History of Western Science & Technology II
History 181
Spring 2016 – Tuesday/Thursday 11:30-12:45
Mary Lyon House Room 119

Instructor Information
Instructor: Amy Breimaier
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Office: Herter 725
Office Hours: Thursdays 1-3 and by appointment

Course Description
This course provides students with a broad survey of the major scientific discoveries and technological innovations in Western history from the Scientific Revolution through the Cold War. Topics to be covered include changing Western understandings of the universe, the human body and evolution, and the rise of the West’s industrial complex. In covering these topics, this course will consider how changes in the fields of science and technology intersected with cultural, social, and religious changes during the same period. Although this course has no prerequisites, an interest in modern European and/or American history is helpful.

General Education Objectives
As part of the University’s General Education program, this course is designed to prepare students for a lifetime of learning by introducing them to subjects and perspectives that they might not otherwise encounter, in a way that links classroom experiences to the broader world. As a designated HS (Historical Processes) General Education course, this class explores the historical developments that have shaped the world we live in today, while teaching students critical skills in reading, writing, and analysis. These skills, and the information to be covered in class, are crucial for moving beyond personal opinions and experiences to understand other people, circumstances, and historical moments. As a RAP class, this course also provides students with a unique opportunity to develop these reading, writing, and analytical skills within a supportive community.

RAP Objectives
As part of the RAP program, this course will provide students with support in transitioning to college life here at the University of Massachusetts Amherst. In particular, through participation in this course, students will learn about the various resources and opportunities available to them on campus, including the Learning Resource Center and the Writing Center. As a course designed specifically for the needs of first-year students, it will also help to guide your development of the critical reading, writing, and analytical skills necessary for success both in college and as members of a larger global community.

Course Requirements
Attendance
You are expected to attend all lectures. Absences will be excused only under certain circumstances: religious holidays, family/medical emergencies, and sports team obligations (only
if a member of the team – a note from the coach is required). If you know you are going to miss class, please let me know in advance and make arrangements with someone else in the class to receive notes from the day.

Classroom Conduct
As this is a small class, I expect everyone to arrive on time and avoid leaving early, unless necessary. If you know you will be late to class, or will have to leave early, please let me know. Non-alcoholic beverages are permitted, though please refrain from eating during class as this can disrupt those around you. Cell phones should be silenced at all times, and are best left in your room – texting is prohibited in class. You are expected to treat your classmates and the instructor with respect at all times. Although this course is taught in a residence hall, and therefore encourages a more casual environment than other on-campus courses, you are still expected to dress appropriately.

Laptops & Tablets
Laptops, tablets, and other electronic devices are strongly discouraged in the classroom, unless specifically noted otherwise in the lecture schedule. Their presence is more distracting in the classroom, both for you and those around you, than their benefit for note taking.

Email Etiquette
Emails sent to me must be professional in tone. When writing an email, remember to include “History 181” and the general topic of the email in the subject line. For example, if you have a question regarding the first paper your email subject should read: History 181 – First Paper. Your emails should also include a proper greeting (“Dear Amy” or “Dear Ms. Breimaier”) and end with your full name as the signature. I respond only to emails that have a proper greeting. Also, please check the syllabus for information such as due dates for papers or what the assigned reading for each day is before emailing me. Finally, I will answer emails sent from 5PM to 9AM during the week and any sent over the weekend at my own discretion, schedule permitting.

Academic Honesty & Plagiarism
Any form of academic dishonesty is prohibited in this course; this includes, but is not limited to, cheating on exams, helping others cheat, plagiarizing written assignments, and fabricating excuses for class absences. If you are caught cheating and/or plagiarizing at any point during the semester, you will at the very least fail the assignment in question and possibly fail the course, be put on academic probation, and, in the more extreme cases, face expulsion from the University. According to the UMASS Academic Regulations (2008-2009) plagiarism is defined as “knowingly representing the words or ideas of another as one’s own work in any academic exercise. This includes submitting without citation, in whole or in part, prewritten term papers of another or the research of another, including but not limited to commercial vendors who sell or distribute such materials.” If you want to use someone else’s words, use quotation marks and cite the source (using the appropriate citation style for the assignment – parenthetical (author’s last name, page number) is acceptable for this course). Cutting and pasting text from the Internet, or anywhere else, without attribution is plagiarism. For more info on this issue, see http://www.umass.edu/academichonesty.
Course Assignments & Grading

