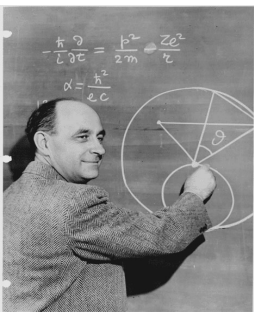
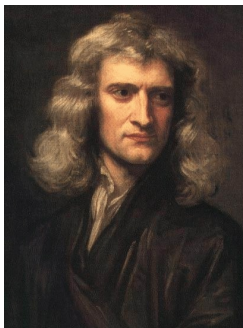


office hours:
tu 10:30-11:30, tuth
1:30-2:30 and by appt.
office: phsc 619
tel: 5.3427
kpandora@ou.edu

assoc. prof. katherine pandora
history of science 2223 ~ spring 2008
cec 121 ~ wed 2:30-5:20



Lives in Science

What does it mean to have a life in science? We will look at how the answers to this question have varied across time and place by taking a close-up look at five such lives through written biographies and add in another four comparative cases by studying a selection of biographical documentary films. In the process, you will learn much about the motivations behind why key figures in the history of science chose to pursue scientific investigation, see in detail the costs and satisfactions these individuals may have experienced because of these commitments, and gain a deeper sense of the “ecology” of scientific life that comes from looking behind names and concepts to studying how the search for scientific knowledge plays out in real-world circumstances.

In the process you’ll also learn a great deal about the historical eras in which these scientists were embedded, and how their lives both reflected the times they lived in and contributed to changing them. We’ll be seeing how science is both an individual enterprise and a collective pursuit, and how the worlds “inside” and “outside” of science are tied together in more ways than we usually consider. Although focusing on singular individuals we will be trying simultaneously to keep in mind the relationships that exist between these particular individuals and the larger culture.

Through our journey across several centuries, we will see science itself change and grow, and we will find persistent themes – such as the struggle that faces women who have sought to live successful scientific lives – and we will come up against issues that remain relevant today, even if the circumstances are different than those in the past: the relationship between science and religion; what bearing personal lives can have on professional lives; the ramifications of scientific research for political and social questions of the day; and debates over the very meaning of science itself, in terms of its characteristics, its goals, and its value.

books

Isaac Newton / James Gleick
Chrysalis: Maria Sibylla Merian and the Secret of Metamorphosis / Kim Todd
Darwin and the Barnacle / Rebecca Stott
The Tree of Life / Peter Sis
A Convergence of Lives: Sofia Kovalevskaia: Scientist, Writer, Revolutionary / Ann Hibner Koblitz
Atoms in the Family: My Life with Enrico Fermi / Laura Fermi

films

Newton’s Dark Secrets (Isaac Newton)
The Secret of Photo 51 (Rosalind Franklin)
Big Dreams, Small Screen (Philo T. Farnsworth)
Einstein Revealed (Albert Einstein and Mileva Maric)

week 1: 1/16
introduction

reading Gleick, *Isaac Newton* (chapters 1-9)
Margaret Mead and Rhoda Metraux, "Image of the Scientist among High-School Student: A Pilot Study," *Science*, 126:384-390, 1957 [handout]
Einstein Portfolio [handout]

week 2: 1/23

discussion: **newton, genius, and revolution**
paired activity: *Newton's Dark Secrets* (video)

reading Gleick, *Isaac Newton* (chapters 10-15)
Todd, *Chrysalis* (prologue, chapter 1)

week 3: 1/30

discussion: **newton: first of the moderns or last of the magicians?**
paired activity: **visit to the history of science collections (3rd floor, Bizzell)**

reading Todd, *Chrysalis* (chapters 2-7)

week 4: 2/6

discussion: **a woman's place at the birth of the revolution**
paired activity: **"coffeehouse" conversations: sex, race, and enlightenment?**

► *newton assignment due*

reading Todd, *Chrysalis* (chapters 8-9)
Stott, *Darwin and the Barnacle* (preface, chapters 1-3)

week 5: 2/13

discussion: **darwin's time and place**
paired activity: **scenes from deep time: the first imaginings of the prehistoric world**

reading Stott, *Darwin and the Barnacle* (chapters 4-9)

week 6: 2/20

discussion: **slice-of-life biography: stott's darwin**
paired activity: **examination of selected Darwin letters**

► *merian assignment due*

reading Stott, *Darwin and the Barnacle* (chapters 10-12)
Sis, *The Tree of Life*

week 7: 2/27

discussion: biography in children's literature: peter sis' darwin

paired activity: library visit – comparative examination of selected children's books

► *darwin (tree of life) assignment due*

reading Koblitz, *A Convergence of Lives* (prefaces, chapters 1-4)

week 8: 3/5

discussion: women and the making of modern science

paired activity: *Remembering Miss Meitner* (in-class dramatic reading)

