

DASC 728/828 Fall 2026 Syllabus

Deep Learning Fundamentals and Applications

MW 3:00-4:15pm ECSB 2120

Course Overview

Catalog Description: This course covers advanced topics in machine learning, especially the contemporary data-driven deep learning. The main part of the course is organized around guided paper reading and dissemination activities throughout the course, as well as course project in a group setting. The students are expected to learn advanced topics in deep learning, as well as methods and approaches to conduct future research in machine learning.

Main Activities: The class has three components.

1. Lectures delivered by the instructor. Some lectures will have take-home quizzes
2. Programming assignments. The completion time of each programming assignment is about 2 weeks. The programming assignments are NOT team-based.
3. Paper reading and presentations: each student must join a self-organized team of 1 to 3 members. Each team will choose a topic, with each topic consists of a few pre-selected papers. Each team is expected to give a presentation in class and answer any related questions.

Final project. This is also team-based. Each team is expected to turn in the completed programming and give a brief presentation about the project in the class.

Prerequisite: See course catalog page for prerequisites

Course Objectives: After this course, you should be able to accomplish the following:

- Understand the basic concepts of deep learning.
- Know the basic components of a DNN.
- Understand how a DNN is trained.
- Know how to find materials related to a specific topic in DL.
- Know how to disseminate a topic in DL.
- Being able to complete a DNN task using pytorch.
- Being able to disseminate scientific research outcomes using verbal (class presentation) and written (using Latex template) methods.

Contact and Office Hours

Dr. Frank Liu, Hampton Hall 2134D, fliu@odu.edu

Office hours:

- M 1:30-2:30pm Hampton Hall 2134
- Contact fliu@odu.edu to make special arrangements for office hours

Meeting Times and Delivery Method

MW 3:00 – 4:15pm. This is an in-person course, and regular attendance is expected. Class meetings are an important part of the learning experience and may include lectures, discussions, activities, demonstrations, quizzes, and other work that cannot always be fully replicated outside of class. Students are responsible for all material covered in class, including announcements, assignments, and changes to the course schedule. As of Spring 2026, no more hybrid classes are allowed at ODU.

All course materials will be available in Canvas.

Textbook and Course Materials

There are no required textbooks. However the following online textbooks can be helpful.

- C. Bishop and H. Bishop's textbook: <https://www.bishopbook.com/>
- S. Prince's textbook: <https://udlbook.github.io/udlbook/>
- Kevin Murthy's ML books: <https://probml.github.io/pml-book/>
- François Fleuret's Little Book on DL: <https://fleuret.org/public/lbdl.pdf>

Grading

There are no exams. The students will also be graded based on classroom participations and quizzes. The general breakdown of the grades is:

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| • Class Participation, Survey completion | 10% |
| • Mini quizzes | 15% |
| • Programming Assignments | 20% |
| • Paper Presentations | 25% |
| • Final project | 30% |

Grade Scale

Percentage	Grade
100-94	A
93-90	A-

89-88	B+
87-84	B
83-80	B-
79-78	C+
77-74	C
73-70	C-
69-0	F

Schedule

Week	Dates	Topic	Notes
1	8/24,8/26	Logistics, intro to Deep Learning	
2	8/31,9/02	GCP+PyTorch, ML concepts	0 th prog. due
3	9/07 , 9/09	DNN constructs	1 st prog. released
4	9/14, 9/16	DNN training	
5	9/21, 9/23	BP and SGD	1 st prog due, 2 nd released
6	9/28, 9/30	DL guidelines, Residual network	
7	10/05, 10/07	Recurrent NN	2 nd prog. due, 3 rd released
8	10/12 , 10/14	Graph NN	
9	10/19, 10/21	GNN training	3 rd prog. due. Final project released
10	10/26, 10/28	paper reading presentations	
11	11/02, 11/04	paper reading presentations	
12	11/09, 11/11	paper reading presentations	
13	11/16, 11/18	Transformers	
14	11/23, 11/25	Final Project Presentations	
15	11/30, 12/02	Final Project Presentations	
16	12/07	Reserve	

Policies

Email/Canvas All students should check Canvas site and email daily. All email related to the course from the instructor will have the subject line "F26-728/828".

Class Participation This is an in-person class, and all students are expected to actively participate during the regularly scheduled class meetings. Active engagement includes contributing to discussions, asking questions, and participating during student presentation sessions. If you anticipate needing to miss classes regularly, please notify me

in advance. Students are also expected to remain consistently engaged with course activities, including regularly checking the Canvas site.

If you must miss a class, you are still responsible for reviewing the Canvas site to access any materials, announcements, assignments, or notes you may have missed.

Participation extends beyond live class meetings. After-class discussions are equally important as in-class lectures and homework. We will use discussion function as the primary discussion platform. Of the 10% class participation grade, the majority will be determined by your engagement. The more you ask questions and contribute answers, the more participation credit you will earn. Students who do not participate in Canvas discussions should not expect to receive the full participation credit.

Classroom Conduct Please be respectful of your classmates and instructor by minimizing distractions during class. If you are late, please do not disrupt the class as you enter and get settled with as little interruption as possible.

