Syllabus
BIL635 – Deep Learning
2026 Fall

Course Description

In this course, you will learn the fundamentals of deep learning, understand how to design neural networks, and apply them to specific problems. Topics include an overview of artificial neural networks, convolutional neural networks, recurrent neural networks, deep generative models, deep reinforcement learning, and recent research topics and applications on audio-visual and language understanding.

The course also includes student presentations and discussions of recent research papers.

Prerequisite: There is no prerequisite for the course. However, having familiarity with the basic concepts of Linear Algebra, Statistics, programming experience (e.g., Python, Matlab), and previous introductory ML courses (e.g., BIL535) are highly recommended.

Contact

Name: Mustafa SERT
Office: A407
Phone: 312-246-6666 Ext.6658/4009
E-mail: msert@baskent.edu.tr
Web: `www.baskent.edu.tr/~msert/`

Schedule

Class Hours:
Tue 18:00 pm–20:50 pm
Location: TBD
Office Hours:
by appointment/email

Grading

Assignments and In-Class Activities: 30%
Midterm Exam: 30%
Final Project: 40%
(prop. 5%, prog. 30%, final 65%)

Textbook and Reference(s): There is no assigned text for this course. Class notes, chapters from the reference books and research papers should be used as the primary reference. The following books are recommended:

1. Ian Goodfellow, Yoshua Bengio, and Aaron Courville, "Deep Learning," MIT Press, 2016
2. K. P. Murphy., "Machine Learning: A Probabilistic Perspective," MIT Press, (2012)
3. Tom Mitchell, "Machine Learning," McGraw-Hill, 1997.
4. Aurélien Géron, "Hands-On Machine Learning with Scikit-Learn, Keras, and TensorFlow: Concepts, Tools, and Techniques to Build Intelligent Systems," O'Reilly, 2019.

Table 1: Weekly Course Schedule

Week	Topics / Deliverables
1	Introduction to Machine Learning
2	Concept Learning
3	Perceptron, Multi-Layer Perceptron – **Final Project Proposal Due (via OYS)**
4	Deep Neural Networks
5	Model Evaluation and Metrics
6	Training Deep Networks
7	Convolutional Neural Networks
8	**Final Project Progress Presentation**
9	Midterm Exam – Subject to change according to Institute regulations
10	Recurrent Neural Networks
11	LSTM and Attention Mechanisms
12	Language Models
13	Representation Learning and Autoencoders
14–16	Recent Research Topics in Deep Learning – **Final Project Presentation and Demo**

REMARKS **Projects:** A course project in the field of Machine Learning will be conducted individually. The project topic is proposed by the students and must be approved by the instructor. Project activities consist of a project proposal, a progress report, and a final report and in-class presentation. Failure to submit or present any required project activity will result in no project grade. Official excuses will be evaluated in accordance with University regulations and instructor discretion.

Late Submission Policy: No deadline extensions for project deliverables. For other assignments, each student will have a total of 3 free late (calendar) days that can be used for assignments. Once these late days are exhausted, any assignments turned in late will not be accepted under any circumstances.

Attendance: A minimum of **70%** attendance of the lecture hours is compulsory. Failure to meet this requirement will result in an **F2** grade.

Moodle (OYS) page of the course: Check regularly the Moodle page of the course for lecture notes, homework assignments, and announcements.

The instructor reserves the right to modify this syllabus at any time without prior notice.