

University of Florida
College of Public Health & Health Professions
PHC 6937: Analysis of Multivariate Data (Fall 2018)
Monday, 11:45am-12:45pm; Wednesday, 11:45am-1:40pm
CTRB 5235

Instructor:

Subharup Guha

Associate Professor Department of Biostatistics

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Office Hours: M, W 10am - 11am or by appointment (e-mail me)

Prerequisites: PHC 6092, PHC 6050C, PHC 6051

Course Overview: This course covers linear models methodology including simple and multiple regression and analysis of variance including factorial and block designs. The course covers regression for categorical data, random effects models for correlated data, and nonparametric and semiparametric regression.

Course Objectives: Upon successful completion of the course, students will be able to:

- Understand the fundamental concepts of multivariate statistical theory
- Apply the concepts to their own methodological and collaborative research

Required Textbook: *Applied Multivariate Statistical Analysis*, Johnson and Wichern, Sixth edition.

Course Requirements/Evaluation/Grading: Students will be evaluated based upon homework assignments and exams. The instructor reserves the right to revise these if necessary.

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| <input type="checkbox"/> Homework (35%) | <input type="checkbox"/> Exam 1 (25%) |
| <input type="checkbox"/> Attendance and class participation (5%) | <input type="checkbox"/> Exam 2 (35%) |

The grading scale for this course consists of the scale, including minus grades, below. The conversion factors for grade point values assigned to each grade are also included (in parentheses):

94% - 100% = A (4.00)	77% - 79% = B- (2.67)	64% - 66% = D+ (1.33)
90% - 93% = A- (3.67)	74% - 76% = C+ (2.33)	60% - 63% = D (1.00)
85% - 89% = B+ (3.33)	70% - 73% = C (2.00)	57% - 59% = D- (0.67)
80% - 84% = B (3.00)	67% - 69% = C- (1.67)	Below 57% = E (0.00)

For more detail on letter grades and university policies related to them, see the Registrar's Grade Policy regulations at <http://www.registrar.ufl.edu/catalog/policies/regulationgrades.html>

Homework: Biweekly assignments are planned. Further information will be provided in class. Discussion on homework problems is allowed, but plagiarism is prohibited.

Class Involvement: Students are encouraged to be actively engaged in classes. Responses to the instructor's requests on sharing thoughts or solutions will be rewarded.

Tentative outline of topics: Adjustments to this schedule may be made during the semester.

Topic	Weeks of
Aspects of multivariate analysis	Aug 20, 27
Matrix algebra and random vectors	Aug 27, Sep 3
Sample geometry and random sampling	Sep 3, Sep 10
The multivariate normal distribution	Sep 10, 17
Inferences about a mean vector	Sep 24, Oct 1
<i>In-class Exam 1</i>	<i>Oct 3 (exact date)</i>
Comparisons of several multivariate means	Oct 8, 15
Multivariate linear regression models	Oct 22, 29
Principal Components	Oct 29, Nov 5
Factor Analysis and Structured Covariance Matrices	Nov 5, Nov 12
Canonical Correlation Analysis	Nov 19, Nov 26
Discrimination and classification	Nov 26, Dec 3
<i>In-class Exam 2</i>	<i>Dec 5 (exact date)</i>

Statement of University's Honesty Policy: At the University of Florida, each student is bound by the academic honesty guidelines of the University and the student conduct code printed in the Student Guide and on the University website. The Honor Code states: "We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity." Cheating, lying, misrepresentation, or plagiarism in any form is unacceptable and inexcusable behavior. Students are expected to act in accordance with the University of Florida policy on academic integrity (see Student Conduct Code, the Graduate Student Handbook or this web site for more details: <http://www.dso.ufl.edu/sccr/>).

Academic integrity: Students are encouraged to discuss the material with other members of the class on homework and other assignments. However, these are **NOT** allowed:

- Have another person complete any assignment in this course
- Copy another student's work on any assignment in this course
- Use materials provided by a previous student in the course for any purpose

Policy Related to Class Attendance: Class attendance is mandatory. Excused absences follow the criteria of the UF Graduate Catalogue (e.g., illness, serious family emergency, military obligations, religious holidays), and should be communicated to the instructor prior to the missed class day when possible. UF rules require attendance during the first two course sessions. Regardless of attendance, students are responsible for all material presented in class and meeting the scheduled due dates for class assignments. Finally, students should read the notes from lectures given in earlier classes prior to the class meetings, and be prepared to discuss the material in class.

Classroom etiquette: Please come to class on time and be prepared to stay until the time scheduled as the end of class. Pagers and cell phones should not be used in class. The use of cell phones, text messaging, and pagers is a common complaint from students. Please turn them off. Another common complaint is "side" conversations among students. Please consider that your conversation may interrupt the attention of someone seated near you. Generally, you should be speaking to the class as a whole or participating in group discussions as directed by the instructor. I welcome in-class questions. Your question will nearly always be one that other students also have.

Policy Related to Make-up Exams or Other Work: Students are allowed to make up work **ONLY** as the result of illness or other unanticipated circumstances warranting a medical excuse and resulting in the student missing a homework or project deadline, consistent with College policy. Documentation from a health care provider is required. Work missed for any other reason will receive a grade of zero.

Accommodations for Students with Disabilities: If you require classroom accommodation because of a disability, it is strongly recommended you register with the Disability Resource Center within the first week of class or as soon as you believe you might be eligible for accommodations. The Disability Resource Center will provide documentation of accommodations to you, which you must then give to me as the instructor of the course to

receive accommodations. Please do this as soon as possible after you receive the letter. Students with disabilities should follow this procedure as early as possible in the semester. The College is committed to providing reasonable accommodations to assist students in their coursework.

Counseling and Student Health: Students sometimes experience stress from academic expectations and/or personal and interpersonal issues that may interfere with their academic performance. If you find yourself facing issues that have the potential to or are already negatively affecting your coursework, you are encouraged to talk with an instructor and/or seek help through University resources available to you.

- The Counseling and Wellness Center 352-392-1575 offers a variety of support services such as psychological assessment and intervention and assistance for math and test anxiety. Visit their web site for more information: <http://www.counseling.ufl.edu>. On line and in person assistance is available.
- You Matter We Care website: <http://www.umatter.ufl.edu/>. If you are feeling overwhelmed or stressed, you can reach out for help through the You Matter We Care website, which is staffed by Dean of Students and Counseling Center personnel.
- The Student Health Care Center at Shands is a satellite clinic of the main Student Health Care Center located on Fletcher Drive on campus. Student Health at Shands offers a variety of clinical services. The clinic is located on the second floor of the Dental Tower in the Health Science Center. For more information, contact the clinic at 392-0627 or check out the web site at: <https://shcc.ufl.edu/>
- Crisis intervention is always available 24/7 from:
 - Alachua County Crisis Center: (352) 264-6789
 - <http://www.alachuacounty.us/DEPTS/CSS/CRISISCENTER/Pages/CrisisCenter.aspx>

Do not wait until you reach a crisis to come in and talk with us. We have helped many students through stressful situations impacting their academic performance. You are not alone so do not be afraid to ask for assistance.