Late Submission Each student will **automatically** receive **2** excuses for late submissions, each will be granted for up to **1 week** extension, without the points being deducted. Any late submission after the first 2 excuses will be automatically deducted by half. **No submission will be accepted after 1 week past the due date.**

Make-up Work Make-ups for graded activities are possible only with a valid written medical or university excuse. It is the student's responsibility to give the instructor the written excuse and to arrange for any makeup work to be done.

Use of ChatGPT and other LLMs Limited usage of ChatGPT/Claude/Gemini in this class is allowed. Examples include using LLMs for high-level summary of a particular concept, generating a few rough ideas to avoid "blank page", and polishing the sentences you have written for better usage of English language. However, it is the student's responsibility ensure the correctness of the content. If you cite LLMs hallucinations as facts in your presentations or homework, your grades will suffer.

Programming assignments will be distributed as Jupyter notebooks with a predefined structure. Students must preserve the provided notebook structure, including the organization and order of cells, unless the assignment instructions explicitly state otherwise. All solutions should be entered in the designated locations.

The submitted work must reflect the student's own understanding and effort. Unless explicitly permitted for a particular assignment, students may not use generative AI or AI-

assisted programming tools, such as ChatGPT, Codex, or similar tools, to generate, complete, or substantially modify assignment solutions.

Students may be asked to explain, modify, or reproduce portions of their submitted code. Inability to explain the logic or implementation of submitted work may result in significant reduction of points and further review for possible academic integrity concerns.

Disability Service In compliance with PL94-142 and more recent federal legislation affirming the rights of disabled individuals, provisions will be made for students with special needs on an individual basis. The student must have been identified as special needs by the university and an appropriate letter must be provided to the course instructor. Provision will be made based upon written guidelines from the University's [Office of Educational Accessibility](#). All students are expected to fulfill all course requirements.

Students are encouraged to self-disclose disabilities that have been verified by the Office of Educational Accessibility by providing Accommodation Letters to their instructors early in the semester in order to start receiving accommodations. Accommodations will not be made until the Accommodation Letters are provided to instructors each semester.

Seeking Help The course Canvas site should be your first reference for questions about the class. If you have questions about course requirements or materials, post questions using the class Canvas Discussion Board. For extra help, attend office hours.

Academic Integrity

Old Dominion University is committed to students' personal and academic success. In order to achieve this vision, students, faculty, and staff work together to create an environment that provides the best opportunity for academic inquiry and learning. All students must be honest and forthright in their academic studies. Your work in this course and classroom behavior must align with the expectations outlined in the Code of Student Conduct, which can be found at <https://odu.edu/oscai>.

The following behaviors along with classroom disruptions violate this policy, corrupt the educational process, and will not be tolerated.

- **Cheating:** Using unauthorized assistance, materials, study aids, or other information in any academic exercise.
- **Plagiarism:** Using someone else's language, ideas, or other original material without acknowledging its source in any academic exercise.

- **Fabrication:** Inventing, altering or falsifying any data, citation or information in any academic exercise.
- **Facilitation:** Helping another student commit, or attempt to commit, any Academic Integrity violation, or failure to report suspected Academic Integrity violations to a faculty member.

In particular, submitting anything that is not your own work without proper attribution (giving credit to the original author) is plagiarism and is considered to be an academic integrity violation. It is not acceptable to copy source code or written work from any other source (including other students, online resources), unless explicitly allowed in the assignment statement. In cases where using resources such as the Internet is allowed, proper attribution must be given.

Any evidence of an academic integrity violation (cheating) will result in a 0 grade for the specific assignment/exam, and the incident will be submitted to the Department of Computer Science for further review. Note that academic integrity violations can result in a permanent notation being placed on the student's transcript or even expulsion from the University. Evidence of cheating may include a student being unable to satisfactorily answer questions asked by the instructor about a submitted solution. Cheating includes not only receiving unauthorized assistance, but also giving unauthorized assistance. For class files kept in Unix space, students are expected to use Unix file permission protections (chmod) to keep other students from accessing the files. Failure to adequately protect files may result in a student being held responsible for giving unauthorized assistance, even if not directly aware of it.

Students may still provide legitimate assistance to one another. You are encouraged to form study groups to discuss course topics. Students should avoid discussions of solutions to ongoing assignments and should not, under any circumstances, show or share code solutions for an ongoing assignment.

All students are responsible for knowing the rules. If you are unclear about whether a certain activity is allowed or not, please contact the instructor.

ODU Cares

[Student Outreach & Support \(SOS\)](#) is a service within the Dean of Students' office. SOS provides support to students who experience administrative, academic, or personal roadblocks. SOS works collaboratively with ODU's Care Team, and is here to help students achieve their personal and academic goals. To access these resources, email oducares@odu.edu.

Statement from ODU Counseling Services

ODU's [Office of Counseling Services](#) (4700 Powhatan Ave, Suite 2403) is a university agency with competent, diverse, and multidisciplinary professional staff. We are

committed to supporting the emotional well-being, social development, and academic progress of all students at Old Dominion University.

College life can be a wonderful time of self-discovery, but for many, it is also a time when the awareness of mental health conditions increases. OCS services are available to assist with addressing mental health concerns that a student may be experiencing. You can learn more about the broad range of confidential mental health services available on campus via our website at <http://www.odu.edu/counselingservices>. All services are free to ODU students.