ROSE STATE COLLEGE

Division Course Syllabus

Division: Humanities
Course Prefix and Number: PHIL 1203
Course Title: Introduction to the History and Philosophy of Science
Semester and Year Submitted: Spring 2014
Credit Hours: 3
Prepared by: Caryl Gibbs
Hours Per Week: Class 3, Lab 0

Course Description (as it appears in Catalog):
This course surveys the history and philosophy of Western civilization from the perspective of developments in science and scientific thinking. This course may be taken as Humanities credit for General Education Requirements. Prerequisite: READ 1213 or equivalent.

Prerequisites: Reading 1213 or Equivalent
Text(s):
Title: Science and Technology in World History, 2nd ed.
Author: James E. McCellan III and Harold Dorn
Publisher: The John Hopkins University Press
Copyright Date: 2006
ISBN #: 978-0801883606
Reading Level: 17
Supplemental Materials:
A variety of online reference materials
Films relevant to the course content
Outline for Remainder of Syllabus:

Rationale:

Science is producing changes in all facets of life, changes that individuals should understand if they hope to cope with the new world which those changes are rapidly creating. Such a perspective of history's scientific discoveries is especially appropriate for today's students.

This course traces the interaction between scientific discoveries and cultural developments. It also identifies key figures and ideas responsible for scientific changes at various times throughout history.

Expected Outcomes:

Following the course, the student should be able to:

1. Identify key scientific figures and describe their contribution to civilization.
2. Describe social and cultural conditions during various periods of history, particularly as said conditions relate to the progression of scientific thought.
3. Explain scientific ideas, attitudes, and world views prevalent during various periods of history.
4. Relate factors that contributed to the development of new knowledge, discoveries, and technologies.
5. Evaluate the impact of significant turning points in the development of science.

Methods of Instruction:

Formal Lecture
Lecture and Discussion
Internet or Computer Based Instruction
Inquiry Approach
Film and Video content relevant to the philosophy of science

Assessment (Including Critical Thinking measurements):

Students will be required to demonstrate their knowledge of the course content, as identified in the learning goals, on written examinations, oral presentations, or projects. The grades of the students will be assigned based on a predetermined scale.

Suggested:

30% Written responses to assigned readings examining specific problems in the philosophy of science and the history of technology.
30% Knowledge and comprehension quizzes over assigned material, including, but not limited to, vocabulary terms specific to the philosophy of science, philosophical concepts specific to the history of scientific inquiry, and information regarding scientific figures and their contributions to science and culture.
30% Scholarly research into a specific topic of the student’s choice, submitted for evaluation in an annotated bibliography and formal presentation.
10% Final examination covering the major topics from the history and philosophy of science, including scientific terms, discoveries, philosophers, and major theoretical developments in the history of the philosophy of science.

Learning Objectives:

The History and Philosophy of Science presents the history of Western civilization, from ancient times to the present, in terms of the interplay between scientific discoveries and cultural developments. It focuses on the rational, analytical, inquiring attitude that is a central characteristic of Western civilization. While the focus of the course will be on Western Civilization, students will be introduced to non-Western thought and technology.

RECOMMENDED UNITS

Following is a brief summary of the topics that make up the course:

UNIT 1: Introduction to the Philosophy of Science (Outcomes 1 & 5).
In this unit, students will demonstrate understanding of the nature of scientific thought and its relationship to culture and civilization. The student will be familiarized with the vocabulary of philosophy as it pertains to the study of science, as well as the methods of rational inquiry that have driven scientific progress.

Suggested Learning Activities:
A. Students will participate in classroom discussions and lectures on the topics specific to this unit.
B. Students will complete a series of quizzes designed to test comprehension of the assigned reading and lecture materials and knowledge of the basic vocabulary of the topics specific to this unit.
C. Students will complete analytical writing using an inquiry approach to articulate their comprehension of the material and offering a thoughtful response to the issues addressed.

UNIT 2: Prehistoric and Ancient Technologies (Outcomes 1, 2, 3, 4).
In this unit, students will identify the fundamental elements of prehistoric and ancient scientific concepts and relate them to the future developments of science to discover the human instinct toward improvement and efficiency.

