

## SOC-967 – The Scientific Revolution: 1500-1800

### Independent Study Correspondence Course Syllabus

**Instructor:** Allen Carden, PhD  
**Phone:** (559) 903-0648  
**Email:** [Allen.Carden@fresno.edu](mailto:Allen.Carden@fresno.edu)

**Number of Graduate Semester Units:** 3 units  
**Target Audience:** All

#### Course Description

An exploration of the key discoveries, theories, personalities, and impact of the scientific revolution in Europe in the 16th through the 18th centuries, including the conflict between scientific advances and traditional religious and cultural views of the period. Comparisons with the current revolution in science and technology will be examined.

Note: Required textbook and video must be acquired separately.

#### Required Texts and Course Materials

**Textbook:** Gribbin, J. (2004). *The Scientists: A History of Science Told through the Lives of its Greatest Inventors*. ISBN-13: 978-0812967883 <https://www.amazon.com/Scientists-History-Science-Greatest-Inventors/dp/0812967887>

**Video:** “Galileo’s Battle for the Heavens” a NOVA/Public Television video

**Note:** Students are responsible for purchasing their own textbook, analyzing the content, and applying what they learned to the course assignments. You are welcome to purchase used, ebook, or new versions to save money. You can order the book directly from the publisher or from one of several discount aggregators (for example): <http://books.nettop20.com>

**Course Packet:** The course packet includes information about the course, instructions and rubrics for completing course assignments, information about Fresno Pacific University (FPU), and specifics on FPU and Continuing Education policies and procedures.

#### Course Dates

Self-paced; students may enroll at any time and take up to one year, from the date of registration, to complete assignments. Students may complete assignments in no less than three weeks for a 3-unit course (one week per unit).

## National Standards Addressed in This Course

### National Board for Professional Teaching Standards (NBPTS)

(<http://www.nbpts.org/standards-five-core-propositions/>)

First published in 1989 and updated in 2016, [What Teachers Should Know and Be Able to Do](#) articulates the National Board's Five Core Propositions for teaching. The Five Core Propositions - comparable to medicine's Hippocratic Oath — set forth the profession's vision for accomplished teaching. Together, the propositions form the basis of all National Board Standards and the foundation for National Board Certification. Course assignments have been designed so students can demonstrate excellence against these professional teaching standards whenever possible.

- Proposition 1: Teachers are committed to students and their learning
- Proposition 2: Teachers know the subject they teach and how to teach those subjects to students
- Proposition 3: Teachers are responsible for managing and monitoring student learning
- Proposition 4: Teachers think systematically about their practice and learn from experience
- Proposition 5: Teachers are members of learning communities

### California History Standards

Students analyze the historical developments of the Scientific Revolution and its lasting effect on religious, political, and cultural institutions. 7.10.1: Discuss the roots of the Scientific Revolution (e.g. Greek rationalism; Jewish, Christian, and Muslim science; Renaissance humanism; new knowledge from global exploration). 7.10.2: Understand the significance of the new scientific theories (e.g. those of Copernicus, Galileo, Kepler, Newton) and the significance of new inventions (e.g. the telescope, microscope, thermometer, barometer). 7.10.3: Understand the scientific method advanced by Bacon and Descartes, the influence of new scientific rationalism on the growth of democratic ideas, and the coexistence of science with traditional religious beliefs.

### Continuing Education Program Student Learning Outcomes

CE 1	Demonstrate proficient written communication by articulating a clear focus, synthesizing arguments, and utilizing standard formats in order to inform and persuade others, and present information applicable to targeted use.
CE 2	Demonstrate comprehension of content-specific knowledge and the ability to apply it in theoretical, personal, professional, or societal contexts.
CE 3	Reflect on their personal and professional growth and provide evidence of how such reflection is utilized to manage personal and professional improvement.
CE 4	Apply critical thinking competencies by generating probing questions, recognizing underlying assumptions, interpreting and evaluating relevant information, and applying their understandings to the professional setting.
CE 5	Reflect on values that inspire high standards of professional and ethical behavior as they pursue excellence in applying new learning to their chosen field.
CE 6	Identify information needed in order to fully understand a topic or task, organize that information, identify the best sources of information for a given enquiry, locate and critically evaluate sources, and accurately and effectively share that information.

## Student Learning Outcomes (SLOs) for This Course

<b>Student Learning Outcomes for This Course</b> By the end of this course student will be able to:	<b>National Standards Addressed in This Course*</b>	<b>Continuing Education Program Student Learning Outcomes Addressed**</b>
1. Describe the religious/cultural environment within which the growth of science developed in Europe in the 16th and 17th centuries		
2. Understand the importance of key individuals and inventions to the Scientific Revolution of the period		
3. Explain key theories developed by thinkers and researchers during the Scientific Revolution		
4. Define the nature of conflicts that arose between the new scientific theories and the Roman Catholic Church, and the reasons for resistance to change		
5. Grasp the implications of changes in core values and worldviews as a result of scientific observation and experimentation		
6. Trace the development of the "scientific method"		
7. Analyze the growth and expansion of scientific thinking as a result of early discoveries and its impact on Western Civilization		
8. Analyze the relationship between scientific discoveries of the era and changes in technology and society, including the Age of Discovery and Colonization		
9. Demonstrate awareness of ethical considerations in science		
10. Demonstrate ability to take material from this course and develop a meaningful lesson for students		

