Bios 600 FAQs

1. Tell me about the course content of Bios 600.

Bios 600 is an introductory course in probability and statistical inference in public health. This course serves as an introduction to the collection, summarization, analysis and presentation of data. Topics include experimentation, measurement, descriptive statistics, summary graphs, correlation, probability, confidence intervals, tests of hypotheses, 2-way tables, power and sample size calculations, diagnostic tests, chi-square distribution and linear regression. Other topics may include logistic regression, survival analysis, survey sampling and nonparametric methods.

Students will be able to evaluate straight-forward statistical usage in everyday life and their own public health discipline, especially in relevant research publications, and interact knowledgeably with statisticians in planning, conducting, analyzing, reporting and interpreting public health research.

2. What are the prerequisites for Bios 600?

Students should have an understanding of basic algebra and arithmetic at the college level.

For example, courses offered residentially at UNC-CH that would meet this expectation include MATH 110 (algebra) or 130 (pre-calculus). Similar algebra courses are offered at other universities or local communities colleges.

No previous statistics or probability coursework is required.

3. I'm concerned about my quantitative background. It has been a long time since I have used my math skills. Is there some way I could check to see if my math skills are sufficient?

Yes. A quantitative self-test is available here: Quantitative Self-Test. Students are encouraged to take the test and check their answers with this Quantitative Self-Test Answer Key. Students should be comfortable with ALL concepts on this test – with the only errors being "careless errors" rather than errors in understanding. Students can use this self-test to direct their review of specific mathematical concepts using the resources suggested below.

4. I took the quantitative self-test recommended in #3, and recognize that I'm a little rusty on a few math topics. Are there any resources you recommend for math review?

Yes. Here are three:

a) A good, free mathematical review can be found as part of the GRE website. See www.ets.org/gre/revised_general/prepare/quantitative_reasoning/ and www.ets.org/s/gre/pdf/gre_math_review.pdf. This downloadable pdf file has a nice review of basic mathematical concepts. Your emphasis should be on the sections on arithmetic, algebra and data analysis (not geometry).

b) www.khanacademy.org has excellent, free videos. Concentrate on these sections: "arithmetic and prealgebra" and "algebra".

c) Many good review books are available including: The Complete Idiot's Guide to Algebra (Michael Kelley), Algebra for Dummies (Sterling), Algebra Demystified: A Self Teaching Guide (Huettenmueller), Practical Algebra: A Self Teaching Guide (Selby), Painless Algebra (Long).

5. Do I need to review trigonometry or geometry?

No.

6. Are their alternative courses I could take at UNC-CH instead of Bios 600?

More information about course substitution is available here.

For example, several alternatives include:

BIOS 550: Basic elements of probability and Statistical Inference I. Required preparation, two semesters of calculus. Fundamental of probability; discrete and continuous distributions, functions of random variables, descriptive statistics, functions of random variables, fundamentals of statistical inference, including estimation and hypothesis testing. A more theoretical introduction to biostatistics than Bios 600. Fall only.

BIOS 500H: Biostatistics for Majors. Required preparation, two semesters of calculus (Math 231 and 232). Corequisite: Bios 511. Reserved for undergrads in BSPH biostatistics degree program and freshmen/sophomores (undergrads only) in the Honors program considering majoring in biostatistics. Instructor permission required. Fall only.

HPM 470: Statistical Methods for Health Policy Management. Reserved for HPM students only. Introduction of linear model approach to analysis of data in health care settings. Topics include probability distributions, estimation tests of hypotheses, methods in multiple regression and analysis of variance and covariance. Fall only.

HBEH 601: Principles of Statistical Inference for Health Behavior. Reserved for HBHE majors only. Required preparation, knowledge of basic descriptive statistics. Major topics include elementary probability theory, probability distributions, estimation, tests of hypotheses, paired and independent samples t-tests, ANOVA, linear and logistic regression, correlation and chi-squared procedures. SAS, a statistical software package, is used in the course. Fall only.

