

# Syllabus for HIMT 350

**NOTE** The contents of this syllabus are as complete and accurate as possible. The instructor reserves the right to make any changes necessary to the syllabus and course material. The instructor will make every effort to inform you of changes as they occur. It is your responsibility to know what changes have been made in order to successfully complete the requirements of the course. Any changes noted in the course News area or sent via email are considered official addendums to this syllabus.

Be sure to review the course calendar for all due dates, along with the activities, assignments, and quizzes scheduled for the semester.

## Contact Information

Instructor: Daniel J. McCarty, PhD

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## Communicating with Your Instructor via Email

I check my email frequently during the day. However, I receive a lot of email and I sometimes delete emails that do not have the subject specified. If you have not received a response to your email within 24 hours, please resend your email. I do not check email routinely at home or on weekends. Please remember that these are professional communications, so please use full sentences and complete words.

## Course Description

This is an introductory course in statistical methods used in applied research for the biological sciences. The course will emphasize the principles of statistical reasoning, underlying assumptions, hypothesis testing, and careful interpretation of results. Some topics covered: descriptive statistics, graphical displays of data, probability, confidence intervals and tests for means, differences of means, sample size and power, differences of proportions, chi-square tests for categorical variables, regression, multiple regression, and non-parametric statistics.

## Learning Objectives

This course will emphasize much more than just number crunching. You will develop a new set of reasoning skills that will provide a foundation for designing, analyzing and interpreting research in the biological sciences. This knowledge and these skills are

essential in today's healthcare environment, which emphasizes evidenced-based healthcare and health outcome evaluation.

At the conclusion of this course, you will be able to:

1. Articulate the basic concepts and techniques of statistics for healthcare.
2. Appreciate the vital role of statistics in determining study designs.
3. Apply statistical analyses to conduct and interpret healthcare data
4. Appreciate the scope of statistics and its essential role in promoting evidenced-based healthcare and health outcome evaluation.

## Course Materials

### Required Textbook

*Basic Biostatistics*, by B. Burt Gerstman (Jones and Bartlett Publishers, 2009)

### Required Software

For our statistical analysis work in this course, we will be using Minitab 17 or Minitab Express. To purchase a copy, click the following link:

<http://www.onthehub.com/minitab/#>.

## Grading

Grades will be based on your performance of the following items:

<b>Activities</b>	<b>Percent of Final Grade</b>
Lesson Quizzes	15%
Activities	15%
Exam 1	20%
Exam 2	20%
Final Exam (comprehensive)	30%
Total	100%

### Grading Scale

90–100 %	A
80–89%	B
70–79%	C
60–69%	D
0–59%	F

## Grading Criteria

“A” reflects exceptional work (going beyond the basics, integrating material well, displaying professionalism in individual and group work, application and demonstration of knowledge and skills, showing initiative, using creativity, writing is reflective of multiple drafts).

“B” reflects good work (valuable teamwork skills, active in class, ability to grasp basic concepts and apply to new situations, some participation in class, completes all assignments with a degree of proficiency but may not demonstrate initiative, creativity or reflection consistently, writing contains errors or lacks conciseness and completeness).

“C” reflects average work (assignments are completed at the minimum, basic concepts are grasped but cannot be applied, some difficulty in group work, spelling and grammar mistakes are common, writing is conversational in tone with little attention paid to detail, word choices, organization (rough draft quality), little participation in class).

## Course Outline

- Lesson 1a: Introduction to Statistics for Healthcare
- Lesson 1b: Introduction to Chance and Probability
- Lesson 2: Measurement
- Lesson 3: Major Study Designs
- Lesson 4: Sampling
- Lesson 5: Frequency Distributions
- Lesson 6: Summary Statistics
- Lesson 7: Probability Concepts
- Lesson 8: Binomial Probability Distributions
- Lesson 9: Normal Probability Distributions
- Lesson 10: Introduction to Statistical Inference
- Lesson 11: Basics of Hypothesis Testing
- Lesson 12: Confidence Intervals
- Lesson 13: Inferences about a Mean
- Lesson 14: Comparing Independent Means
- Lesson 15: Comparing Several Means
- Lesson 16: Correlation and Regression
- Lesson 17: Multiple Linear Regression
- Lesson 18: Proportions and Vital Statistics
- Lesson 19: Chi-sq test
- Lesson 20: Introduction to Nonparametric Statistics
- Lesson 21: A Brief Introduction to Advanced Statistics
- Lesson 22: Data Report and Presentation

## Course Policies

Please note that you are responsible for anything I send you via email.

The News tool in D2L will be used as a means of communication. Please check it on a regular basis to keep current. The syllabus, schedule and assignments are all subject to change. Any changes or need for additional information affecting the course as a whole will be communicated here.

All assignments will have a specified due date. You must submit one copy of your homework in the dropbox of D2L by this due date. Late assignments may be accepted but these will receive a lower grade. *If you have any concern about meeting the requirements of this course, please contact me.*

Assignment and quiz grades will be available to you in the Grades tool of D2L.

Any necessary communication regarding assignments placed in the dropbox will be posted through dropbox feedback.

Legitimate emergencies do occur and may prevent the completion of course work by the designated time. Please inform me as soon as possible when emergency situations occur and indicate your plans for completing the work. Extension of the completion time will be considered on an individual basis.