Introductory biostatistics courses - What you need to know!

Many allied health science graduate majors require some biostatistics course or sequence, and most allow you to substitute a higher-numbered biostatistics course for a required course. Or perhaps biostatistics is not required, but you are interested in learning some!

The Biostatistics division in the School of Public Health (SPH) offers three two-semester sequences for you to consider:

PubH 6414/6415 Biostatistical Methods I and Biostatistical Methods II **OR**
PubH 6450/6451 Biostatistics I and Biostatistics II **OR**
PubH 7401/7402 Fundamentals of Biostatistical Inference and Biostatistics Modeling and Methods

Trying to understand which sequence is right for you?

Each sequence covers, in large part, the same body of statistical ideas: basic distributions, descriptive statistics and graphing, hypothesis testing and confidence intervals for means and proportions, linear regression, analysis of variance, power and sample size, logistic regression, and Kaplan-Meier curves and time-to-event models.

The sequences differ in the expected mathematical background, the level of underlying statistical fundamentals that students are expected to master, the depth to which statistical methods are covered, the type of statistical software, and credit hours. Here are specifics on how they differ.

	6414/6415	**6450/6451**	**7401/7402**
Credits	3/3	4/4	4/4
Offered	Online & in-class	In-class only	In-class only
Software	R Commander and R, SAS (in-class 6415 only)	R or SAS (6450), SAS (6451)	SAS, R, or Stata
Computer lab time	1 hour/week (in-class only)	1 hour/week (6450 only)	None
Prerequisites	College algebra	College algebra	Undergraduate calculus
Sufficient prerequisite for	PubH 7415	PubH 6470, 7415, 7420, 7430, 7470	Any class with 6414/15 or 6450/51 as prerequisites
After both semesters	- Understand appropriate use and interpretation of all statistical methods covered. - Be able to apply basic statistics to your own research.	- Learn underlying algebraic basis for statistical fundamentals. - Understand methods and programming in depth. - Understand appropriate use and interpretation of all statistical methods covered. - Be able to apply all methods learned to your own research.	- Understand the mathematical underpinnings of statistical reasoning and statistical methods. - Learn additional topics: multinomial models, advanced methods for repeated measures, time-to-event data. - Understand appropriate use and interpretation of all statistical methods covered. - Be able to apply all methods learned to your own research.

We also offer two classes on **SAS programming**: (1) PubH 6420, 1 credit, in class and online, covering SAS programs for reading and processing data, and descriptive and basic statistical analysis; there are no pre-requisites. (2) PubH 6470, 3 credits, in class only, introducing students (who have a minimum of 6450/6451) to SAS programming, graphics, and data analysis (including general linear models, logistic regression, longitudinal mixed effects models, and time-to-event models). For both classes, very little time is spent on explaining statistical methods; students are expected to have had exposure to them ahead of time.

You can link to each of our courses from http://www.sph.umn.edu/biostatistics/allcourses.asp.

How do you decide which to take?

SPH and other degree program admitted students: It is important that you check with your Director of Graduate Studies, Program Director, Advising Team, or Academic Advisor to determine what is required vs. recommended, and what substitutions may be accepted. If you expect to do most or all of the statistical analyses for your MPH, MS, or other degree thesis/project, you will need ***two*** semesters of biostatistics in order to be sufficiently prepared.

SPH Core Concepts Certificate students: Check with your Public Health Practice advisor to find out what the required biostatistics sequence is for your ultimate degree of interest, for example if you are interested in applying to a Master of Public Health Major/Program in the future. Even though the Certificate requires PubH 6414/6415, you may want to take PubH 6450/6451.

Non-degree seeking students potentially interested in an SPH degree program: Feel free to check our website at www.sph.umn.edu, click on the major or program you are interested in, and review the curriculum to help determine which biostatistics courses to take.

Whichever sequence you decide is appropriate for you,
we strongly encourage you to take *both* semesters, not just the first one!

You will be much better prepared to understand, interpret, use, and learn new statistics
in your field of research *over your career*.

Last updated: 26-Apr-12