

STA 5934

SYLLABUS



COURSE INFORMATION

- **Course Hours:** 4:50PM - 5:40PM Monday, Wednesday, and Friday
- **Course Meeting Location:** OSB, Room 0108
- **Credit Hours:** 3 hours
- **Prerequisites:** Previous experience in statistical inference as well as basic competency in implementing computational methods.



COURSE DESCRIPTION

This course will introduce students to several approaches in basic and advanced Bayesian modeling. We will start by understanding the basics of parametric Bayesian methods emphasizing both conceptual foundations and computation. Then, the course will focus on familiarizing students with nonparametric Bayesian modeling for different data structures. Although some theoretical discussion will take place in class, the course will primarily have a methodological emphasis.

Major topics in this course will include: basics of Bayesian inference; conjugate and non informative priors; performing inference using Markov chain Monte Carlo; model selection; introduction to random probability measures; mixture models; and, if time permits, predictive modeling approaches (e.g., Gaussian process regression; Bayesian decision tree ensembles; Bayesian neural networks, etc).



COURSE INSTRUCTOR





◆ PhD in Statistics

✉ abarrientos@fsu.edu (abarrientos@fsu.edu)

🏢 Department of Statistics/LOV 315

🕒 5:45 PM – 6:15 PM, Mondays and Wednesdays, or by appointment

↩ Emails will be responded to within 24 hours (see *Policy on Responding to*

Students below).



COURSE MATERIALS

- Hoff, P.D., 2009. *A first course in Bayesian statistical methods* (Vol. 580). New York: Springer.
- Berger, J.O., 2013. *Statistical decision theory and Bayesian analysis*. Springer Science & Business Media.
- Ghosh, J.K., Delampady, M. and Samanta, T., 2007. *An introduction to Bayesian analysis: theory and methods*. Springer Science & Business Media.
- Müller, P., Quintana, F.A., Jara, A. and Hanson, T., 2015. *Bayesian nonparametric data analysis* (Vol. 18). New York: Springer.

STUDENT RESPONSIBILITIES

- Students should log on to Canvas at least every other day to check for course updates.
- Students are expected to keep up with the class, engage with the course material, and submit assignments by the due dates.
- Assignments, quizzes, and exams are expected to be products of individual students per the [FSU Academic Honor Policy](http://registrar.fsu.edu/bulletin/undergraduate/information/integrity/) (<http://registrar.fsu.edu/bulletin/undergraduate/information/integrity/>).
- Students should not discuss any of the questions with each other during the actual exams without instructor approval.
- To receive maximum points for questions, students need to follow the instructions carefully, follow word limits as instructed, and use spell and grammar checking.
- To be successful in this course, students need to complete all required assignments and tests.



GRADING POLICY

Final grade: It will be determined by a weighted average of the following items: (1) Assignments (60%), and (2) final project (40%).



GRADING SCHEME

The following grading standards will be used in this class:

Grading Scheme Breakdown

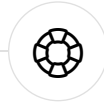
Grade	Range
A	100% to 93%
A-	< 93% to 90%
B+	< 90% to 87%
B	< 87% to 83%
B-	< 83% to 80%
C+	< 80% to 77%
C	< 77% to 73%
C-	< 73% to 70%
D+	< 70% to 67%
D	< 67% to 63%
D-	< 63% to 60%
F	< 60% to 0%



TECHNOLOGY REQUIREMENTS

Course content is accessible through Canvas. Students will need to be able to view videos.

write and upload assignments, post to discussion boards, and take assessments. Students should have access to high-speed internet and updated software. Mobile devices may be used to view course content, upload assignments, and take assessments as determined by the instructor. To view the most current technology requirements, visit the [FSU Canvas support site \(http://support.canvas.fsu.edu\)](http://support.canvas.fsu.edu).



CANVAS SUPPORT

Need help with Canvas? Contact FSU Canvas Support:

✉ **Email:** canvas@fsu.edu (<mailto:canvas@fsu.edu>)

📞 **Phone:** (850) 644-8004

🌐 **Website:** support.canvas.fsu.edu (<http://support.canvas.fsu.edu>)

🕒 **Hours:** 8am to 5pm, Monday - Friday



COURSE POLICIES

COMMUNICATIONS/NETIQUETTE

For Discussions:

- Please use polite, respectful behavior when posting your responses to prompts in the Discussion Boards.
- Be mindful of how you express your emotions and humor, and be sensitive to cultural and ability differences of your online peers.
- Keep postings to the point, and make sure your comments are relevant to the topic of discussion.
- Avoid messages such as, "Wow," "Way to go," or "Ditto" and aim for comments that validate other members' ideas through careful explanation of why.
- When replying, give a short description in the subject line of what you are replying to, and use correct punctuation and spelling throughout your post.

