptual framework.

### **Information for instructors proposing SED credit for a specific course:**

The St. Olaf Curriculum Committee is responsible for reviewing and approving proposals to designate individual courses as meeting the Scientific Exploration and Discovery requirement. Instructors may seek SED credit as part of a proposal for a new course, or may seek to add SED credit to an existing course. SED credit is attached to the *course*, not to the instructor or to the specific term in which the course is offered. A proposal for SED credit must show how the course meets each of the SED course guidelines; the comments following a guideline provide additional information about how the Curriculum Committee interprets and applies that

guideline in reviewing proposals. Instructors are encouraged to consider the comments as well as the guidelines themselves in preparing proposals. Forms and additional instructions for submitting proposals electronically are available on the website of the [Office of the Registrar](#).

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