COURSE OUTLINE

History 133 History of Science

I. Catalog Statement

HIST 133 is a history of the notable scientific ideas and discoveries in Western civilization. It is a seminar, colloquial style discussion that examines the forces in history that led to the development of the major scientific revolutions and thinkers that have shaped modern industrialized *humanity* and culture. Some of the thinkers and scientists studied include the philosophy of science, the scientific method, science and pseudoscience, how science interacts with other cultural elements, ancient science, magic and renaissance science, the Copernican Revolution, the Newtonian Revolution, the Darwinian Revolution, Pasteur and the medical revolution, and the Einstein Revolution. The course enhances the students' understanding of the present by a better understanding of the past.

Total Lecture Units: 3.0 **Total Course Units: 3.0**

Total Lecture Hours: 48.0

Total Faculty Contact Hours: 48.0

Recommended Preparation: Eligibility for ENGL 101.

II. Course Entry Expectations

Skills Level Ranges: Reading 6, Writing 6, Listening/Speaking 6, Math 2.

Prior to enrolling in the course, the student should be able to:

- 1. read at the 12th grade level or higher;
- 2. understand abstract and complex collegiate reading selections;
- 3. write an organized and grammatically correct essay which focuses on a central idea and employs specific details;
- 4. complete a research paper, write essay exams, or complete other types of writing assignments;
- 5. communicate learning, conceptual understanding and critical analysis skills through writing research papers, essay exams, or other types of writing assignments;
- 6. learn material through class discussion and lecture;
- 7. add, subtract, multiply, and divide using whole numbers, fractions, and decimals
- 8. convert fractions and decimals to percentages.

III. Course Exit Standards

Upon successful completion of the required coursework, the student will be able to:

- 1. demonstrate critical thinking and scientific skills;
- 2. debate controversial issues rationally;
- 3. write clearly and concisely about scientific issues covered in the course;
- 4. demonstrate a knowledge of the history of science;

1. Development of medical science in America

5. demonstrate how science and culture interact.

IV.	<u>Course Content</u> Total Faculty Contact Hours =	entact Hours = 48 Hours	
	A. Introduction/History of Science	2 hours	
	B. Science and Pseudoscience	2 hours	
	C. Relationships Between Science and Cultural Traditions	1 hour	
	D. The World of Prescience Myth and Science		
	 E. Science in the Ancient World: Mesopotamia, Sumeria, Greece 1. Hellenic and Hellenistic Science 2. Islamic Science 3. Indian science: Hindu Math 	10 hours	
	F. Roman Science/Technology and the Rise of Islamic Science 1. Medieval science	1 hour	
	G. The Coperican Revolution	3 hours	
	H. The Newtonian Revolution and Synthesis	3 hours	
	I. The Scientific Revolution	3 hours	
	J. Science and the Enlightenment	2 hours	
	K. The Geological Revolution and the Discovery of the Earth	2 hours	
	 L. The Darwinian Revolution and Evolution Deep Time 1. Darwin and the Victorian world 2. Natural Salaction and the development of the genetic world of science 	2 hours	
	2. Natural Selection and the development of the genetic world of scienceM. Pasteur and the Medical Revolution	2 nours	

N. Faraday, Maxwell and the Discovery of Electromagnetism
O. New Directions in Math: Cantor, Peano, Russel
P. The Eisenstein Revolution—Relativity in the Context of Fin de Siècle Europe4
Q. Quantum Mechanics
A hours
R. The Big Bang
S. Unresolved Issues in Cosmology, Physics, Life Science
3 hours

V. Methods of Instruction

The following methods of instruction may be used in the course:

- 1. lecture;
- 2. multimedia;
- 3. student individual and group presentations;
- 4. online (including hybrid, blogs, group discussions, etc.);
- 5. articles and books on reserve in the library.

VI. Out of Class Assignments

The following out of class assignments may be used in the course:

- 1. essay(e.g. write an in-class essay which compares the changes brought about by the Newtonian revolution to those brought about by the Einsteinian revolution);
- 2. research paper (e.g. a short biography of a notable 19th or 20th century scientist, followed by an evaluation of the impact of his or her work not only upon the filed of science but also upon the global community).

VII. Methods of Evaluation

The following methods of evaluation may be used in the course:

- 1. examinations;
- 2. class participation demonstrating course exit standards;
- 3. research projects.

VIII. <u>Textbook(s)</u>

Kuhn, Thomas. S. *The Structure of the Scientific Revolution 4th Edition*. Chicago: University of Chicago Press, 2012. Print. 16th Grade Reading Level. ISBN: 9780226458120.

IX. Student Learning Outcomes

Upon successful completion of the required coursework in History of Science, the student will be able to:

- 1. summarize various scientific philosophies and approaches;
- 2. demonstrate critical thinking and scientific skills regarding the interaction of science and culture;
- 3. write and discuss events from the history of science.