For Email Communication:

- For email, please respond to your instructor's and peers' messages within a 24-hour period.
- Use a brief description in the subject line that outlines the topic of discussion.
- Avoid using slang or profane words.
- Use your instructor's correct title he or she prefers for communication.
- Avoid using emoticons, such as smiley faces, and maintain a professional demeanor.
- Sign your email messages using your full name.
- AVOID USING ALL CAPS. This makes the message visually difficult to read and is perceived by the reader as "shouting."
- Use correct spelling, grammar, and punctuation, just as you would for any communication.
- Ask yourself whether you would be comfortable if someone other than the intended receiver were to read your message. Remember, email is not a completely secure form of communication.
- Refrain from "flaming," which is expressing a strongly held opinion without tact or regard for others. Don't assume that recipients will know the intent of the message (e.g., "just kidding"). It reads differently when it's in print (electronic or not).
- Report any inappropriate communication considered to be of a serious nature to your instructor, as it may be a violation of University policy.
- Treat others with respect by making messages clear and succinct.

CLASSROOM POLICY

The classroom environment is an important factor for effective learning. In order to not distract other students' attention please follow these classroom policies. The first one of these is the university policy. Remember that no food or drinks are allowed in the classroom. Turn off all audible alarms (cell phones, pagers, calculators, watches etc.) Do not use cellphones in the class. Come to the class on time. Opening and closing the classroom door in the middle of a class cause distraction to the students and the teacher. Do not talk to other students without permission while the professor is teaching. More than one conversation creates noise and makes it difficult for the students to pay attention to the lecture.

ATTENDANCE POLICY

You are required to attend all classes. The class activities will help you assimilate the lessons more easily, giving you an opportunity for active learning. Do not let this opportunity slip away. Any foreseen absence must be cleared with the instructor. If the absence is due to emergencies, it is the student's responsibility to notify the instructor at the earliest opportunity of the emergency.

POLICY FOR HOMEWORK RE-GRADE

You have one week to request a re-grade of a homework from the date on which the graded homework is available to the students of the class. Submit a written request detailing the nature of the grading error to the instructor along with the relevant homework.

POLICY FOR COLLECTING RETURNED HOMEWORK/EXAM

It is the student's responsibility to retrieve his or her homework/exam whenever they are returned and to check grades on the class website. If you notice any mistake in recording grades, please inform the instructor about it as soon as possible but no later than one week from grades being posted online.

POLICY FOR CONTACTING THE INSTRUCTOR OR TEACHING ASSISTANT OUTSIDE THE CLASS

You are strongly encouraged to come to the instructor or teaching assistant during their office hours. If your schedule conflicts with the office hours, you can make an appointment. You may ask the instructor or teaching assistant brief questions by e-mail, but you may be asked to come to office hours if the instructor or teaching assistant thinks that the questions are better answered in person. When you send e-mails, remember the following: always send e-mails from your canvas account.

POLICY ON RESPONDING TO STUDENTS

- I respond to email typically within 24 hours, Monday through Friday.
- I might not be able to respond to questions about the assignments the day before they are due.
- Graded assignments will be typically returned within 2 weeks after due date.



UNIVERSITY ATTENDANCE POLICY

Excused absences include documented illness, deaths in the family and other documented crises, call to active military duty or jury duty, religious holy days, and official University activities. These absences will be accommodated in a way that does not arbitrarily penalize students who have a valid excuse. Consideration will also be given to students whose dependent children experience serious illness.

Please note: Modifications to this policy have been made to accommodate the unique circumstances of the COVID-19 pandemic. For more information, [see this memo that has been distributed to all faculty and instructional staff](https://www.fda.fsu.edu/sites/g/files/upcbnu636/files/Media/Files/Academic%20Policies/Important%20Policies%20AY%202020-2021_revised_b.pdf) (https://www.fda.fsu.edu/sites/g/files/upcbnu636/files/Media/Files/Academic%20Policies/Important%20Policies%20AY%202020-2021_revised_b.pdf) regarding the 2020-2021 academic year.

ACADEMIC HONOR POLICY

The Florida State University Academic Honor Policy outlines the University's expectations for the integrity of students' academic work, the procedures for resolving alleged violations of those expectations, and the rights and responsibilities of students and faculty members throughout the process. Students are responsible for reading the Academic Honor Policy and for living up to their pledge to "...be honest and truthful and... [to] strive for personal and institutional integrity at Florida State University." (For more details see the [FSU Academic Honor Policy and procedures for addressing alleged violations](http://fda.fsu.edu/academic-resources/academic-integrity-and-grievances/academic-honor-policy) (<http://fda.fsu.edu/academic-resources/academic-integrity-and-grievances/academic-honor-policy>).