OR ANY BIOS COURSE (3 or 4 hours) ABOVE BIOS 540.

7. I've had a previous course in statistics/biostatistics. Can I exempt Bios 600?

Maybe. First review this sample Bios 600 syllabus to see if your previous course covered the topics in Bios 600 in an equally or more rigorous manner.

Then discuss with your departmental academic advisor whether an exemption of Bios 600 would be in your best interest. If your departmental academic advisor is supportive, you may obtain information about exempting Bios 600 (including the course exemption form) at this link, then click on the "Academics" tab.

Explicit instructions are available at this website including an example of a completed course exemption form. A completed form will explain in Section D how each competency was fulfilled in the previous course and will include syllabus of the previous course.

Briefly, students submit the completed course exemption form to their own departmental student services manager (SSM) who checks the student's transcript. The form is forwarded by the SSM to the core course instructor who determines whether an exemption is appropriate.

While each case is considered individually, in general, students need to have completed a biostatistics/statistics course that is equally or more rigorous than Bios 600 within the last 5 years and obtained at least a "B" grade.

AP Statistics or STOR 151/155 will not exempt a student from Bios 600.

8. What software is used in Bios 600? Do I need experience in this software before enrolling?

Because different software packages (or no software) offer advantages and disadvantages, the software used in Bios 600 may vary by semester and instructor. Software that has been used in recent semesters includes SAS, Stata, R, Excel or no software. The software package to be used will be stated in the course syllabus.

Students are not expected to have experience in a particular statistical software package before enrolling in Bios 600. However, basic personal computing knowledge (file names, directory structures, drop down menus, etc.) is assumed.

9. What is the difference in the different sections? How do I choose a section? When is Bios 600 offered?

Different software or textbooks may be used by instructors in different sections. Recent recommended textbooks have included:

Principles of Biostatistics, Pagano

Biostatistics: A Foundation for Analysis in the Health Sciences, Daniel

Basic Biostatistics: Statistics for Public Health Practice, Gerstman

Fundamentals of Biostatistics, Rosner

For residential students, two sections of Biostatistics 600 are offered each Fall. One section of Biostatistics 600 is offered in the Spring. The course is not offered residentially in the summer.

Students may choose a section based on the day/time the courses are offered or other factors such as instructor preference or software covered.

For Fall 2014, instructors, textbooks, and software preferences are provided below.

BIOS 600.001, 9:30-10:45 T/TH, Dr. Amy Herring, textbook by Pagano, Stata or R software (student preference)

BIOS 600.002, 8:00-9:15 T/TH, Mr. Marcus Herman-Giddens, textbook by Gerstman, R and Excel software

10. Does Bios 600 meet the CEPH requirements?

Yes – all sections of Bios 600 meet the CEPH requirements here:

https://sph.unc.edu/files/2013/12/Corecompetencies_2012.pdf

11. I'm in Bios 600 (or Epi 600) and would benefit from group tutoring. Are there any options available?

In addition to office hours by your professor and TAs for your specific section, group tutoring is available. More information available at

https://sph.unc.edu/files/2013/12/Academic-Enrichment-Program-for-BIOS-and-EPID-Courses.pdf

12. I would like more exposure to statistical software than is covered in Bios 600. Any suggestions?

Bios 511 (Introduction to Statistical Computing and Data Management) is a four hour course which focuses on SAS software – primarily data management and graphing aspects including macros. Fall Only.

Also, the Odum Institute periodically offers Short Courses in R, Stata, SPSS and SAS.

More information at http://www.irss.unc.edu/odum/contentSubpage.jsp?nodeid=21

13. What course is recommended after Bios 600?

BIOS 545 (Principles of Experimental Analysis) is often the course recommended after Bios 600. This course covers multiple regression, ANOVA, ANCOVA. Prereqs are Bios 600 (or equivalent) and familiarity with SAS (such as Bios 511). Spring only.

BIOS 550 (Probability and Statistical Inference I) is a more advanced treatment of biostatistical topics. Prereqs include two semesters of calculus (Math 231/232). Fall only.