



# Scientific Literacy in Education

## Course Syllabus

### Course Description

This course aims to increase scientific literacy while introducing education professionals to the core ideas of scientific investigation. The course covers a variety of topics, including the nature of science, the scientific method, scientific reasoning, and scientific communication. Students will participate in practical exercises, case studies, and discussions throughout the course to help them better understand the scientific method, how scientific information is produced, and how it can be applied in education and education administration. Additionally, students will learn how to assess arguments and supporting data, as well as how to differentiate between trustworthy and questionable information sources. The emphasis of the course will be on the value of scientific literacy and how it can be utilized to make informed decisions on broader issues in education. Additionally, students will learn how to critically assess the social and cultural consequences of scientific information as well as the ethical issues that are inherent in scientific research.

This course enhances classroom teaching effectiveness and supports improved student outcomes by introducing new knowledge in a comprehensive understanding of the scientific process, with strategies to evaluate scientific information, promote scientific literacy, and communicate science effectively in educational settings.

### Course Objectives

At the end of this course you should be able to:

1. Develop a fundamental understanding of the scientific process and how it is used in various areas of study.
2. Recognize the parts of a published academic article, understand the open science movement and the context in which it exists, and understand the importance of replication in research.
3. Understand the scientific publication process, some of the biases inherent in that process, and how it has changed over time.
4. Develop critical thinking abilities to assess scientific claims and supporting data and to tell trustworthy sources of information from unreliable ones.
5. Encourage scientific literacy among students, make educated choices about the research presented in lessons, and use effective pedagogical practices.
6. Utilize scientific communication abilities to explain scientific ideas and results to students in an educational setting.

### Modules

- Module 1: Introduction to Science and Scientific Literacy, Quiz 1



- Module 2: Anatomy of a Scientific Paper & Open Science, Quiz 2
- Module 3: Potential Sources of Bias in the Publication of Science, Quiz 3
- Module 4: Identifying Areas of Concern with Scientific Studies, Quiz 4
- Module 5: Improving Scientific Literacy in the Classroom, Quiz 5
- Module 6: Communicating Science at a Broader Level, Quiz 6

### **Grading:**

Each quiz must be passed at an 80% or higher (three attempts allowed).

### **Format**

This is a self-paced, asynchronous (no required live meetings) course. Throughout the PD course, you will find it helpful to take notes along the way to assist with the quizzes. Within each module, you will find reflection assessments that are not graded but will help in your journey through the course. There is an interactive forum in the course to help you connect with peers and instructors, share ideas, and collaborate on best practices throughout your learning journey.