PROCESS FOR RESOLVING ACADEMIC PROBLEMS OR GRIEVANCES

Please use this [step-by-step guide to resolving academic problems](https://www.fda.fsu.edu/sites/g/files/upcbnu636/files/Media/Files/General%20Academic%20Appeals/Academic_Problem-Solving_Flowchart_Binder_Oct-2020.pdf) (https://www.fda.fsu.edu/sites/g/files/upcbnu636/files/Media/Files/General%20Academic%20Appeals/Academic_Problem-Solving_Flowchart_Binder_Oct-2020.pdf) to begin the process of communicating with your instructor to resolve any confusion or difficulty you may be having in the course. Detailed information on FSU's grievance procedure, including special instructions for students enrolled in an FSU branch campus, is maintained on the General Bulletin's [Academic Integrity & Grievances](https://registrar.fsu.edu/bulletin/undergraduate/information/integrity/index.cfm) (<https://registrar.fsu.edu/bulletin/undergraduate/information/integrity/index.cfm>) webpage. Out-of-state distance learning students should review the Office of Distance Learning [Complaint Resolution](https://distance.fsu.edu) (<https://distance.fsu.edu>)

[/about-us/complaint-resolution\)](#) page for additional procedures.

AMERICANS WITH DISABILITIES ACT

Florida State University (FSU) values diversity and inclusion; we are committed to a climate of mutual respect and full participation. Our goal is to create learning environments that are usable, equitable, inclusive, and welcoming. FSU is committed to providing reasonable accommodations for all persons with disabilities in a manner that is consistent with academic standards of the course while empowering the student to meet integral requirements of the course.

To receive academic accommodations, a student:

- (1) must register with and provide documentation to the Office of Accessibility Services (OAS);
- (2) must provide a letter from OAS to the instructor indicating the need for accommodation and what type; and,
- (3) should communicate with the instructor, as needed, to discuss recommended accommodations. A request for a meeting may be initiated by the student or the instructor.

Please note that instructors are not allowed to provide classroom accommodations to a student until appropriate verification from the Office of Accessibility Services has been provided.

This syllabus and other class materials are available in alternative format upon request.

For more information about services available to FSU students with disabilities, contact the

Office of Accessibility Services (Tallahassee Campus) [\(https://dsst.fsu.edu/oas\)](https://dsst.fsu.edu/oas)

874 Traditions Way

108 Student Services Building

Florida State University

Tallahassee, FL 32306-4167

(850) 644-9566 (voice)

(850) 644-8504 (TDD)

[oas@fsu.edu \(mailto:oas@fsu.edu\)](mailto:oas@fsu.edu)

<https://dsst.fsu.edu/oas>

Student Disability Services (Panama City Campus) [\(https://pc.fsu.edu/students/student-disability-services\)](https://pc.fsu.edu/students/student-disability-services)

Office of Student Affairs

4750 Collegiate Drive

2nd Floor Barron Building (Room 215)

Florida State University Panama City

Panama City, FL 32405

(850) 770-2172 (office)

(866) 693-7872 (toll free)

Email: sds@pc.fsu.edu (<mailto:sds@pc.fsu.edu>)

<https://pc.fsu.edu/students/student-disability-services>

FREE TUTORING FROM FSU (*TALLAHASSEE CAMPUS*)

On-campus tutoring and writing assistance are available for many courses at Florida State University. For more information, visit the Academic Center for Excellence (ACE) Tutoring Services' comprehensive list of on-campus tutoring options - see the [Academic Center for Excellence \(ACE\) Tutoring Services' website](http://ace.fsu.edu/tutoring) (<http://ace.fsu.edu/tutoring>) or contact tutor@fsu.edu (<mailto:tutor@fsu.edu>). High-quality tutoring is available by appointment and on a walk-in basis. These services are offered by tutors trained to encourage the highest level of individual academic success while upholding personal academic integrity.

SYLLABUS CHANGE POLICY

"Except for changes that substantially affect implementation of the evaluation (grading) statement, this syllabus is a guide for the course and is subject to change with advance notice."









COURSE SUMMARY

All course assignments due dates will be listed below as well as dates for the final project. To be successful in this course, be sure to complete all required assignments by the due date.

Course Summary:

Date	Details
Wed Feb 26, 2020	 Home Assignment 2 (https://canvas.fsu.edu/courses/147773/assignments/1074789) due by 5:15pm

Date	Details	
Fri Mar 27, 2020	 <u>Home Assignment 3 -- Final project proposal</u> (https://canvas.fsu.edu/courses/147773/assignments/1074790)	due by 11:59pm
Wed Apr 1, 2020	 <u>Home Assignment 3 -- Problems 1, 2, and 3</u> (https://canvas.fsu.edu/courses/147773/assignments/1074791)	due by 5:15pm
Fri Apr 10, 2020	 <u>Home Assignment 3 -- Problems 4 and 5</u> (https://canvas.fsu.edu/courses/147773/assignments/1074792)	due by 11:59pm
Fri Apr 24, 2020	 <u>Final project</u> (https://canvas.fsu.edu/courses/147773/assignments/1074787)	due by 11:59pm
Mon Jan 25, 2021	 <u>Home Assignment 1</u> (https://canvas.fsu.edu/courses/147773/assignments/1074788)	due by 5:15pm
	 <u>Final Grade</u> (https://canvas.fsu.edu/courses/147773/assignments/1074786)	