► *darwin (barnacle) assignment due*

reading Koblitz, *A Convergence of Lives* (chapters 5-11)

week 9: 3/12

discussion: the world of modern European science

paired activity: *The Secret of Photo 51* (video)

reading Koblitz, *A Convergence of Lives* (chapters 12-15)
Fermi, *Atoms in the Family* (chapters 1-5)

week 10: 3/19

no class – spring break

week 11: 3/26

discussion: preliminary discussion of paper topics

paired activity: *Big Dreams, Small Screen* (video)

► *kovalevskaia assignment due*

reading Fermi, *Atoms in the Family* (chapters 6-14)

week 12: 4/2

discussion: "little" science and "big" science

paired activity: *Einstein Revealed* (video; begin)

reading Fermi, *Atoms in the Family* (chapters 15-25)

week 13: 4/9

discussion: the atomic world

paired activity: *Einstein Revealed* (video; finish)

► *fermi assignment due*

week 14: 4/16

paper consultations

reading prep for work-in-progress presentations (I will provide weblinks)

week 15: 4/23

work-in-progress presentations

week 16: 4/30

final paper due at my office, phsc 619, up until 5:00 p.m.

Assignments:

1. For most class sessions you will type up and bring with you three discussion points from that week's reading (these can be aspects you found significant about the figure we are studying, about the way the book is written, or questions you have); week 12 will relate to the Einstein documentary, and week 13 will be a summation set of comments. These ten sessions are weeks 2, 3, 4, 5, 6, 8, 9, 11, 12, and 13. These will be graded s/u and as a group will be worth 10%. To receive full 10% credit, you need to have completed at least 8 of these satisfactorily.
2. In most of our class sessions there will be a paired activity to go along with our reading. There is a 10% grade for class participation, which entails showing up, having done the reading, participating in discussion, and being engaged in our group activities.
3. You will write five short essays on the five major assigned books (3-4 pp., or approx. 800-1100 words); these are each worth 10%. The Newton essay is due 2/6 ; the Merian essay is due 2/20; the Darwin (Stott) essay is due 3/5; the Kovalévskaja essay is due 3/26; and the Fermi essay is due 4/9. You will also write a 2 ½ -3 page essay on the children's Darwin book; it will be due on 2/27 and is worth 5%.
4. You will have a final paper instead of a final exam. This will be worth 25%, and will be 5-6 pp. in length, or approx. 1250-1800 words. There are three options for the paper. You can: 1) bring all five of the major books together in your final paper (supplemented with the videos as appropriate) and integrate them into an overall comparative analysis (I will provide some questions for you to use as guidance if you wish); 2) you can compare two different scientists, using one book from our class and one book you choose in consultation with me (or you can read a second, different biographical treatment of one of the scientists in your assigned reading and write a paper comparing the two); or 3) you can do a small research project, such as looking at a set of children's picture books about Einstein. I will provide a list of examples of possible research projects for you; we can also custom-design one for you. The final paper is due on 4/30, the last class session.

University of Oklahoma ConocoPhillips Writing Center

If you would like help with your pre-writing, organizing, documenting sources, or other aspects of writing assignments, make an appointment at the Writing Center – **325-2936**. The Writing Center is located in Bizzell Library, Lower Level 227. After January 28th they are open Mon-Tues 9:00 - 8:00, Wed-Thurs 9:00-5:00, and Fri 9:00-12:00. Information is also available at their website:

<http://www.ou.edu/writingcenter/>

Rules of the Road

Attendance: Attendance is required. Two unexcused absences are allowed; missed classes beyond this will result in your grade being lowered by 5% increments. If you need to miss class for an illness serious enough to merit a trip to the doctor, a family emergency, etc., please be sure to contact the instructor.

Academic Misconduct: **Cheating will not be tolerated.** Cheating includes, but is not limited to, copying the work of another student, using the written work of another author without attribution, or any conduct that seeks to compromise the examination process. *Such conduct will result in an automatic F on that examination and the student can be referred to the Dean for disciplinary action.*

Due Dates: Exams **will not be accepted if turned in late**, and will be graded F. (This requirement will be waived only in the case of a medical or family emergency. To the extent possible, permission should be sought before the due date.)

Religious Holidays: It is the policy of the University to excuse the absences of students that result from religious observances and to provide without penalty for the rescheduling of examinations and additional required class work that may fall on religious holidays. Please see me in advance.

Students with Disabilities: Any student in this course who has a disability that may prevent him or her from fully demonstrating his or her abilities should contact me as soon as possible, so we can discuss accommodations necessary to ensure your full participation and to facilitate your educational opportunities.

Grading Scale: The letter grades for this course conform to a 4 point scale, as follows:

4.0-3.5 = A (A=4.0, A- = 3.7, A-/B+=3.5)

3.49-2.5 = B (B+ = 3.3, B = 3.0, B- = 2.7, B-/C+=2.5)

2.49-1.5 = C (C+ = 2.3, C = 2.0, C- = 1.7, C-/D+=1.5)

1.49-0.5 = D (D+ = 1.3, D= 1.0, D- = 0.7)

0.5 and below = F