



THE UNIVERSITY of
NEW ORLEANS

DEPARTMENT OF COMPUTER SCIENCE

Syllabus, Spring 2024

CSCI 6521: Advanced Machine Learning I,
Room: Math 322+Internet.

Lecture: Tues & Thursday: 5:00 PM to 6:15 PM

Zoom ID and Passcode to attend the class –

Zoom ID: 824 4083 0960

Passcode: 670980

Instructor: Md Tamjidul Hoque

Email: thoque@uno.edu

Phone: 504-280-2406

Office Hours: **Tuesday** 6:15 PM to 8:15 PM.

Wednesday 11:00 AM to 1:00 PM.

Thursday 6:15 PM to 8:15 PM.

Online Office Hours:

<https://uno.zoom.us/join/82440830960>

Prerequisites: Consent of the department or CSCI 4/5587.

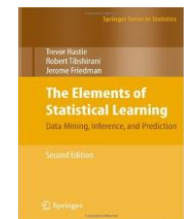
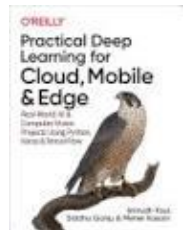
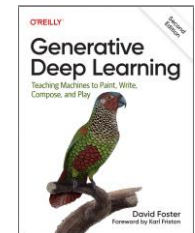
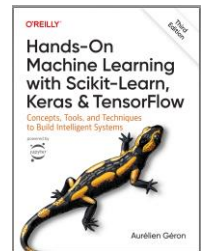
Textbooks: The slides, notes, and exercises contain sufficient reading materials.

The following books are recommended for optional reading:

1. Hands-on Machine Learning with Scikit-Learn, Keras, and TensorFlow, 3rd Edition., by Aurélien Géron, O'Reilly, 2023, book@UNO [link](#).
2. Generative Deep Learning: Teaching Machines to Paint, Write, Compose, and Play, 2nd Edition, by David Foster.
3. Practical Deep Learning for Cloud, Mobile, and Edge: Real-World AI & Computer-Vision Projects Using Python, Keras & TensorFlow, by Anirudh Koul, Meher Kasam, and Siddha Ganju.
4. The Elements of Statistical Learning, 2nd ed, by Trevor Hastie, Robert Tibshirani, and Jerome Friedman. Springer, 2009, ISBN: 978-0387848570. The book is available online: <http://www-stat.stanford.edu/~tibs/ElemStatLearn/>
5. Hands-On Unsupervised Learning Using Python by Ankur A. Patel.

Course Content: This course covers advanced machine learning applications and their development using the latest tools and platforms such as [Tensorflow](#), [Keras/TFLearn](#), [Cloud platform](#), [Jupyter Notebook](#), [Scikit-learn](#), and [Weka](#). The course encompasses the probabilistic aspect of machine learning techniques to uncover patterns to predict future data or other outcomes of interest. Topics covered will include:

- Introduction to various programming aspects, tools, and platforms of machine learning
- Regression, Classification, and Optimization
- Generative Modeling



- Autoencoders
- Representation Learning and Generative Learning Using Autoencoders and GANs
- Paint
- Write – Natural Language Generator
- Compose
- Advanced Generative Modeling
- Feature Detection Using Deep Belief Networks
- Time Series Clustering
- Real-Time Object Classification on iOS with Core ML

Learning Outcomes: The course is about building advanced machine learning by applying suitable and effective statistical machine learning techniques using tools and platforms. The target is to learn about applying probabilistic reasoning to inferential problems systematically. After successful completion of the course, a student is expected to be able to easily apply the latest tools and methods in many important areas, including but not limited to text processing, computer vision, robotics, and bioinformatics. Students will also learn to utilize the latest hardware architecture, such as vector registers, parallel CPUs, and GPU/TPU.

Online Materials: Essential course material, assignments, announcements, etc., will be posted to this course page on Canvas, <https://uno.instructure.com/>. Make sure to check your @uno.edu email frequently.

Attendance: Your class attendance is needed and essential for you to meet course requirements. 5% mark is allocated for your attendance.

Grading:	Programming Assignments (3):	marks 39%
[Tentative]	Homework Assignments (1):	marks 11%
	Class Tests (3):	marks 20% [best 2 counts]
	Attendance:	marks 5% { %5: [90-100%], 4%: [85-90), 3%: [80-85), 2%: [75-80), 1%: [70-75), 0%: <70.}
	Final Examination:	marks 25% (Must attend to pass)
	<i>Grading scale:</i> A: 90+%, B: 80-89%, C: 70-79%, D: 60-69%, F: < 60%.	

Bonus: A student who can produce any publishable work (approved based on superior results, recognized by the instructor during the course period) related to any given assignment(s) or the topics covered in the class will be given 10% bonus marks.

Exams: Test 1, 2, and 3: tentatively on Feb 13th, March 19th, and April 23rd, respectively.

Last Class: April 30th (Tuesday)

Final Exam: Date/Time THURSDAY, May 2, 2024, 5:30 PM to 7:30 PM, Location: Math 322+Internet.

Due Dates: You are responsible for handing in your assignment on time. Late submissions will be assessed at the following rates: 80% for 1-48 hours late, 60% for 49-96 hours late, 40% for 97-144 hours late, and 20% for 145-168 hours late. Assignments that are over a week late will receive no credit. For online submission, use Canvas. However, if Canvas is not working for some technical reason, email me the assignment (thoque@uno.edu). If you cannot act according to the deadlines due to exceptional circumstances, you must inform long before the deadline or provide evidence.

Conducts:

(1) All submitted works must be your own. Any academic dishonesty, including cheating, plagiarism, and conspiracy, will result in 0 marks and be reported to the appropriate authority in the University (<https://www.uno.edu/media/15321>).

(2) Please be on time in the class. Late coming to class is discouraged.

(3) Please avoid disruptive and noisy classroom activities and be respectful to others.

You may be interested in:

- Undergraduate Machine Learning (ML) and AI Concentration, [click-here](#) for the details.
- For the graduate certificate in ML & AI, click here for the details.
- CSCI 4587/5587 ML I, [click-here](#) for a sample syllabus.
- CSCI 4588/5588 ML II, [click-here](#) for a sample syllabus.
- CSCI 6522 Advanced ML II, [click-here](#) for a sample syllabus.