

**History of Science 100**  
**Great Scientists – Fall 2000**  
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Welcome to History of Science 100. My name is Daniel Thurs. My office is 7142 Social Science. The phone number there is 262-3999. My office hours will be Tuesdays and Thursdays before class (5-6) or by appointment. My e-mail address is [dpthurs@students.wisc.edu](mailto:dpthurs@students.wisc.edu). If you send me an e-mail message, expect a turn-around time of about 24 hours. If there's an emergency and you need to reach me quickly, you can call me at home. My number there is 294-9514. Please don't call before 10 am or after 10 pm.

In this course, we'll examine the lives and the work of seven different scientists active from the sixteenth to the twentieth century. Some names will be familiar. Others will not. All have a lesson to teach about what science is, how it has worked, and the conditions under which it has been done. The seven scientists we will meet over the next fifteen weeks are: German astronomer Johannes Kepler (1571-1630), American "man of science" Alexander Dallas Bache (1806-1867), French microbiologist Louis Pasteur (1822-1895), American astronomer Simon Newcomb (1835-1909), British naturalist Charles Darwin (1809-1882), American anthropologist Margaret Mead (1901-1978), and German physicist Albert Einstein (1879-1955).

### **Themes**

Though the course is divided into two units, each with its own themes, the overarching focus of the class is the interaction between science and the place and time in which it's practiced. As I hope you'll learn, science is not some abstract or bloodless thing—rather, it's done by real people, with real personalities and interests, goals and biases, and different styles of approaching the natural world. And discovery depends as much on the people who pay the bills, the tools that are available, and the expectations people have about the natural world as on some "scientific method." In particular, Unit I will focus on different ways of doing science and different means of supporting and paying for scientific work. Unit II will focus on the what happens after a discovery is made, including the working up of images of scientists in popular culture, controversy in science, and the impact of science on religion, philosophy and art.

### **Format**

This is primarily a lecture course. But, given the relatively small class size, there will be opportunities to do some small group work. I will also try to make lectures more interactive by leaving time and providing material for in-class discussion. Feel free at any time to ask questions or raise issues that you think are important.

### **Readings**

There are no textbooks for this course. There is a course reader, however, available from the History of Science Department office, 7143 Social Science. The reading schedule is given below. The weekly average comes out to 36 pages. Sometimes there will be more than this, sometimes less. The kinds of readings included in the reader are also various. Some are written by professional historians of science. Others were composed in a more journalistic or even fictional spirit.

One of your responsibilities will be to keep a *journal* (a plain notebook will due) of you readings. After you've finished a particular assignment, take ten minutes to jot down your impressions in your journal, note any questions you might want to ask in class, and check to see that you understood the important points of the reading. This will help both your comprehension and will be a useful tool when it comes time to write one of the two take home essays. From time to time, I'll collect your journals and give you feedback.

In addition to the ordinary readings, you'll also need to do one or two *exploratory* readings throughout the semester.

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Through these you'll explore a particular issue or event in greater detail. You can choose from among eleven. Since these readings of different lengths, some are only worth ½ of others. If you pick one of these, you'll need to do another exploratory reading at some later time. If you decide to do one of the three readings worth 1, you don't have to do another. You can, of course, do more than is required for extra credit.

(a)	9/14	Reader 55-63	½
(b)	9/19	Reader 64-80	1
(c)	10/5	Reader 99-117	1
(d)	10/10	Reader 170-177	½
(e)	10/12	Reader 178-185	½
(f)	10/26	Reader 230-237	½
(g)	10/31	Reader 246-254	½
(h)	11/2	Reader 271-284	1
(i)	11/7	Reader 285-296	½
(j)	11/9	Reader 335-342	½
(k)	12/5	Reader 455-462	½

In response to your exploratory reading, you'll need to write a *review* (at least 500 words for each ½ and 1000 words for each 1). Please *type* this and attach it to your journal.

### Essays

The exams in this course will be two take home essays. You will get a list of questions at least a week before each essay is due. In addition, we will have two writing workshops to give you a chance to discuss your ideas with other students and to give me an opportunity to teach you a little bit about writing a good essay. The first essay, covering Unit I, will be due on *Monday, Oct. 23, by 5 pm*. The second essay, covering Unit II, will be due on *Monday, Dec. 18, by 5 pm*. There will be no final exam. On both Mondays, I will be in my office from 4 to 5 to collect your work.

### Grading

Your grades will be based on a number of elements, including the two essays, your response(s) to exploratory readings, your journal, and attendance. The relative weight of these factors is as follows:

Attendance	10%
Journal	15%
Exploratory Reading(s)	15%
Essay #1	30%
Essay #2	30%

### Class Schedule

#### Unit I : Styles and Tools of Scientific Practice

9/5	Intro/Scientific Revolution	—
9/7	Kepler's Life and Times	—
9/12	Kepler's Work	Reader 1-44
9/14	Science in the 19 <sup>th</sup> century	— (a)

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9/19	Bache's Life and Work	Reader 45-55, (b)
9/22	Government Science	—
9/26	Government Science	Reader 81-97
9/28	Medicine up to the 19 <sup>th</sup> century	—
10/3	Pasteur's Life and Work	Reader 117-142
10/5	Laboratory Science	Reader 143-160, (c)
10/10	Late 19 <sup>th</sup> century science	— (d)
10/12	Newcomb's Life and Work	Reader 161-169, (e)
10/17	Scientific Method	Reader 186-193 and either (1) 194-206 or (2) 207-216
10/19	Writing Workshop	—

Essay #1 due on Monday, 10/23, by 5 pm

**Unit II : Contexts and Images of Science and Scientists**

10/24	Darwin's Life	—
10/26	Darwin and evolution	Reader 217-230, (f)
10/31	The reaction to Darwin	Reader 262-269, (g)
11/2	Evolution and Religion	Reader 255-261, (h)
11/7	Creationism	Reader 271-284 (i)
11/9	Mead and Samoa	Reader 315-334, (j)
11/14	Mead under Fire	Reader 366-373 and either (1) 343-350 or (2) 351-356 or (3) 357-365
11/16	The Response to Freeman	Either (1) Reader 379-394 or (2) 395-400, 413-414 or (3) 415-420
11/21	Science and Controversy	Skim Reader 400-413 and either (1) Reader 374-378 or (2) 420-423
11/23	[Thanksgiving]	—
11/28	Einstein's Life	Reader 425-442
11/30	Relativity	Reader 443-454
12/5	Einstein and Fame	Supplement 1-8 (k)
12/7	Relativity and Culture	Supplement 8-16
12/12	Einstein as Icon	Reader 463-483
12/14	Writing Workshop	—

Essay #2 due on Monday, 12/18, by 5 pm