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The Process of Science



Learning about the content of science without learning the process of science is like trying to learn a foreign language with a dictionary. You can memorize a lot of vocabulary words and you may even be able to get by asking for directions or buying milk in the store. But without a sense of the nature and structure of the language, you will never be able to read a novel or have a conversation. Similarly in science, you may learn all of the facts about circulation in the atmosphere and the chemistry of greenhouse gases, but you will likely not understand why scientists have different ideas about the future effects of climate change. Without an awareness of how scientists gather and analyze their data, how they form hypotheses, and how they communicate those ideas to other scientists, you are missing the most important component of science - how we know what we know.

Our newest series of modules currently under production will help bring the process of science to life for you. We present the nature and practice of science as a means of clarifying how we know what we know. The modules listed below offer an answer to the question, "What is science and how does it work?"

Introduction: What is the Process of Science?

- module I. [The Process of Science](#)
- module II. [Teaching the Process of Science](#) (for faculty)

The Process of Science

- module III. The Nature of Science *Summer 2010*
- module IV. [Scientists and the Scientific Community](#)
- module V. [Scientific Institutions and Societies](#)
- module VI. [Scientific Ethics](#)
- module VII. [Ideas in Science: Theories, Hypotheses, and Laws](#)
- module VIII. Ideas in Science: Scientific Controversy *Summer 2010*
- module IX. [The Practice of Science](#)
- module X. [Research Methods: Experimentation](#)
- module XI. [Research Methods: Description](#)
- module XII. [Research Methods: Modeling](#)
- module XIII. [Research Methods: Comparison](#)
- module XIV. [Data: Analysis and Interpretation](#)
- module XV. [Data: Statistics](#)
- module XVI. [Data: Using Graphs and Visual Data](#)
- module XVII. [Data: Uncertainty, Error, and Confidence](#)
- module XVIII. [Scientific Communication: Understanding Scientific Journals and Articles](#)
- module XIX. [Scientific Communication: Peer Review](#)
- module XX. [Scientific Communication: Utilizing the Scientific Literature](#)

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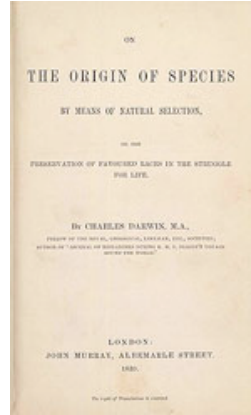


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The material contained in these modules is not presented as a distinct discipline within science, but rather as an umbrella for all scientific disciplines. Each module can stand alone, but they can also be read in conjunction with modules about scientific knowledge. For example, reading the Ideas in Science: Theories, Hypotheses, and Laws module while studying evolutionary theory will give more meaning to the term and thus can help clarify the theory of evolution. Through reading these modules, we hope that our readers will see that science is not a simple set of facts and terms to be memorized. It is a dynamic process that helps us to better understand our surroundings and place in the universe.



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