\* Please refer to the section on **National Standards Addressed in This Course**

\*\* Please refer to the section on **Continuing Education Program Student Learning Outcomes**

## Topics, Assignments, and Activities

Module Module Title	Module Assignments and Activities	Points Possible for Each Assignment
Module 1	<ul style="list-style-type: none"> <li>Watch DVD, "Galileo's Battle for the Heavens" and respond to questions</li> </ul>	50 pts
Module 2	<ul style="list-style-type: none"> <li>Evaluate the educational materials available from the DVD</li> </ul>	5 pts
Module 3	<ul style="list-style-type: none"> <li>Assigned readings from John Gribbin's book, <i>The Scientists</i>, and create a chart of 20 scientists per instructions, as well as completing a review of the book</li> </ul>	50 pts
Module 4	<ul style="list-style-type: none"> <li>Biographical report (1-2 pages each) on three selected scientists</li> </ul>	20 pts
Module 5	<ul style="list-style-type: none"> <li>Develop an annotated Internet bibliography of eight websites useful for teachers</li> </ul>	15 pts
Module 6	<ul style="list-style-type: none"> <li>Report on the Scientific Method (may be written report, power point, or poster format)</li> </ul>	15 pts
Module 7	<ul style="list-style-type: none"> <li>Essay (1-2 pages) on the influence of scientific thinking on the Enlightenment</li> </ul>	10 pts
Module 8	<ul style="list-style-type: none"> <li>Report (1-2 pages) on a pre-1500 non-European scientific discovery helpful to the advance of science in the West</li> </ul>	10 pts
Module 9	<ul style="list-style-type: none"> <li>Personal opinion essay (1-2 pages) on the relationship between science and religious faith</li> </ul>	10 pts
Module 10	<ul style="list-style-type: none"> <li>Develop and teach a lesson dealing with the history of science (or submit two lesson plans if unable to teach a lesson)</li> </ul>	30 pts
Module 11	<ul style="list-style-type: none"> <li>Essay (1-2 pages) on what can be gained from a study of the history of science</li> </ul>	10 pts
Module 12	<ul style="list-style-type: none"> <li>Evaluation and application (1 page) describing your reaction to the course and how you might find it useful in your teaching</li> </ul>	5 pts
	<b>TOTAL POINTS</b>	<b>230 points</b>

## Grading Policies, Rubrics, and Requirements for Assignments

### Grading Policies

- Assignments will be graded per criteria presented in the course rubrics.
- A = 90-100% and B = 80-89%, (anything below 80% will not receive credit.)
- The discernment between an A or a B letter grade is at the discretion of the instructor based on the quality of work submitted (see course rubrics).
- Coursework falling below a B grade will be returned with further instructions.
- All assignments must be completed to receive a grade and are expected to reflect the quality that teacher-training institutions require of professional educators. If completed assignments do not meet this standard, students will be notified with further instructions from the instructor.

## Grading Rubrics

Grade	Percent	Description	Rubric
A	90-100%	Excellent	Meets all course / assignment requirements with significant evidence of subject mastery and demonstration of excellent graduate level professional development scholarship.
B	80-89%	Very Good	Adequately meets criteria for all course/assignment requirements - demonstrates subject competency with very good graduate level professional development scholarship.
NC	Below 80%	Unacceptable	Does not meet the minimum criteria for all course/assignment requirements and demonstrated little, if any, evidence of acceptable graduate level professional development scholarship.

## Writing Requirements

- **Superior:** Writing is clear, succinct, and reflects graduate level expectations. Clearly addresses all parts of the writing task. Maintains a consistent point of view and organizational structure. Include relevant facts, details, and explanations.
- **Standard:** Writing is acceptable with very few mistakes in grammar and spelling. Addresses most parts of the writing task. Maintains a mostly consistent point of view and organizational structure. Include mostly relevant facts, details, and explanations.
- **Sub-standard:** Writing contains noticeable mistakes in grammar and spelling. Does not address all parts of the writing task. Lacks a consistent point of view and organization structure. May include marginally relevant facts, details, and explanations.

## Lesson Plan Requirements

- **Superior:** Instructional goals and objectives clearly stated. Instructional strategies appropriate for learning outcome(s). Method for assessing student learning and evaluating instruction is clearly delineated and authentic. All materials necessary for student and teacher to complete lesson clearly listed.
- **Standard:** Instructional goals and objectives are stated but are not easy to understand. Some instructional strategies are appropriate for learning outcome(s). Method for assessing student learning and evaluating instruction is present. Most materials necessary for student and teacher to complete lesson are listed.
- **Sub-standard:** Instructional goals and objectives are not stated. Learners cannot tell what is expected of them. Instructional strategies are missing or strategies used are inappropriate. Method for assessing student learning and evaluating instruction is missing. Materials necessary for student and teacher to complete lesson are missing.

