



§ I: MATH 6605 Biostatistics Syllabus

Catalog Description

A non-calculus-based course that includes basic concepts of probability and statistics. These concepts are applied to problems in human biology, industrial/occupational health, and epidemiology. Introduction to and use of the computer package R for data analysis. 3 credits.

Note: this course is designed for students majoring in biological and health sciences with limited mathematics backgrounds. No prior statistics experience is required. Through the extensive use of practical examples this course is expected to motivate and teach students statistics knowledge that would be helpful for their major study. The course is cross-listed with BIOL 6605

Required Textbook

Biostatistics for the Biological and Health Sciences, Marc M. Triola and Mario F. Triola, Addison Wesley, 1e, ISBN 9780321194367.

The computer program R is the standard statistical program for this course. Students will use R to complete data analysis projects. R can be downloaded and installed on your personal computer for free following instructions at <http://www.r-project.org/>.

Course Objectives

This course covers fundamental concepts in probability and statistics, including data description, design of experiment, probability rules and distributions, statistical inference and linear regression. Definitions will be learned through real-world examples and applications. Besides these traditional materials, topics and methods that are particularly applicable to biological and health sciences will be introduced. As an introductory level statistics course for biological and health sciences students, it does not emphasize mathematical rigor underlying the theory, but focus on the applications of statistical ideas to realistic data and practices. Students are expected to use materials learned from this course to guide statistical practice for their major studies in the future.

Student Learning Outcomes

After successfully completing this course the expectation is that students will be able to:

1. To grasp concepts in probability and be able to apply basic probability rules, distributions, and laws to solve conceptual statistics questions;
2. Use statistical guidelines and common sense to interpret the process of data collection, description and analysis, and to design statistically sound experiments;
3. Learn various statistical inference techniques and be able to select appropriate methods for specific data sets and scientific purpose;
4. Link the course materials with real-life examples, and explore the opportunities for other biological applications; and,
5. Interpret statistical reports and carrying out data analysis using R.

Required Curriculum Content

Key topics covered include:

1. To facilitate the understanding of concepts and familiarize the use of computer program R, several data projects will be assigned during the semester. Independent work is expected. All sections of MATH 6605 Biostatistics will cover, as a minimum, the material from *Biostatistics for the Biological and Health Sciences*, Marc M. Triola and Mario F. Triola, Addison Wesley, 1e, ISBN 9780321194367, as listed:

Chapter	Textbook Topic
1-2	Introduction to statistics, data and R
3	Probability theory
4-5	Probability distributions
6	Sample estimates
7-8	Hypothesis testing
9-10	Correlation, Regression, multinomial experiments
11	Analysis of variance
12	Nonparametric statistics
13	Life table
Extra	Data analysis using R, Part I
Extra	Data analysis using R, Part II

Common Department Requirements for MATH 6605

While students in each section of MATH 6605 are assessed by the course instructor, there are general guidelines that apply to all sections of MATH 6605. These include:

- Only Department approved calculators are allowed on exams; other electronic devices are not allowed on any exams.

Department, College and University Expectations and Policies

It is important that students familiarize themselves with a range of policies and guidelines that have been established by the Department of Mathematics and Physics, the College of Arts and Sciences, and the University of New Haven. These are an integral part of the syllabus for this course.

Adding/Dropping a Class

The final day to drop a course without it appearing on your transcript is Tuesday, December 4, as discussed at <http://www.newhaven.edu/academics/calendar>. During the second week of classes, further adjustment requires the approval of the chair of the department offering the course, as described at <http://catalog.newhaven.edu/content.php?catoid=7&navoid=730#Changes>.

Attendance Regulations

University attendance policy guidelines require that:

All students are expected to attend regularly and promptly all their classes, appointments, and exercises. While the university recognizes that some absences may occasionally be necessary, these should be held to a minimum. A maximum of two weeks of absences will be permitted for illness and emergencies. The instructor has the right to dismiss from class any student who has been absent more than the maximum allowed. After the last date to drop as published in the academic calendar, a student will receive a failure (F), if failing at that point, or a W, if passing at the time of dismissal.

Students are to adhere to the policy attendance policy guidelines outlined in the University Catalog under the heading, *Attendance Regulations*, at http://catalog.newhaven.edu/content.php?catoid=12&navoid=881#Academic_Status_and_Progress, or alternatively in the Student Handbook at <http://www.newhaven.edu/studenthandbook> on pp. 48-49, i.e., at <http://viewer.zmags.com/publication/bc83d17d#/bc83d17d/48>.

Withdrawal Deadline

Students wishing to withdraw must submit a request for an official course withdrawal in writing using the Course Withdrawal Form available online from <http://forms.newhaven.edu/view.php?id=134169>. The final date to request a withdrawal is Tuesday, October 30 listed in <http://www.newhaven.edu/academics/schedules-registration/academic-calendar-2017-2018.php>. This request must be submitted to the Registrar's Office and signed by the International Office if you are an international student. The grade of W will be recorded, but the course will not affect the GPA.¹

Incomplete Grades

A grade of Incomplete (INC) is given only in special circumstances and indicates that the student has been given permission by the instructor to complete required course work (with the same instructor) after the end of the term. Students need to examine carefully the **changed guidelines** pertaining to INC grades, specifically:

To remove the INC grade, the student must complete all required course work in timely fashion as stipulated by the instructor but no later than the end of the following term. Fall and intersession course incompletes must be completed no later than the last day of the spring term. Spring and summer course incompletes must be completed no later than the last day of the fall term.

If the course work is not submitted within the allotted time, the INC grade will be changed to an F shortly after the deadline by the Office of the University Registrar. Students will be notified via campus email at least two weeks prior to the change of grade process.

