

HSTR 207CS: Science & Technology in World History

Mid-Term Exam Study Guide

The final exam will incorporate material from your readings, the lectures, and our discussions. You should bring two blue books to the exam. We will provide blank sheets of paper for you to organize your thoughts and outline your answers. No notes or books will be allowed.

Sample Identification

Reductionism	Neolithic Revolution	Haber-Bosch Process
Alexander von Humboldt	Joseph Priestley	Anthropocene
John Tyndall	the Columbian Exchange	guano

Sample Essay Questions

Methods:

Explain the similarities (use empirical evidence, deduce past processes from present structures, and examine change over time) and differences (reductionism vs. holism, how? vs. why?) between the approaches of history and of science.

Explain the cumulative (Newtonian) model of science, the paradigm (Kuhn) model in science, and ecosystem (Johnson) theory of science.

Give examples of the various connections between science and society (in the history of science), and between nature and culture (in environmental history).

Explain Diamond's "chain of causation" among ultimate, intermediate, and proximate causes using examples from the readings (including Diamond) and lectures.

Explain Stephen Johnson's "ecosystem" model of history using Priestley as an example.

Why does Johnson start with Priestley's quote, "The English Hierarchy... has equal reason to tremble at an air pump, or an electrical machine"?

Agricultural Science & Food Systems:

Why has nitrogen been a key chemical component to both agricultural developments and global population growth?

What were the crucial differences between "biological old regime" vs. "biological new regime" vs. "fossil fuel regime" of agriculture? What types of genetic changes are happening to plants, animals, and/or people?

How have discussions about world hunger factored into arguments both during the Cold War's Green Revolution and contemporary GMO debates?

Are GMOs just an extension of what humans have been doing to plants for the last ten thousand years? Why or why not?

Climate Science & the Anthropocene:

What led to the first investigations of the earth's natural greenhouse effect? Where was the science practiced and what methods did early investigators use?

How can it be during the post-1945 period when scientific understandings of climate change have become ever more sophisticated that disagreements about climate policy have never been more uncooperative?

Is the Anthropocene an extension of climate science, or is it a totally new scientific concept? Why?