Suggested Learning Activities:
A. Students will participate in classroom discussions and lectures on the topics specific to this unit.
B. Students will complete a series of quizzes designed to test comprehension of the assigned reading and lecture materials and knowledge of the basic vocabulary of the topics specific to this unit.
C. Students will complete analytical writing using an inquiry approach to articulate their comprehension of the material and offering a thoughtful response to the issues addressed.
UNIT 3: Greek Science and Society (Outcomes 1, 2, 3, 4).
In this unit, students will identify the fundamental elements of Greek Scientific thought and relate them to Greek political forms, illuminating the origins of Western science.

Suggested Learning Activities:
A. Students will participate in classroom discussions and lectures on the topics specific to this unit.
B. Students will complete a series of quizzes designed to test comprehension of the assigned reading and lecture materials and knowledge of the basic vocabulary of the topics specific to this unit.
C. Students will complete analytical writing using an inquiry approach to articulate their comprehension of the material and offering a thoughtful response to the issues addressed.

UNIT 4: Medieval Contexts of Natural Knowledge (Outcomes 1, 2, 3, 4).
In this unit, the student will learn about scientific progress in Medieval Europe and identify faults in the widespread notion that the Middle Ages era was "dark" and "Static."

Suggested Learning Activities:
A. Students will participate in classroom discussions and lectures on the topics specific to this unit.
B. Students will complete a series of quizzes designed to test comprehension of the assigned reading and lecture materials and knowledge of the basic vocabulary of the topics specific to this unit.
C. Students will complete analytical writing using an inquiry approach to articulate their comprehension of the material and offering a thoughtful response to the issues addressed.

UNIT 5: Scientific Imagination in the Renaissance (Outcomes 1, 2, 3, 4).
In this unit, the student will identify the elements that distinguish the Renaissance imagination from the Medieval by revealing the shift in attitudes toward visual imagery and language.

Suggested Learning Activities:
A. Students will participate in classroom discussions and lectures on the topics specific to this unit.
B. Students will complete a series of quizzes designed to test comprehension of the assigned reading and lecture materials and knowledge of the basic vocabulary of the topics specific to this unit.
C. Students will complete analytical writing using an inquiry approach to articulate their comprehension of the material and offering a thoughtful response to the issues addressed.
UNIT 6:  **Patronages and Printing (Outcomes 1, 2, 3, 4).**
In this unit, the student will discover the social contexts for science in the fifteenth and sixteenth centuries.

**Suggested Learning Activities:**
A. Students will participate in classroom discussions and lectures on the topics specific to this unit.
B. Students will complete a series of quizzes designed to test comprehension of the assigned reading and lecture materials and knowledge of the basic vocabulary of the topics specific to this unit.
C. Students will complete analytical writing using an inquiry approach to articulate their comprehension of the material and offering a thoughtful response to the issues addressed.

UNIT 7:  **The Reform of the Heavens (Outcomes 1, 2, 3, 4).**
In this unit, the student will identify the elements of Copernicus's theory and examine his achievements as an expression of the Renaissance scientific aesthetic and the humanist urge to reform.

**Suggested Learning Activities:**
A. Students will participate in classroom discussions and lectures on the topics specific to this unit.
B. Students will complete a series of quizzes designed to test comprehension of the assigned reading and lecture materials and knowledge of the basic vocabulary of the topics specific to this unit.
C. Students will complete analytical writing using an inquiry approach to articulate their comprehension of the material and offering a thoughtful response to the issues addressed.

UNIT 8:  **Mechanical and Mathematical Visions of the Universe (Outcomes 1, 2, 3, 4).**
In this unit, the student will discover how Descartes, Hobbes, and Newton saw themselves as creating a "New Science" as a new kind of theology.

