





# Science (SCIE) 326

## Scientific Reasoning (Revision 6)

**Status:**

Replaced with new revision, see the [course listing](#)  for the current revision 

**Delivery mode:**

Individualized study online 

**Credits:**

3

**Area of study:**

Science

**Prerequisites:**

Twelve credits of university-level science courses.

**Precluded:**

None

**Challenge:**

SCIE 326 has a challenge for credit option.

**Faculty:**

[Faculty of Science and Technology](#) 

## Overview



This course deals with both the formal and informal aspects of scientific reasoning. Topics covered include: what is science? what is reason? the scientific method; relations between theory and experiment; scientific paradigms; explanation and prediction; what is a scientific theory? principles of reasoning; systems of analytical reasoning; tools for analysis (Venn diagrams, classification, syllogisms, Boolean logic); statistical inference; traps and fallacies of reason; mathematics in science.

## Learning outcomes

Upon successful completion of this course, you will be able to

- describe what science is and what it is not and discuss the major ideals, principles and paradigms in science.
- discuss critically the relationship between science and human understanding, philosophy and values.
- understand the scientific process and how it works, with a focus on the scientific method and the development of scientific theory.
- describe the role of formal reason, logic and critical thinking as well as the role of mathematics in science.
- use basic tools of scientific reasoning to construct reason-based arguments.

## Evaluation

To **receive credit**  for SCIE 326, you must achieve a course composite grade of at least **D (50 percent)** . The weighting of the composite grade is as follows:

| Activity                     | Weight |
|------------------------------|--------|
| Assignment: Reflective Essay | 25%    |
| Midterm Exam                 | 35%    |
| Final Exam                   | 40%    |

| Activity | Weight |
|----------|--------|
| Total    | 100%   |

The **midterm and final examinations** for this course must be requested in advance and written under the supervision of an AU-approved exam invigilator. Invigilators include either ProctorU or an approved in-person invigilation centre that can accommodate online exams. Students are responsible for payment of any invigilation fees. Information on exam request deadlines, invigilators, and other exam-related questions, can be found at the **Exams and grades** [↗](#) section of the Calendar.

To learn more about assignments and examinations, please refer to Athabasca University's **online Calendar** [↗](#).

## Materials

Derry, Gregory N. *What Science Is and How It Works*. Princeton, NJ:

Princeton University Press, 1999.  (Print)

Lessing, Doris. *Prisons We Choose to Live Inside*. New York: Harper and Row,

1986.\*  (Print)

**\*Note:** As of May 5, 2023, *Prisons We Choose to Live Inside* is no longer used in this course.

## Challenge for credit

### Overview

The challenge for credit process allows you to demonstrate that you have acquired a command of the general subject matter, knowledge, intellectual and/or other skills that would normally be found in a university-level course.

Full information about **challenge for credit** [↗](#) can be found in the Undergraduate Calendar.

## Evaluation

To **receive credit** [↗](#) for the SCIE 326 challenge registration, you must complete the two parts of the challenge exam and achieve a grade of at least **C- (60 percent)** [📄](#) on the entire exam.

[📄](#) **Challenge for credit course registration form**

## Important links

- › [Academic advising](#) [↗](#)
- › [Program planning](#) [↗](#)
- › [Request assistance](#) [↗](#)
- › [Support services](#) [↗](#)

Athabasca University reserves the right to amend course outlines occasionally and without notice. Courses offered by other delivery methods may vary from their individualized study counterparts.

*Opened in Revision 6, January 8, 2016*

*Updated July 9, 2024*

View **previous revision** [↗](#)

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