The University policy on incomplete grades is available at http://catalog.newhaven.edu/content.php?catoid=12&navoid=881#Academic_Status_and_Progress under the heading, *Incomplete (INC) Grade Policy*.

¹ Please note that this withdrawal deadline represents a **significant policy change**. It is the responsibility of the student to assure that the required paperwork and documentation is completed by the deadline.

Academic Integrity Policy

This class fully adheres to the Academic Integrity Policy:

Academic integrity is a core university value that ensures respect for the academic reputation of the University, its students, faculty and staff, and the degrees it confers. The University expects that students will conduct themselves in an honest and ethical manner and respect the intellectual work of others. Please be familiar with the UNH policy on Academic Integrity. Please ask about my expectations regarding permissible or encouraged forms of student collaboration if they are unclear.

Students are required to adhere to the Academic Integrity Policies specified in the Student Handbook on pp. 66–73 of <http://www.newhaven.edu/studenthandbook>, i.e., at <http://viewer.zmags.com/publication/bc83d17d#bc83d17d/66>.

Coursework Expectations

This course will require significant in-class and out-of-class commitment from each student. The University estimates that a student should expect to spend two hours outside of class for each hour they are in a class. For example, a three credit course would average six [6] hours of additional work outside of class.² Coursework expectations are detailed at http://catalog.newhaven.edu/content.php?catoid=12&navoid=881#General_Policies under the heading *Course Work Expectations*.

Please note, that MATH 6605 is a 3-credit course, and as such requires a total of 9 hours per week invested in study and homework for the average student.

Commitment to Positive Learning Environment

The University of New Haven wants to foster and support a civil, respectful, and open-minded climate so that all of us can live and work in an environment free of harassment, bias-motivated behaviors, unfair treatment, and fear. To this end, the university expects all members of our community to refrain from actions or behaviors that intimidate, humiliate, or demean persons or groups or that undermine their security or self-esteem based on traits related to race, ethnicity, country of origin, religion, gender identity/expression, sexual orientation, age, or physical or mental ability, including learning and/or developmental disabilities and past/present history of mental disorder or other category protected by state or federal law. If you have witnessed or are the target of a bias-motivated incident, please contact the Office of the Dean of Students at 203-932-7432 or Campus Police at 203-932-7014 or fill out the form at <http://www.newhaven.edu/student-life/report-it>.

The University adheres to the philosophy that all community members should enjoy an environment free of any form of harassment, sexual misconduct, discrimination, or intimate partner violence. If you have been the victim of sexual misconduct we encourage you to report this. If you report this to a faculty/staff member, they must notify our college's Title IX coordinator about the basic facts of the incident (you may choose to request confidentiality from the University). If you encounter sexual harassment, sexual misconduct, sexual assault, or discrimination based on race, color, religion, age, national origin, ancestry, sex, sexual orientation, gender identity, or disability please contact the Title IX Coordinator, Caroline Koziatek at (203)-932-7479 or CKoziatek@newhaven.edu. Further information about Title IX at UNH may be found at <http://www.newhaven.edu/about/title-ix.php/>.

Religious Observance Policy for Students

The University of New Haven respects the right of its students to observe religious holidays that may necessitate their absence from class or from other required university-sponsored activities. Students who wish to observe such holidays should not be penalized for their absence, although in academic courses they are responsible for making up missed work. More information about religious observance policies can be found in the Student Handbook on p.48 at <http://viewer.zmags.com/publication/bc83d17d#bc83d17d/48>.

More information about religious observance policies can be found in the Student Handbook, and there is also a separate handbook for International students at <https://www.newhaven.edu/student-life/international-service>

² Please note that study guidelines are important, i.e., there is substantial evidence that shows that the pass rates for students in math courses decrease dramatically as the time spent on outside study falls below 2 hours of homework per credit per week.

[index.php](#).

University Support Services

The University recognizes students often can use some help outside of class and offers academic assistance through several offices. In addition to discussing any academic issues you may have with your instructor, advisor, or with the the courses or department coordinator or chair, the University provides these additional resources for students:

The Academic Success Center

<http://www.newhaven.edu/AcademicSuccess>, located in Maxcy 208 for help with your academic studies, or call 203.932.7234 to set up an appointment.

The Center for Learning Resources (CLR)

<http://www.newhaven.edu/academics/CLR>. located in Peterson Library, provides academic content support to the students of the University of New Haven using metacognitive strategies that help students become aware of and learn to apply optimal learning processes in the pursuit of creating independent learners CLR tutors focus sessions on discussions of concepts and processes and typically use external examples to help students grasp and apply the material.

Writer to Writer

<http://www.newhaven.edu/writertowriter/> is a peer-tutoring program inspired by the belief that all writers struggle and can benefit from talking through their ideas. Tutors are undergraduate students trained to work with you at any stage in the writing process.

Accessibility Resources Center

<http://www.newhaven.edu/student-life/accessibility-resources-center/index.php>. Students with disabilities are encouraged to share, in confidence, information about needed specific course accommodations. The Accessibility Resources Center (ARC) provides comprehensive services and support that serve to promote educational equity and ensure that students are able to participate in the opportunities available at the University of New Haven. Accommodations cannot be made without written documentation from the ARC. The ARC is located on the ground floor in the rear of Sheffield Hall. Sheffield Hall is located in the Residential Quad area, and can be contacted at 203-932-7332. The ADA/Section 504 Compliance Officer is Rebecca Johnson, RJohnson@newhaven.edu, and can be reached by phone at 203-932-7238. Information on the ARC can be found at