**Suggested Learning Activities:**
A. Students will participate in classroom discussions and lectures on the topics specific to this unit.
B. Students will complete a series of quizzes designed to test comprehension of the assigned reading and lecture materials and knowledge of the basic vocabulary of the topics specific to this unit.
C. Students will complete analytical writing using an inquiry approach to articulate their comprehension of the material and offering a thoughtful response to the issues addressed.
UNIT 9: Enlightenment and Industrialization (Outcomes 1, 2, 3, 4).
In this unit, students will discover how scientific work inside and outside the universities was connected to the marketplace in the eighteenth century.

Suggested Learning Activities:
A. Students will participate in classroom discussions and lectures on the topics specific to this unit.
B. Students will complete a series of quizzes designed to test comprehension of the assigned reading and lecture materials and knowledge of the basic vocabulary of the topics specific to this unit.
C. Students will complete analytical writing using an inquiry approach to articulate their comprehension of the material and offering a thoughtful response to the issues addressed.

UNIT 10: Scientific Medicine and Social Statistics (Outcomes 1, 2, 3, 4).
In this unit, students will explore the social effects of new medical knowledge and technologies in the nineteenth and twentieth centuries.

Suggested Learning Activities:
A. Students will participate in classroom discussions and lectures on the topics specific to this unit.
B. Students will complete a series of quizzes designed to test comprehension of the assigned reading and lecture materials and knowledge of the basic vocabulary of the topics specific to this unit.
C. Students will complete analytical writing using an inquiry approach to articulate their comprehension of the material and offering a thoughtful response to the issues addressed.

UNIT 11: Darwinism As Science and Ideology (Outcomes 1, 2, 3, 4).
In this unit, students will discover how and why science, previously thought of as a study of God's creation, became secularized.

Suggested Learning Activities:
A. Students will participate in classroom discussions and lectures on the topics specific to this unit.
B. Students will complete a series of quizzes designed to test comprehension of the assigned reading and lecture materials and knowledge of the basic vocabulary of the topics specific to this unit.
C. Students will complete analytical writing using an inquiry approach to articulate their comprehension of the material and offering a thoughtful response to the issues addressed.
UNIT 12: Uncertainty in Physics and Society (Outcomes 1, 2, 3, 4).
In this unit, students will identify the late eighteenth and nineteenth centuries' challenges to the Newtonian world of laws and causes.

Suggested Learning Activities:
A. Students will participate in classroom discussions and lectures on the topics specific to this unit.
B. Students will complete a series of quizzes designed to test comprehension of the assigned reading and lecture materials and knowledge of the basic vocabulary of the topics specific to this unit.
C. Students will complete analytical writing using an inquiry approach to articulate their comprehension of the material and offering a thoughtful response to the issues addressed.

UNIT 13: Progresses and the Rationality of Science (Outcomes 1, 2, 3, 4).
In this unit, students will review traditional views and learn about current debates about the status of scientific knowledge.

Suggested Learning Activities:
A. Students will participate in classroom discussions and lectures on the topics specific to this unit.
B. Students will complete a series of quizzes designed to test comprehension of the assigned reading and lecture materials and knowledge of the basic vocabulary of the topics specific to this unit.
C. Students will complete analytical writing using an inquiry approach to articulate their comprehension of the material and offering a thoughtful response to the issues addressed.

UNIT 14: At the Brink of the Future (Outcomes 1, 2, 3, 4).
In this unit, students will explore the implications for the individual and society of advances in computer technology and emerging biomedical/genetic technologies.

Suggested Learning Activities:
A. Students will participate in classroom discussions and lectures on the topics specific to this unit.
B. Students will complete a series of quizzes designed to test comprehension of the assigned reading and lecture materials and knowledge of the basic vocabulary of the topics specific to this unit.
C. Students will complete analytical writing using an inquiry approach to articulate their comprehension of the material and offering a thoughtful response to the issues addressed.
D. Students will conduct scholarly research into a current science breakthrough and analyze a contemporary scientific issue in terms of the issues and content learned throughout the course.

UNIT 15: Comprehensive Final Examination (Outcomes 1, 2, 3, 4, 5).
In this unit, students will demonstrate their knowledge and comprehension of the ideas and concepts from the course, as well as their critical thinking skills by
writing a comprehensive final examination covering the major people, ideas, and terms from the course.