Instructor Name: Subha Guha, Ph.D.
Office Number: CTRB 5225
Phone Number: 352-294-5921
Email Address: s.guha@ufl.edu
Campus Course Hours: Mondays 11:45 - 12:35 and Wednesdays 11:45 - 12:35, 12:50 - 1:40
Campus Course Room: HPNP G-210
Office Hours: Mondays and Wednesdays 10:00 – 11:00, and by appointment
Preferred Course Communications: e-mail

Prerequisites: PHC 6092, PHC 6050C, PHC 6051 (or equivalent).

PURPOSE AND OUTCOME

Course Overview
To equip students with an understanding of the basics of Bayesian statistics, with special emphasis on practical implementation.

Relation to Program Outcomes
This course prepares students to communicate the foundations of Bayesian biostatistics concepts and methods, and to apply them, including the interpretation and communication of results.

Course Objectives and/or Goals
Upon successful completion of the course, students should be able to:

- Fit Bayesian models to real data sets
- Understand computational techniques to fit Bayesian models
- Use software such as WinBUGS and specialized R packages
- Be capable of applying Bayesian techniques in clinical trials, survival analysis, longitudinal studies, disease mapping, image analysis, and bioinformatics

Instructional Methods
Lectures with slides, data analysis demonstrations in R and WinBUGS, and whiteboard use. Homework assignments. Two in-class exams.
DESCRIPTION OF COURSE CONTENT

Topical Outline/Course Schedule

Adjustments to this schedule may be made during the semester

<table>
<thead>
<tr>
<th>Topic</th>
<th>Weeks of</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bayes Theorem</td>
<td>Aug 19, 26</td>
</tr>
<tr>
<td>Introduction to Bayesian inference</td>
<td>Aug 26, Sep 2, 9</td>
</tr>
<tr>
<td>Some models with several parameters</td>
<td>Sep 9</td>
</tr>
<tr>
<td>Choosing the prior</td>
<td>Sep 9, 16</td>
</tr>
<tr>
<td>MCMC sampling</td>
<td>Sep 16, 23, 30, Oct 7</td>
</tr>
<tr>
<td>Hierarchical models</td>
<td>Oct 7, 14, 21</td>
</tr>
<tr>
<td>In-class Exam 1</td>
<td>Oct 9 (exact date)</td>
</tr>
<tr>
<td>Model building and assessment</td>
<td>Oct 21, 28</td>
</tr>
<tr>
<td>Variable selection</td>
<td>Oct 28, Nov 4</td>
</tr>
<tr>
<td>Bioassay</td>
<td>Nov 4</td>
</tr>
<tr>
<td>Measurement error</td>
<td>Nov 4, 11</td>
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<tr>
<td>Survival analysis</td>
<td>Nov 11, 18</td>
</tr>
<tr>
<td>Longitudinal analysis</td>
<td>Nov 18</td>
</tr>
<tr>
<td>Spatial applications</td>
<td>Nov 18, 25, Dec 2</td>
</tr>
<tr>
<td>In-class Exam 2</td>
<td>Dec 4 (exact date)</td>
</tr>
</tbody>
</table>

Course Materials and Technology


For technical support for this class, please contact the UF Help Desk at:
- Learning-support@ufl.edu
- (352) 392-HELP - select option 2
- https://lss.at.ufl.edu/help.shtml

ACADEMIC REQUIREMENTS AND GRADING

Assignments

Students will be evaluated based upon homework assignments and exams. The overall grade will include homework assignment, class participation and two in-class exams. Class participation will include attendance, sharing reading comments, and participating in discussion. Students are encouraged to discuss either in groups or with the instructor on homework assignments, but are expected to complete homework on their own.

Homework: 35%
Exam 1: 25%
Exam 2: 35%
Class participation: 5%
The instructor reserves the right to revise the above distribution if necessary.

The grading scale for this course consists of the standard scale, including minus grades, below. Percentages will be rounded up when computing the grade.

93% - 100% = A  
90% - 92% = A-  
87% - 89% = B+  
83% - 86% = B  
80% - 82% = B-  
77% - 79% = C+  
73% - 76% = C  
70% - 72% = C-  
67% - 69% = D+  
63% - 66% = D  
60% - 62% = D-  
Below 60% = E

Please be aware that a C- is not an acceptable grade for graduate students. A grade of C counts toward a graduate degree only if an equal number of credits in courses numbered 5000 or higher have been earned with an A.

Letter grade to grade point conversions fixed by UF:

<table>
<thead>
<tr>
<th>Letter Grade</th>
<th>A</th>
<th>A-</th>
<th>B+</th>
<th>B</th>
<th>B-</th>
<th>C+</th>
<th>C</th>
<th>C-</th>
<th>D+</th>
<th>D</th>
<th>D-</th>
<th>E</th>
<th>WF</th>
<th>I</th>
<th>NG</th>
<th>S-U</th>
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</thead>
<tbody>
<tr>
<td>Grade Points</td>
<td>4.0</td>
<td>3.67</td>
<td>3.33</td>
<td>3.0</td>
<td>2.67</td>
<td>2.33</td>
<td>2.0</td>
<td>1.67</td>
<td>1.33</td>
<td>1.0</td>
<td>0.67</td>
<td>0.0</td>
<td>0.0</td>
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For greater detail on the meaning of letter grades and university policies related to them, see the Registrar’s Grade Policy regulations at:
http://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx

Exam Policy
The two exams are in-class exams. Students may not share exams or exam solutions with anyone else at any time, even after the course is finished.

Policy Related to Make up Exams or Other Work
In the event of unusual circumstances, a student could be given a make-up exam, or an incomplete grade in the course.

Policy Related to Required Class Attendance

Attendance of all class sessions is expected. We will follow the UF Attendance Policy. For information regarding the UF Attendance Policy see the Registrar website for additional details:
https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx
Expectations Regarding Course Behavior
Students are expected to show up for class prepared and on time. Cell phones are to be silenced during class unless there is an emergency, in which case please inform the instructor.

Communication Guidelines
Students are expected to participate in class discussions. Assignments must be clearly written in reasonably good English.

Academic Integrity
Students are expected to act in accordance with the University of Florida policy on academic integrity. As a student at the University of Florida, you have committed yourself to uphold the Honor Code, which includes the following pledge:

“We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity.”

You are expected to exhibit behavior consistent with this commitment to the UF academic community, and on all work submitted for credit at the University of Florida, the following pledge is either required or implied:

“On my honor, I have neither given nor received unauthorized aid in doing this assignment.”

It is your individual responsibility to know and comply with all university policies and procedures regarding academic integrity and the Student Honor Code. Violations of the Honor Code at the University of Florida will not be tolerated. Violations will be reported to the Dean of Students Office for consideration of disciplinary action. For additional information regarding Academic Integrity, please see Student Conduct and Honor Code or the Graduate Student Website for additional details: https://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/ http://gradschool.ufl.edu/students/introduction.html

Please remember cheating, lying, misrepresentation, or plagiarism in any form is unacceptable and inexcusable behavior.

Online Faculty Course Evaluation Process
Students are expected to provide feedback on the quality of instruction in this course by completing online evaluations at https://evaluations.ufl.edu. Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at https://evaluations.ufl.edu/results/.

SUPPORT SERVICES

Accommodations for Students with Disabilities
If you require classroom accommodation because of a disability, you must register with the Dean of Students Office http://www.dso.ufl.edu within the first week of class. The Dean of Students Office will provide documentation of accommodations to you, which you then give to me as the instructor of the
course to receive accommodations. Please make sure you provide this letter to me by the end of the second week of the course. 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.