University of Florida College of Public Health & Health Professions
PHC 6092: Introduction to Biostatistical Theory (Fall 2019)
Monday period 3, Wednesday Periods 3-4, HPNP, G307

Instructor Information:
Yang Yang, Associate Professor    352-294-1933 or 352-273-7396    yangyang@ufl.edu
Department of Biostatistics
College of Public Health & Health Professions

Teaching Assistant:
On-campus: Xiulin Xie (xiulin.xie@ufl.edu)
Online: Samuel Anyaso-Samuel (sanyasosamuel@ufl.edu)

Office Hours:
To be announced (TA, on-campus students),
To be announced (TA, online students),
To be announced (Lecturer, online students).

On-campus student with questions are encouraged to approach the instructor after classes. The office of the instructor is located on the 4th floor of Dauer Hall. The office of TAs is located on the 5th floor of CTRB. Additional help can be made by appointment if needed.

Note for online students: The instructor will offer a one-hour online tutoring session each week. The time will be determined per communications with students to fit the schedules of as many students as possible. A zoom link will be posted in canvas each week one day before the office hour.

Prerequisites: Multivariate calculus similar to MAC 2313

Course Overview: This is a required core course for the MS program in Biostatistics. It will provide a detailed introduction to basic statistical theory such as point estimation, hypothesis testing, asymptotic theory and Bayesian inference.

Course Objectives: Upon successful completion of the course, students will be able to understand the fundamental concepts in estimation and statistical testing as well as their applications in Bayesian inference and linear regression.


Recommended Reference Books:

Last revised February 14, 2020
E-Learning/Canvas: An E-Learning site in Canvas will be available for the course. Grades, discussion boards, and other information will be available in the E-Learning system. E-learning is accessible at lss.at.ufl.edu or through my.ufl.edu. You must have a valid Gatorlink ID and password. For assistance, call the UF Help Desk at 392-HELP.

Useful external lecture videos: (strongly recommended for students with difficulties in calculus or basic probability theory)

MIT single-variable calculus
https://www.youtube.com/watch?v=7K1sB05pE0A&index=1&list=PL590CCC2BC5AF3BC1
MIT Open: Probabilistic systems analysis and applications
https://www.youtube.com/watch?v=j9WZyLZCBzs&list=PLUUi4u3cNGP60A3XMwZ5sep719_nh95qOe

Course Requirements/Evaluation/Grading: Students will be evaluated based upon homework assignments and exams. Exams will be in class.

- Homework (20%)  Exam I (30%)
- Attendance (10%)  Exam II (40%)
- Class Presentation (not scheduled)

The tentative grading scales for this course are given below. This is not final, however. The final grades will be affected by the distribution of final scores in the class (online and on-campus separately). The conversion factors for grade point values assigned to each grade are also included (in parentheses):

- 94% - 100% = A (4.00)
- 90% - 93% = A- (3.67)
- 85% - 89% = B+ (3.33)
- 80% - 84% = B (3.00)
- 77% - 79% = B- (2.67)
- 74% - 76% = C+ (2.33)
- 70% - 73% = C (2.00)
- 67% - 69% = C- (1.67)
- 64% - 66% = D+ (1.33)
- 60% - 63% = D (1.00)
- 57% - 59% = D- (0.67)
- 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: Homework will be assigned bi-weekly roughly. Information will be provided in class. Discussion on homework problems among classmates is allowed, but plagiarism is strictly prohibited.

Class Involvement: Students are encouraged to be actively engaged in classes. Responses to teacher’s requests on sharing thoughts or solutions will be rewarded, e.g., 1-2 points towards homework grades.
**Topical Outline:** Adjustments to this schedule are possible during the semester. The instructor will strive to be informative and fair regarding any changes.

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<tr>
<th>Topic</th>
<th>Reading</th>
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<tr>
<td>Set theory and probability review (3 week)</td>
<td>Appendix A, Abramovich &amp; Ritov; Chapters 1-4, Casella and Berger</td>
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<td>Sufficient, ancillary and complete statistics (1 week)</td>
<td>Chapter 1, Abramovich and Ritov; Section 6.2, Casella and Berger</td>
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<tr>
<td>Point estimation (3 weeks)</td>
<td>Chapter 2, Abramovich and Ritov; Chapter 7, Casella and Berger</td>
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<td>Mid-term Exam</td>
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<td>Hypothesis testing and interval estimation (3-4 weeks)</td>
<td>Chapter 3 &amp; 4, Abramovich and Ritov; Chapter 8 &amp; 9.2, Casella and Berger</td>
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<td>Asymptotic theory (3 weeks)</td>
<td>Chapter 5, Abramovich and Ritov; Sections 5.5.1, 5.5.3, 5.5.4, 10.1.1, 10.1.2, 10.3.1 and 10.4.1, Casella and Berger</td>
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<td>Bayesian inference (2 weeks)</td>
<td>Chapter 6, Abramovich and Ritov; Section 1.2.3 and 8.2.2, Casella and Berger</td>
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<td>Decision Theory (1 week, depending on availability of time)</td>
<td>Chapter 7, Abramovich and Ritov</td>
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<td>Final Exam</td>
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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, the following is 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 assigned readings prior to the class meetings, and be prepared to discuss the material except for the first class session.

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, you must first register with the Dean of Students Office (http://www.dso.ufl.edu/). The Dean of Students Office will provide documentation to you.
which you then give to the instructor when requesting accommodation. The College is
committed to providing reasonable accommodations to assist students in their coursework.

**Counseling and Student Health:** Students may occasionally have personal issues that arise in
the course of pursuing higher education or that may interfere with their academic
performance. If you find yourself facing problems affecting your coursework, you are
encouraged to talk with an instructor and to seek confidential assistance at the University of
Florida Counseling Center, 352-392-1575, or Student Mental Health Services, 352-392-1171.
Visit their web sites for more information: [http://www.counsel.ufl.edu/](http://www.counsel.ufl.edu/) or

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, including primary care, women's health care, immunizations, mental health care, and
pharmacy 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: [www.health.ufl.edu/shcc](http://www.health.ufl.edu/shcc)

Crisis intervention is always available 24/7 from Alachua County Crisis Center: (352) 264-6789.

BUT – *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.*

As Spring semester course syllabi development begins, please include U
Matter, We Care information in your course syllabus. Student Senate
Resolution 2015-138 recommends the following language for all course
syllabi:

> Your well-being is important to the University of Florida. The U Matter,
We Care initiative is committed to creating a culture of care on our
campus by encouraging members of our community to look out for one
another and to reach out for help if a member of our community is in need. If you or a friend is in distress,
please contact umatter@ufl.edu so that the U Matter, We Care Team can reach out to the
student in distress. A nighttime and weekend crisis counselor is available by phone at 352-
392-1575. The U Matter, We Care Team can help connect students to the many other
helping resources available including, but not limited to, Victim Advocates, Housing staff,
and the Counseling and Wellness Center. Please remember that asking for help is a sign of
strength. In case of emergency, call 9-1-1.