

Syllabus

Revolutionary Ideas in Science

Course Overview

This one-semester course is a guide to help you understand the history of science from prehistoric to modern times. You will learn about inventions and discoveries in various fields of science, such as physics, chemistry, biology, genetics, computer science, Earth sciences, and astronomy.

This course includes 15 lessons and five Course Activities. Each lesson contains one or more Lesson Activities. The lessons cover the following topics:

- The first two lessons discuss the science that prevailed in prehistoric and ancient periods.
- The next two lessons discuss the scientific revolution and the contributions of Sir Isaac Newton to the field of science.
- The next two lessons describe the discoveries and inventions in various branches of physics, such as thermodynamics, electricity, electromagnetism, and quantum mechanics.
- The next lesson describes various discoveries and inventions related to the cosmos.
- The next two lessons discuss the history of chemical sciences and discoveries related to atoms and molecules.
- The next two lessons describe Charles Darwin's theory of evolution and the discoveries related to genetics and biotechnology.
- The next two lessons describe the discoveries and inventions related to human anatomy and medicine.
- The next lesson describes discoveries related to Earth sciences.
- The final lesson describes various inventions in the field of computer science.

You will submit the Course Activity documents to your teacher, and you will grade your work in the Lesson Activities by comparing them with sample responses. Each lesson also has a multiple-choice mastery test. A multiple-choice end-of-semester test completes the course.

The Course Activities (submitted to the teacher) and the Lesson Activities (self-checked) are major components of this course. They will guide your learning as you work through this course.

Course Goals

This course will help you meet the following goals:

- Explore Stone Age, Bronze Age, and Iron Age inventions and discoveries.
- Describe the ancient and medieval science that prevailed across various regions of the world.

- Describe the scientific revolution and the emergence of the new scientific method.
- Explore the inventions and discoveries of Sir Isaac Newton.
- Explore the inventions and discoveries in the fields of thermodynamics and electricity.
- Explore the inventions and discoveries in the fields of electromagnetism and quantum mechanics.
- Describe various theories related to the evolution of the universe, contributions of famous scientists to the field of astronomy, and various tools used in astronomy.
- Explore various discoveries in chemical sciences.
- Describe the discoveries related to atoms and molecules.
- Describe the discoveries related to the origin of species and the contribution of Charles Darwin to the theory of evolution.
- Explore discoveries in the field of genetics and biotechnology.
- Discuss the history of anatomy from ancient to present times, and various inventions and discoveries in anatomy.
- Describe the discoveries and inventions in medicine.
- Describe the discoveries related to Earth sciences.
- Describe the inventions related to computer devices and the Internet.

Prerequisite Skills

Revolutionary Ideas in Science is a beginner's course and does not have specific prerequisites. Nevertheless, these fundamental skills will be helpful:

- basic math knowledge
- basic computer skills
- ability to understand basic science

General Skills

To participate in this course, you should be able to do the following:

- Perform basic operations with word processing software, such as Microsoft Word.
- Perform online research using various search engines and library databases.
- Communicate through email and participate in discussion boards.

For a complete list of general skills that are required for participation in online courses, refer to the Prerequisites section of the Plato Student Orientation document, found at the beginning of this course.

Credit Value

Revolutionary Ideas in Science is a 0.5-credit course.

Course Materials

- Notebook
- Computer with Internet connection and speakers or headphones
- Microsoft Word or equivalent

Course Pacing Guide

This course description and pacing guide is intended to help you stay on schedule with your work. Note that your course instructor may modify the schedule to meet the specific needs of your class.

Day	Activity / Plato Objective	Type
1 day:	Course Orientation <i>Review the Plato Student Orientation and Course Syllabus at the beginning of this course.</i>	
3 days: 2–4	Prehistoric Science and Technology <i>Explore the inventions and discoveries of the prehistoric period.</i>	Lesson
3 days: 5–7	Ancient and Medieval Science <i>Describe the ancient and medieval science that prevailed across various regions of the world.</i>	Lesson
3 days: 8–10	The Scientific Revolution <i>Describe the scientific revolution that occurred from the mid-fifteenth century to the seventeenth century.</i>	Lesson
1 day: 11	Para Jumble	Activity
1 day: 12	Impact of the Scientific Revolution	Course Discussion
3 days: 13–15	The Newtonian Revolution <i>Explore the inventions and discoveries of Sir Isaac Newton.</i>	Lesson
5 days: 16–20	The Wheel, Prehistoric Artifacts, and Scientific Equipment	Course Activity

Day	Activity / Plato Objective	Type
4 days: 21–24	Thermodynamics and Electricity <i>Explore the inventions and discoveries in the fields of thermodynamics and electricity.</i>	Lesson
4 days: 25–28	Electromagnetism and Quantum Mechanics <i>Explore the inventions and discoveries in the fields of electromagnetism and quantum mechanics.</i>	Lesson
1 day: 29	Space Jumble	Activity
1 day: 30	Dual Property of Light	Course Discussion
4 days: 31–34	The Cosmos <i>Explore the various theories and inventions related to the universe.</i>	Lesson
5 days: 35–39	Steam Engines, Refraction, and Missions of NASA	Course Activity
3 days: 40–42	Chemical Sciences <i>Explore important discoveries in the chemical sciences.</i>	Lesson
3 days: 43–45	Chemical Atomism <i>Describe discoveries related to atoms and molecules.</i>	Lesson
1 day: 46	Para Jumble	Activity
1 day: 47	Telescope on Earth or in Space	Course Discussion
5 days: 48–52	From Alchemy to Chemistry	Course Activity
3 days: 53–55	The Darwinian Revolution <i>Describe the discoveries related to the origin of species and the contribution of Charles Darwin to the theory of evolution.</i>	Lesson
4 days: 56–59	The DNA Mystique <i>Describe discoveries in the field of genetics and biotechnology.</i>	Lesson

Day	Activity / Plato Objective	Type
4 days: 60–63	The Revolution in Anatomy <i>Describe the discoveries and inventions in anatomy.</i>	Lesson
5 days: 64–68	Comparing Competing Theories	Course Activity
1 day: 69	Space Jumble	Activity
1 day: 70	Theory of Evolution	Course Discussion
4 days: 71–74	Medicine <i>Describe discoveries and inventions in medicine.</i>	Lesson
3 days: 75–77	Earth Sciences <i>Describe discoveries related to Earth sciences.</i>	Lesson
4 days: 78–81	The Information Age <i>Describe inventions related to computer devices and the Internet.</i>	Lesson
5 days: 82–86	Atmospheric Pressure, Global Warming, and Use of Computers	Course Activity
1 day: 87	Para Jumble	Activity
1 day: 88	Social Networking	Course Discussion
1 day: 89	Course Review	
1 day: 90	End of Course	Assessment