

14.332.435/16.332.530
Introduction to Deep Learning Spring 2024

Instructor:

Prof. Bo Yuan, Office: CoRE715, Email: bo.yuan@soe.rutgers.edu

Teaching Assistant: Huy Phan, Email: huy.phan@rutgers.edu

Schedules:

Lecture: Wednesday from 5:40pm to 8:40pm

On-campus: CCB 1303

Virtual (if needed): Webex room: <https://rutgers.webex.com/meet/by163>

Final project: TBD for detailed due dates

Office Hours: Thursday 6pm-8pm, online <https://rutgers.webex.com/meet/by163>

Office Hours for Teaching Assistant: , Wednesday 4:30-5:30pm, CoRE 737

Prerequisites:

- Basic knowledge of linear algebra
- Basic knowledge of calculus
- **Prior Python programming experience is required**

Course Materials:

Lecture slides

Tutorials and papers posted on Canvas

No textbook needed

Course website (Canvas):

All class materials, grade statistics and announcements

Student Learning Outcomes:

The student in this class should be able to understand deep learning basics, construction, training, test and application of deep neural networks via using Pytorch, approaches for efficient deep neural network deployment, and vulnerability and robustness of deep neural networks

Grading:

Homework	50%	Quizzes	10%
Final Projects	40%		

Tentative Outline of Topics:

- Machine learning basics
- Structure/construction of deep neural networks: Fully-connected, CNN, RNN, Transformer

- Training deep neural networks: mathematics and implementation
- Security and vulnerability of deep neural networks: Attack and Defense
- Designing compact and fast deep neural networks: Model compression and acceleration

Homework Policy:

- Homework assignments will be posted on the Canvas.
- Homework may contain hand-written part and programming part with different due dates.
- No late homework will be accepted unless the instructor is notified before it is due for special circumstances. Late homework will receive penalty of 10% per day including weekends.

Computing Resource:

- Personal laptop or desktop is required for programming homework and final project
- Computing resource with GPU is not required.

Quiz Policy:

- Some online quizzes will be posted in Canvas. The duration of quizzes will be one week.
- The format of quiz will be multiple-choice questions.
- No makeup quizzes for any reason.

Project Policy:

- Two types of project, Type-A and Type-B can be chosen for final project
- No team for Type-A. Type-B can be teamed with two students per team.
- Students can choose both Type-A and Type-B. Higher scores will be counted for grading.
- A final project is required for project submission.
- Details on project will be announced in Canvas.

Re-grade Policy:

- Re-grade requests for homework, quizzes are due no later than one week after the grade is posted on the Canvas.
- Regard requests can be submitted via email, making appointment or stopping by during office hours.
- When re-grade request is accepted, the entire submitted work may be re-graded. This may result in a lower grade.
- Work done in pencil may not be considered for re-grade. See Rutgers' academic integrity carefully before asking for re-grade.