

STAT 8024 26 SS – sec 001

Advanced Statistical Modeling

Tuesdays/Thursdays, 9:30 am – 10:50 am, 60WCharter, rm 115

Instructor: **Seongho Song**
Division of Statistics and Data Science,
Room 5322, French Hall West
(513) 556-4826 (6-4826 from on campus phones)
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Office Hours: Tuesdays/Thursdays 11:00 am – 12:00 pm or by appointment

Course Description: The course covers basic concepts, models, methods, theories, and applications in Deep Learning (DL) and Bayesian Deep Learning for Physical Informed Neural Network (PINN). R & Python software will be used. The goal is to equip the students with theories and practical skills to carry out both approaches of deep learning in a practical setting.

Course Webpage: Course related information will be posted on UC Canvas (uc.instructure.com), including course syllabus, announcements (choose “Notify me right away” as notification preferences on Canvas), lectures, and homework assignments, etc. **Please visit Canvas frequently.**

Textbooks: Benatan, Gietema and Schneider (2023), *Enhancing Deep Learning with Bayesian Inference*, 1st eds., <packt> (ebook available online)
The code bundle for the textbook is hosted on Github at
<https://github.com/PacktPublishing/Enhancing-Deep-Learning-with-Bayesian-Inference>

West and Harrison (1997), *Bayesian Forecasting and Dynamic Models*, 2nd eds., Springer

References/Recommended readings

Petris, Petrone and Campagnoli (2009), *Dynamic Linear Models with R*, Springer (eBook available at UC Library)

To be added more here.

Final Course Grade:

The upper limits for contributions to the final grade are Attendance (20%), Midterm-Presentation (40%), Final Presentation (40%). The final grade will be converted to the traditional letter grade based on the following chart:

96-100:	A	87-89:	B+	77-79:	C+	67-69:	D+	<60:	F
90-95:	A-	83-86:	B	73-76:	C	63-66:	D		
		80-82:	B-	70-72:	C-	60-62:	D-		

Please note STAT 8024 is a graduate level course. Therefore, “F” will be assigned for a letter grade scale equal to C- or below.

Homework:

- No homework will be assigned during the semester.

Examinations:

- There will be no exam during the semester.

Presentations during semester:

- There will be presentations (at least 2) and discussions in class during the semester.

Withdrawals: Last day to withdraw: **April 10, 2026 @ 11:59 pm.** For class withdrawal and refund info, please go to Spring 2026 Dates & Deadlines Calendar at

<https://www.uc.edu/about/registrar/calendars/spring-2026/dates-deadlines.html>

Communication:

- ✓ Course announcements and materials are posted on Canvas through the semester.
- ✓ Make good use of the instructor's office hours. **It is extremely important for you to ask the instructor's help as soon as possible if you have difficulty in the course materials covered.**
- ✓ Beyond class and office hours, the best way to contact the instructor is by email (seongho.song@uc.edu). Please note the course email correspondence must be done via UC email accounts. The instructor cannot send email to any other account (i.e. gmail, hotmail, yahoo, etc.)

Classroom Etiquette:

Our goal is to have a classroom atmosphere that allows the class to learn the material without distractions. The following behaviors will help us achieve this:

- ✓ Please turn off your cell phones or set it to vibration before coming to class.
- ✓ Please arrive in class on time.
- ✓ Please do not disrupt others during class.
- ✓ Please do not leave class early unless you have to. If you plan to leave early, sit near the door so as to disturb as few people as possible.

Academic Integrity Policy: The University Rules, including the Student Code of Conduct, and other documented policies of the department, college, and university related to academic integrity will be enforced. Any violation of these regulations, including acts of plagiarism or cheating, will be dealt with on an individual basis according to the severity of the misconduct. (http://www.uc.edu/conduct/Academic_Integrity.html)

Accessibility Policy: The University of Cincinnati is committed to providing all students with equal access to learning opportunities. Disability Services [now called Accessibility Resources] is the official campus office that works to arrange for reasonable accommodations for students with an identified physical, psychological or cognitive disability (learning, ADD/ADHD, psychological, visual, hearing, physical, cognitive, medical condition, etc.) Students are encouraged to contact Disabilities Services to arrange for a confidential meeting to discuss services and accommodations. Contact should be initiated as soon as possible to allow adequate time for accommodations to be arranged.

If you have a disability (e.g., visual impairment, hearing impairment, physical impairment, communication disorder, and/or specific learning disability, etc.) which may influence your performance in this course, you must meet with the Disability Services Office (DSO) to arrange for reasonable accommodations to ensure an

equitable opportunity to meet all the requirements of this course. If you require accommodations due to disability, please contact DSO at 513-556-6823, Campus Location: 210 University Pavilion. You will be provided an Accommodation Form indicating your accommodation needs for the semester. Please present this form to the instructor AS SOON AS POSSIBLE to ensure your accommodation needs are discussed, agreed upon, and provided.

Counseling Services: Students have access to counseling and mental health care through the University Health Services (UHS), which can provide both psychotherapy and psychiatric services. In addition, students can receive three free professional counseling sessions upon request through the Counseling and Psychological Services (CAPS). These sessions are not associated with student's insurance coverage. Students are encouraged to seek assistance for anxiety, depression, trauma/assault, adjustment to college life, interpersonal/relational difficulty, sexuality, family conflict, grief and loss, disordered eating and body image, alcohol and substance abuse, anger management, identity development and issues related to diversity, concerns associated with sexual orientation and spirituality concerns, as well as any other issue of concern. After hours, students may call UHS at 513-556-2564 or CAPS Cares at 513-556-0648. For urgent physician consultation after-hours students may call 513-244-9984.

Diversity and Inclusion: This class is committed to the fundamental principles of academic freedom and human dignity. Diversity in all forms is something we welcome, we foster, and we prize. We believe that honest attempts to understand the perspectives of others facilitates learning, and we will strive to achieve this goal at all times. We strongly disavow discrimination -- including harassment -- on the basis of race, national or ethnic origin, religion, sex or gender identity, disability, age, sexual orientation, or veteran status.

Student Religious Accommodations: Ohio law and the University's Student Religious Accommodations for Courses Policy 1.3.7 permits a student, upon request, to be absent for reasons of faith or religious or spiritual belief system or participate in organized activities conducted under the auspices of a religious denomination, church, or other religious or spiritual organization and/or to receive alternative accommodations with regard to examinations and other course requirements due to an absence permitted for the above-described reasons. Not later than fourteen days after the first day of instruction in the course, a student should provide the instructor with written notice of the specific dates for which the student requests alternative accommodations. For additional information about this policy, please contact the Executive Director of the Office of Equal Opportunity and Access at (513) 556-5503 or oeohelp@UCMAIL.UC.EDU.

(This syllabus is subject to changes.)