

**Instructor:** Leonard B. Bliss  
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**Course Rationale:** Scientific research methodology did not spring up full grown out of the head of a god (see Athena/Zeus) nor out of the head of some university professor, either. Modern scientific method evolved slowly, and often bloodily, over the course of at least 2,000 years. Some people died for it, others were imprisoned and ridiculed and then forgotten. And some were remembered and honored both in their own times and far into the future. Scientific method is not a closed book, it is still be written, but it is tempting to freeze it in the present and say, "Let us study scientific method," as if we were looking at a finished piece of work, and examine it piece by piece. This is the strategy most often used to explain scientific method to beginners or to people who will restrict their efforts to consuming the results of research. But it is limited and ill serves serious scholars who think about and carry out scientific research. Serious, productive scholars are aware of the source of their methods and how they developed through time and use this knowledge to understand the strengths and weaknesses of established methods of gathering and analyzing data and in constructing new strategies for doing this thing. They are aware that there is a connection between modern researchers and what scholars did thousands of year ago and value this connection. Quite simply, those of us who work in the academy expect our doctoral students to be serious, productive scholars who are aware of where their research strategies came from and can help influence where they are going.

**Course Description:** This seminar will seek to understand research methodology as it is practiced in the West by studying its development from the Classical Greeks to the beginning of the 21<sup>st</sup> Century. This is not to suggest that there are not other traditions of learning about the world among non-Westerners nor that these traditions were not useful to those who used them, but we can only do so much in a semester and we must recall that we are working in a university in the West. We will study the development of scientific method from a historical point of view by studying writings of those who participated in particular development as well as the writings by later scholars who wrote about them. The course is somewhat unstructured because discussions may lead us on different paths than those anticipated by the instructor. In any case, we will have fun.

#### Course Requirements:

1. Attend class meetings. You can't participate in a discussion if you are not here.
2. Participate in the class discussion as a knowledgeable participant.
3. Carry out written or verbal presentation assignments as requested.

#### Grading:

The moment you first walked into class your grade was A. You will retain that A provided you are a productive participant in this seminar who participates in the discussion and

shows continued evidence of doing the appropriate readings and written assignments.

### Academic Integrity

Be assured and forewarned that cheating will not be tolerated in this seminar. All cases of suspected breaches of academic integrity will be referred to the University's Committee on Academic Misconduct. Regarding the consequences of being found guilty of dishonest academic practice, the instructor shall make an academic judgment about the student's grade on that work and in the course and shall report such incidents to the Primary Administrative Officer.

### Office of Disability Services for Students

If you have a disability and need assistance, please notify me and/or contact the Office of Disability Services for Students (348-3532). Upon contact, the Office of Disability Services for Students will review your request and contact your professors or other appropriate personnel to make arrangements for appropriate modification and/or assistance.

### Code of Decorum

All students taking courses are expected to behave in a scholarly manner and to be considerate of their instructors and classmates. Among other things, this includes silencing cell phones, coming to class on time, and respecting the rights and personhood of others.

### Tentative List of Topics

#### Topic

1. Connections
  2. The Medieval Aristotelians (for example, Da Vinci)
  3. The Renaissance - the theory based manipulation of variables and the rise of empiricism (for example, Galileo)
  4. Empiricism and induction first established (for example, Bacon)
  5. The philosophical basis for hypothesis formation is established (Karl Popper)
  6. The development of statistical inference (Guinness, Gosset, and Fisher)
  7. The war of hypothesis testing techniques (Pearson and Fisher)
  8. The paradigm wars (Postpositivism vs Constructivism)
  9. Scientific revolutions. How do we know one when we see one.
  10. Jean Anyon: The revolutionary scientist
  11. The roles of argument and evidence.
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