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Things to keep in mind:

- Retain a copy of all assignments until the graded version is returned
- Keep hold of all graded assignments until after the final grades are posted
- Please respect a 24-hour moratorium on discussing individual grades
- All late papers will be subject to a third of a letter grade deduction for each day not submitted
- All papers must be submitted both in hard copy the day they are due and via Turnitin on the class Moodle page – only those papers submitted in both formats will be graded
- Letter grade equivalencies:
  - A = 92.5-100
  - A- = 89.5-92.4
  - B+ = 87.5-89.4
  - B = 82.5-87.4
  - B- = 79.5-82.4
  - C+ = 77.5-79.4
  - C = 72.5-77.4
  - C- = 69.5-72.4
  - D+ = 67.5-69.4
  - D = 62.5-67.4
  - D- = 59.5-62.4
  - F = below 59.5

First Paper – Due Thursday, February 11
For this assignment you will answer the following question:
  - Was the Scientific Revolution indeed revolutionary?
    - Why or why not?
In your response you must include no less than two (2) examples to support your position and engage with the arguments presented by Lawrence M. Principe in *The Scientific Revolution* and Holly Tucker in *Blood Work*. This paper should be 4-5 pages long, double-spaced, using size 12 Times New Roman font with 1 inch margins, and include proper citations (for this course, author’s last name and page number(s) is acceptable). The use of outside sources in this paper is strongly discouraged. More detailed guidelines for writing history papers will be provided in class and on Moodle.

Mid-Term – Tuesday, March 1
The mid-term for this course will be held on Tuesday, March 1 in class. All students are expected to take the mid-term at that time; make-ups will only be administered under special
circumstances. The mid-term will cover material through Thursday, February 25, and will consist of key term identifications, short answers, and an essay question.

Second Paper – Due Tuesday, April 5
For this assignment you will write a comparative paper that considers the numerous ways in which Frankenstein and Metropolis critiqued the scientific and technological developments of their respective periods. In your paper you must bring the two works into dialogue with one another by considering their similarities and differences.

• Which do you believe provided the most powerful critique of science and technology?
  o Why?
In answering this question you should keep in mind that their reception today does not necessarily reflect their reception in the past. This paper should be 4-5 pages long, double-spaced, using size 12 Times New Roman font with 1 inch margins, and include proper citations (for this course, author’s last name and page number(s) is acceptable). You may use outside sources in this paper, so long as you have discussed them with me first. Metropolis should be cited as follows (Metropolis, [time of scene]).

Book Review – Due Tuesday, April 26
For this assignment you will write a short, analytical review of The Girls of Atomic City. In this review, you will need to address the following points/topics:

• What is the central argument of the text? (Yes, this text has an argument!)
• What goals/objectives does Kiernan set out for herself?
• What is she trying to prove/convince readers of with this text?
• In critiquing the work you will need to address whether or not you felt that she succeeded in proving/convincing you of her points – and why or why not. Make sure to support your positions with specific examples from the text.
• Your review should also provide a concise (no more than one paragraph) summary of the text. As this is a Book Review, and not a Book Report, you will want to focus on textual and historical analysis, not summary.
• You should begin your review with a concise argument that lets the reader know your position by the end of the first paragraph. For example, “Kiernan was successful in this work for…reasons” or “Kiernan was not successful in this work for…reasons.” I encourage you to be more creative with your arguments than the examples provided here.
• You should conclude your review with a discussion of questions that you believe need to be further explored – what questions did this text leave you wanting to know more about?
Examples of academic book reviews can be found at The American Historical Review (accessible through the UMass library website). This paper should be 4-5 pages long, double-spaced, using size 12 Times New Roman font with 1 inch margins, and include proper citations (for this course, author’s last name and page number(s) is acceptable).

Final Exam – Thursday, May 5 from 1:00-3:00PM
The final for this course will be held on Thursday, May 5. All students are expected to take the final at that time; make-ups will only be administered under special circumstances. The final will consist of key term identifications and short answers based on material from the second half of the course and an essay question that will require you to draw upon material from the entire semester.
Reading Quizzes
If attendance and participation falter throughout the semester these will be administered at the start of class. They will count toward your overall attendance grade.

