

**EPID 705**  
**Fall, 2013**  
**Introduction to Deductive Logic and Probability Logic in Epidemiology**  
**Syllabus**

**DESCRIPTION**

Covers properties of logical relations, truth tables and Euler diagrams, valid and fallacious arguments, cognitive heuristics and biases, interpretations of probability, the probability calculus, Bayes's theorem, binomial and normal distributions, applications of probability logic and probabilistic fallacies, all in an epidemiologic context.

**INSTRUCTIONAL TEAM**

**Charles Poole**           Instructor  
2401A McGavran-Greenberg  
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Office hours: Wednesdays 1:30-2:30 PM and by appointment

**Anna Bauer**           Teaching Assistant  
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Office hours: To be announced

**REQUIRED TEXTS**

Freund, John E. Introduction to probability. New York: Dover Books, 1993 (paperback).

Weston, Anthony. A rulebook for arguments. 4th edition. Hackett Publishing Company, 2008 (paperback).

**OUTCOME MEASURES**

Class participation	10%
Quiz 1	15%
Exercise 1	30%
Quiz 2	15%
Exercise 2	30%

**GRADES**

<60.0	F
60.0 – 74.9	L
75.0 – 89.9	P
≥90.0	H

## HONOR CODE

University policy requires all students to familiarize themselves with all provisions of the Instrument of Student Governance. The expression, “unauthorized assistance,” in the descriptions of the graded material below is a key term in the Instrument.

The following links provide all the needed information: <http://honor.unc.edu/> and <http://instrument.unc.edu/>. These links are also provided on the course web site.

Appendix A of the Instrument states that each student is expected to “[s]ign a pledge on all graded academic work certifying that no unauthorized assistance has been received or given in the completion of the work.” We abide by this requirement in EPID 705. The instructor reserves the right to deduct points without warning if this statement is not written and signed on each assignment and quiz, whether or not a reminder is given.

## CLASS PARTICIPATION

Selected lecture slides contain problems to aid your preparation for class. Everyone is strongly encouraged to do all these problems before they come up in class. There is no better way to prepare for the exercises and quizzes.

Each student will email the instructor to reserve one class participation problem to discuss with the instructor in class. You may wait until slide sets are posted and request specific problems or merely ask for the next available problem. If you do not reserve a problem, you will be assigned one at random near the end of the course.

The score on class participation problems is 0 for being unprepared and 100 for trying your best to do the problem before coming to class, even if you “get it all wrong.”

### *Unauthorized assistance*

There are no restrictions on whom or what you may consult in preparing these problems, including the instructor and teaching assistant. You are encouraged to work together on them, including the one you reserve to discuss with the instructor in class.

## EXERCISES

There are two take-home exercises. Each is posted, with an immediate email announcement of the posting, on the course web site 5-7 days before it is due. The exercises are due to the teaching assistant before class starts on a specified date, with no exceptions. The late penalty is 15 points for each day or fraction thereof.

The teaching assistant will provide information on how to hand in the exercises (paper or electronic, in person or mail box, etc.).

Please make your answers legible. Use a word processor if necessary. If you are given instructions, be sure to follow them. If not, use your best judgment. Rounding is a good

example. If you are given a rounding rule, use it. If you are not given a rounding rule, don't ask for it. Use your best judgment.

Show your work, whether instructed to or not. Use your best judgment on how much to show. Picture yourself as a grader who wants to be informed but not overwhelmed with detail.

#### *Unauthorized assistance*

You are to complete the exercises completely on your own. While working on them, you may not discuss them with anyone other than the instructor and the teaching assistant. You may continue to discuss course content with classmates and others while working on an exercise, just not the specific questions on that exercise. You may not consult exams, exercises or answer keys from this course in previous years. (The old course number was EPID 158.) Instructions on a given exercise may place additional restrictions on authorized assistance (e.g., regarding software use).

## **QUIZZES**

The two quizzes are in class and timed. The first covers deductive logic. The second covers probability logic. The formats are modifications of the true-false and multiple-choice formats, which we will go over well in advance of each quiz.

#### *Unauthorized assistance*

The quizzes are open-book, but there will not be enough time to look up very much. The instructor and teaching assistant will be available to answer clarification questions. No other communication of any kind is permitted with any other person or with any entity outside the room while taking a quiz.

## **READINGS AND OTHER PREPARATION**

The Weston text should be studied in its entirety. Only the sections of the Freund text on the topics covered in lecture need to be studied. A list of recommended practice problems in the Freund text will be provided on the course web site. A few additional required readings will be posted there as well.

The course web site gives links to web sites on deductive logic and probability logic. At these sites, you can find practice problems and alternative presentations of most of the key concepts. Unfortunately, not every problem or example on these sites will have an epidemiologic topic as its subject matter. Nonetheless, these web sites are highly recommended, especially for the deductive logic part of the course. Please do not feel insulted if some of them seem directed toward much younger students.

The course web site contains a list of some recommended books on deductive logic and cognitive heuristics and biases, as well as some books that at least touch on probability logic at approximately the desired level for this course. These resources are provided only for those who wish to study this material beyond the course requirements.

The following are highly recommended:

1. Form or join a study group. If it doesn't work out, form or join another one.
2. Before coming to class, do the readings and study the slides..
3. Do all the class participation problems before coming to class, even after you've done yours orally.
4. Do all the recommended practice problems in the Freund textbook.
5. Consult the posted web sites.
6. Ask questions in class and outside of class, especially about the class participation problems before they come up in class.
7. If you have a disability of any kind, please avail yourself of the relevant University services and let the instructor know. The same goes for other major life events that might impede your success in the course. This information will be held in the strictest confidence. There are some steps we can take to help in these circumstances, but they become less and less available as the semester goes on.

## **EPISHEET**

An Excel workbook called Episheet.xls is posted on the course web site. We might use it in EPID 705. We will definitely use it, a lot, in EPID 715.

This spreadsheet program contains macros. To get it to work properly, you may need to relax your computer's security settings.

## **AUDITORS**

Auditors and repeat customers are welcome, space permitting. University policy dictates that anyone who audits a course may not subsequently take it for credit.

## **SCHEDULE**

Class meets 8:00 – 9:15 AM in McGavran-Greenberg 2301 on the following dates:

**Tuesdays**

Sept. 10  
Sept. 17  
Sept. 24  
Oct. 1  
Oct. 8  
Oct. 15 Quiz 1  
Oct.. 22 Exercise 1 due  
Oct. 29  
November 5  
November 12  
November 19  
November 26 Quiz 2  
December 2 Exercise 2 due

**Thursdays**

Sept. 5  
Sept. 12  
Sept. 19  
Sept. 26  
Oct. 3  
Oct. 10  
Oct. 17 No class (fall break)  
Oct. 24  
Oct. 31  
Nov. 7  
Nov. 14  
Nov. 21  
Nov. 28 No class (Thanksgiving)