## Instructor/Student Contact Information

This course requires a minimum of three contacts between the student and the instructor. The first contact point occurs after the student enrolls in the course. The instructor contacts the student by phone to welcome them to the course and Fresno Pacific University. The instructor provides an overview of the course, material, assignments, and expectations for successful completion of the course. This initial interaction also establishes a foundation for future interactions (via email or phone). The second interaction should occur when the student is approximately half-way through the course. The instructor can field any assignment questions and learn what has been most

beneficial to the student so far. The final conversation occurs at the end of the course. This interaction provides a final check that all assignments have been completed, final grade request has been submitted, and answer any final questions or concerns.

## **Coursework Hours**

Based on the Carnegie Unit standard, a unit of graduate credit measures academic credit based on the number of hours the student is engaged in learning. This includes all time spent on the course: reading the textbook, watching videos, listening to audio lessons, researching topics, writing papers, creating projects, developing lesson plans, posting to discussion boards, etc. Coursework offered for FPU Continuing Education graduate credit adheres to 45 hours per semester unit for the 900-level courses. Therefore, a student will spend approximately 135 hours on a typical 3-unit course.

## **Services for Students with Disabilities**

Students with disabilities are eligible for reasonable accommodations in their academic work in all classes. In order to receive assistance, the student with a disability must provide the Academic Support Center with documentation, which describes the specific disability. The documentation must be from a qualified professional in the area of the disability (i.e. psychologist, physician or educational diagnostician). Students with disabilities should contact the Academic Support Center to discuss academic and other needs as soon as they are diagnosed with a disability. Once documentation is on file, arrangements for reasonable accommodations can be made. For more information and for downloadable forms, please go to <https://www.fresno.edu/students/academic-support/services-students-disabilities>.

## **Plagiarism and Academic Honesty**

All people participating in the educational process at Fresno Pacific University are expected to pursue honesty and integrity in all aspects of their academic work. Academic dishonesty, including plagiarism, will be handled per the procedures set forth in the Fresno Pacific University Catalogue - <https://www.fresno.edu/students/registrars-office/academic-catalogs>

## **Technology Requirements**

To successfully complete the course requirements, course participants will need Internet access, can send and receive email, know how to manage simple files in a word processing program, and have a basic understanding of the Internet. Please remember that the instructor is not able to offer technical support. If you need technical support, please contact your Internet Service Provider.

## **Final Course Grade and Transcripts**

When all work for the course has been completed, students will need to logon to the Continuing Education website (<https://ce.fresno.edu/my-account>) and "Request Final Grade". Once the instructor receives the requests and submits the grade online, students may log back in to view their Final Grade Report or order transcripts online. Please allow at least two weeks for the final grade to be posted. For more information, see the Continuing Education Policies and Procedures at <https://ce.fresno.edu/ce-policies-and-procedures>.

## University Policies and Procedures

Students are responsible for becoming familiar with the information presented in the Academic Catalog and for knowing and observing all policies and procedures related to their participation in the university community. A summary of university policies may be found on the university website at <https://www.fresno.edu/students/registrars-office/academic-catalogs>.

## Fresno Pacific University Student Learning Outcomes

<b>Student Learning Outcomes Oral Communication:</b> Students will <i>exhibit</i> clear, engaging, and confident oral communication – in both individual and group settings – and will critically <i>evaluate</i> content and delivery components.
<b>Written Communication:</b> Students will <i>demonstrate</i> proficient written communication by <i>articulating</i> a clear focus, <i>synthesizing</i> arguments, and utilizing standard formats in order to <i>inform</i> and <i>persuade</i> others.
<b>Content Knowledge:</b> Students will <i>demonstrate</i> comprehension of content-specific knowledge and the ability to apply it in theoretical, personal, professional, or societal contexts.
<b>Reflection:</b> Students will <i>reflect</i> on their personal and professional growth and <i>provide evidence</i> of how such reflection is utilized to manage personal and vocational improvement.
<b>Critical Thinking:</b> Students will <i>apply</i> critical thinking competencies by <i>generating</i> probing questions, <i>recognizing</i> underlying assumptions, <i>interpreting</i> and <i>evaluating</i> relevant information, and <i>applying</i> their understandings to new situations.
<b>Moral Reasoning:</b> Students will <i>identify</i> and <i>apply</i> moral reasoning and ethical decision-making skills, and <i>articulate</i> the norms and principles underlying a Christian world-view.
<b>Service:</b> Students will <i>demonstrate</i> service and reconciliation as a way of leadership.
<b>Cultural and Global Perspective:</b> Students will <i>identify</i> personal, cultural, and global perspectives and will employ these perspectives to <i>evaluate</i> complex systems.
<b>Quantitative Reasoning:</b> Students will accurately <i>compute</i> calculations and symbolic operations and <i>explain</i> their use in a field of study.
<b>Information Literacy:</b> Students will <i>identify</i> information needed in order to fully understand a topic or task, <i>explain</i> how that information is organized, <i>identify</i> the best sources of information for a given enquiry, <i>locate</i> and critically <i>evaluate</i> sources, and accurately and effectively <i>share</i> that information.