Extra Credit Opportunities
There will be at least three extra credit opportunities over the course of the semester – if others become available, I will make an announcement in class. For each of these opportunities, a 1-2 page paper discussing how the podcast/museum exhibit relates to topics covered in the course will be required for credit. Each extra credit opportunity will be worth three (3) points on the mid-term. As of right now, extra credit can be received from visiting the Beneski Museum of Natural History at Amherst College and from listening to one episode from the Radio Lab Podcast and NPR TED Radio Hour Podcast (links to both these podcasts can be found on Moodle). Please note that the NPR TED Radio Hour Podcast is not the same as the TED Talks.

Academic Services
Writing Center
While we will spend much time in this course on college level reading and writing, those interested in further assistance, including a fresh pair of reading eyes, can find help at the Writing Center, which is part of Learning Support Services on the 10th floor of the Du Bois Library. For more information on their services, see http://www.umass.edu/writingcenter.

Disability Services
The University of Massachusetts Amherst is committed to providing an equal educational opportunity for all students. If you have a documented physical, psychological, or learning disability on file with Disability Services or the Center for Counseling and Psychological Health, you may be eligible for reasonable academic accommodations to help you succeed in this course. If you have a documented disability that requires an accommodation, please notify me within the first two weeks of the semester so that we may make appropriate arrangements.

Readings
Books - Required

Principe, Lawrence M. *The Scientific Revolution: A Very Short Introduction*
Shelley, Mary. *Frankenstein* (make sure to purchase the 1818 version of the text!)

Books – Optional

Misa, Thomas J. *Leonardo to the Internet: Technology and Culture from the Renaissance to the Present*
Numbers, Ronald L., ed. *Galileo Goes to Jail and Other Myths About Science and Religion*
Note on Readings
Assigned readings should be completed by the dates they are listed under. Staying on top of the readings is crucial to your success in this course. Aside from the assigned books, all other readings can be found on the course Moodle page (https://moodle.umass.edu/). You should bring your readings to class each day and be prepared to discuss them on a regular basis.

Lecture Schedule

Week 1: Medieval Science & Technology
I. Tuesday, January 19 – What is the History of Science & Technology?
II. Thursday, January 21 – Medieval Science & Technology
   a. Readings
      i. *The Scientific Revolution*, Introduction – Chapter 2
      ii. “What was Worth Knowing in 1500” (Dear), Moodle
      iii. “Myth 10: That the Scientific Revolution Liberated Science from Religion” (Osler), Moodle

Week 2: The Scientific Revolution
I. Tuesday, January 26 – The Changing Heavens
   a. Readings
      i. *The Scientific Revolution*, Chapter 3
      ii. “Myth 8: That Galileo Was Imprisoned and Tortured for Advocating Copernicanism” (Finocchiaro), Moodle
II. Thursday, January 28 – Early Chemistry
   a. Readings
      i. *The Scientific Revolution*, Chapter 4
      ii. *Blood Work*, Prologue – Chapter 8

Week 3: The Scientific Revolution
I. Monday, February 1 – Last Day of Add/Drop
II. Tuesday, February 2 – The Human Body
   a. Readings
      i. *The Scientific Revolution*, Chapter 5
      ii. *Blood Work*, Chapter 9 – Epilogue
III. Thursday, February 4 – Early Physics
    a. Readings
       i. *The Scientific Revolution*, Chapter 6 – Epilogue
       ii. Excerpt from the *Principia Mathematica* (Newton), Moodle
       iii. “Myth 13: That Isaac Newton’s Mechanistic Cosmology Eliminated the Need for God” (Davis), Moodle

Week 4: The Enlightenment
I. Tuesday, February 9 – Peer-Editing
   a. Assignment
      i. Bring a complete draft of your first paper to class
II. Thursday, February 11 – The Human Mind
a. Readings
   i. Excerpt from An Essay Concerning Human Understanding (Locke), Moodle
   ii. “What is Enlightenment?” (Kant), Moodle
   iii. Excerpt from The Newtonian System of Philosophy (Telescope), Moodle
b. Assignment
   i. First Paper Due

