



## STAT 500 I - Statistics for Biomedical Scientists I

3 Credits

Fall 2019

Syllabus

Instructor: Deven Shah

### Contact Information:

Classroom: BLDG10 - B1C209-211 - Tuesdays 5:00 PM – 8:00 PM

E-mail: [deven.shah@asclepius.net](mailto:deven.shah@asclepius.net)

Phone: 301-685-3557

Virtual Office Hours: arranged via email

Preferred Method of Communication: email

### Course Information:

Prerequisites, if any: None

### Course Description:

The objective of this course is to provide an overview of statistics for biomedical research workers and clinicians who are interested in interpretation of the results of statistical analyses. This is a series of integrated lectures on analysis and interpretation of medical research data. Emphasis is on ideas and understanding rather than mechanics. Topics covered include the foundation of statistical logic and interpretation of the most commonly encountered statistical procedures in medical research.

### Course Website (Canvas):

Will communicate via email and potentially Canvas

### Learning Materials:

#### Required and Recommended Texts:

Rosner, Bernard Fundamentals of Biostatistics, 8th Edition.

#### Required Journal Articles:

#### Companion Site:

[http://www.cengage.com/cgi-wadsworth/course\\_products\\_wp.pl?fid=M20b&product\\_isbn\\_issn=9781305268920](http://www.cengage.com/cgi-wadsworth/course_products_wp.pl?fid=M20b&product_isbn_issn=9781305268920)

## Course Goals

When you complete the course successfully, you will be able to:

1. Understand statistical reasoning (Classical/Frequentist Approach)
2. Communicate better on statistical analyses with reviewers, colleagues, and statisticians
3. Distinguish between various statistical techniques used in biomedical research
4. Interpret statistical outputs and summaries

## Structure of the Course

STAT 500 is a full-year course. First semester introduces Probability Theory and preliminary one/two sample statistical inference techniques. The second semester expands on the material covered in the first semester by looking at assumptions, extensions, and alternatives for common procedures. You do not have to complete both semesters; you can choose to only take STAT500 in the Fall. However, material covered in the first semester is necessary to satisfactorily undertake the second semester.

## The Learning Process

A mix of white-board and on-line presentations to foster dialogue on course material.

## Important Dates:

Drop deadline – Consult FAES

Audit and withdrawal deadline – Consult FAES

Holidays – none planned

## Communication:

Reply to email: [deven.shah@asclepius.net](mailto:deven.shah@asclepius.net)

Reply to voicemail: 301-685-3557

Preferred time to call: 10AM – 12Noon

Other forms of communication, if applicable: none

Canvas Q&A Discussion Forum, if applicable: in the works

## Etiquette:

Email: Preferable

Group etiquette: Please refrain from conversations during lectures

## Policies:

**[PLEASE DO NOT CHANGE OR DELETE THE TEXT BELOW THROUGH THE \*\*\*]**

## Academic Policies

This course adheres to all FAES policies described in the academic catalog and student handbook, including the Academic Integrity policy listed on page 11 of the academic catalog and student handbook. Be certain that you are knowledgeable about all of the policies listed in this syllabus, in the academic catalog and student handbook, and on the FAES website. As a student in this program, you are bound by those policies.

## Copyright

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## Guidelines for Disability Accommodations

FAES is committed to providing reasonable and appropriate accommodations to students with disabilities. Students with documented disabilities should contact Dr. Mindy Maris, Assistant Dean of Academic Programs.

## Dropping the Course

Students are responsible for understanding FAES policies, procedures, and deadlines regarding dropping or withdrawing from the course or switching to audit status.

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Expectations for instructor's feedback on assignments:

Understanding of the concepts, required assumptions, and methodology

Major Assignments:

50% = Midterm Exam

50% = Final Exam

Grading Scale:

90-100 A

80-89 B

70-79 C

60-69 D

Weekly Schedule:

Week	Readings	Learning Activities and Assignments
1	Chapters 1 & 2 Chapter 3 Introduction to R	Overview & Descriptive Statistics Probability: Notations
2	Chapter 3	Probability: Notations
3	Chapter 3	Probability: Bayes Theorem Random Variables, Expected Values, Variance, Permutation/Combination
4	Chapter 4	Discrete Probability Distributions, Binomial, Poisson
5	Chapter 4	Continuous Probability Distribution, Normal, Standard Normal
6	Chapter 5	Continuous Probability Distribution, Normal, Standard Normal
7	Chapter 5	Estimation: Population vs Sample, Random Numbers, Randomized Clinical Trials
8	Chapter 6	Estimation: Point Estimates and Confidence Intervals
9	Chapter 6	Hypothesis Testing: Concept, One Sample, Relation with CI, Normal Population
10	Chapter 7	Hypothesis Testing: Binomial and Poisson
11	Chapter 7	Hypothesis Testing: Two-Sample Inference
12	Chapter 8	Hypothesis Testing: Two-Sample Inference cont.
13	Chapter 8	Non Parametric Statistics
14	Chapter 9	Review