Week 5: The Enlightenment
I. Tuesday, February 16 – No Class, Monday Schedule
II. Thursday, February 18 – The Power of the Skies
   a. Readings
      i. Excerpt from Experiments and Observations on Electricity Made at Philadelphia in America (Franklin), Moodle
      ii. Begin reading Frankenstein

Week 6: Science in the Romantic Era
I. Tuesday, February 23 – The Expanding Heavens & Earth
   a. Readings
      i. Excerpt of a letter from Caroline Herschel to Sir Joseph Banks (Nov. 7, 1795), Moodle
      ii. “William Herschel and the Construction of the Heavens” (Hoskin), Moodle
      iii. “Meriwether Lewis on the Divide” (Gilman), Moodle
      iv. Continue reading Frankenstein
II. Thursday, February 25 – The Chemical Revolution
   a. Readings
      i. “The Chemical Revolution and the Politics of Language” (Golinski), Moodle
      ii. Continue reading Frankenstein

Week 7: The Long 19th Century
I. Tuesday, March 1 – Mid-Term
II. Thursday, March 3 – Early Industrialization
   a. Readings
      i. “‘I Think Less of the Factory than of My Native Dell’: Labor, Nature, and the Lowell ‘Mill Girls’” (Montrie), Moodle
      ii. Continue reading Frankenstein

Week 8: The Long 19th Century
I. Tuesday, March 8 – The Dangers of Industrialization
   a. Readings
      i. “On the Mechanical Age (1829)” (Carlyle), Moodle
      ii. “The Business of Invention in the Paris Industrial Exposition of 1806” (Hafter), Moodle
      iii. Continue reading Frankenstein
II. Thursday, March 10 – Science before Darwin
   a. Readings
      i. Excerpt from *Zoological Philosophy* (Lamarck), Moodle
      ii. Excerpt from *Principles of Geology* (Lyell), Moodle
      iii. Finish reading *Frankenstein*

*Week 9: Spring Break*

*Week 10: The Long 19th Century*
   I. Tuesday, March 22 – Darwin
      a. Readings
         i. Excerpt from *The Origin of Species* (Darwin), Moodle
         ii. “Myth 18: That Darwin Destroyed Natural Theology” (Roberts), Moodle
   II. Thursday, March 24 – Genetics and Eugenics
      a. Readings
         i. “Fitter Families for Future Firesides” (Lovett) Moodle

*Week 11: Science, Technology, & WWI*
   I. Tuesday, March 29 – The Problem of Reality
      a. Watch
         i. *Metropolis* (Original Release 1927; Restored Version Released 2010)
            1. Movie is available both on Netflix (watch the *Metropolis Restored* version) & through the UMass Library (streamed via Kanopy)
   II. Thursday, March 31 – The Reality of Modern Warfare
      a. Readings
         i. “Reconstructions: Prosthetics and the Rehabilitation of the Male Body in World War I France” (Panchasi), Moodle

*Week 12: Science, Technology, & WWII*
   I. Tuesday, April 5 – The Interwar Period
      a. Readings
         i. *The Girls of Atomic City*, Introduction – Chapter 6
      b. Assignment
         i. Second Paper Due
   II. Thursday, April 7 – The Manhattan Project and Big Science
      a. Readings
         i. *The Girls of Atomic City*, Chapter 7 – Chapter 12

*Week 13: The Cold War*
   I. Tuesday, April 12 – Consequences of the Bomb
      a. Readings
   II. Thursday, April 14 – Sputnik and the Space Race
      a. Readings
         i. “The Scramble for Space” (McDougall), Moodle


**Week 14: The Cold War & Today**

I. Tuesday, April 19 – Global Technology
   a. Readings
      i. “Toward Global Culture” (Misa), Moodle

II. Thursday, April 21 – Technology Today
   a. Readings
      i. “Paths to Insecurity” (Misa), Moodle

**Week 15: Science, Technology, & Today**

I. Tuesday, April 26 – Final Exam Review Session
   a. Assignment
      i. Book Review Due

*Final Exam: Thursday, May 5 from 1:00-3:00PM*