

Laboratory Session 00: Introduction to Deep Learning

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1. Objectives

This lab is designed as a low-friction onboarding activity for students who are new to Deep Learning and still developing Python proficiency. By the end of Lab 00, you should be able to:

- Explain (at a high level) what **Deep Learning** is and how it relates to **AI** and **Machine Learning**.
- Describe the **training loop** in plain language (data → model → loss → update → repeat).
- Build a one-page **course map** showing the main topics you will learn across the semester.

2. What you need to know

2.1 Deliverables and submission

You must submit three items.

- **D1 – AAA Course Map (1 page)**: a concept map that connects the main topics of the course.
- **D2 – Evidence Table (8 rows)**: a short evidence-based research activity with sources and paraphrases.

Submission package (single ZIP recommended):

- A PDF containing D1 and D2 (named: *2425.GIDIA.AAA.Lab00_SurnameName.pdf*).

Deadline: 28/05/2026 - 23:59

The deliverable of this laboratory is voluntary.

2.2 AI tool usage policy

You may use AI tools for brainstorming, but you must **disclose usage**. If you used an AI tool for any Evidence Table row:

- Paste the exact **prompt** you used (in a footnote or appendix).
- Write **3–5 lines** explaining what you kept, what you changed, and what you verified with a source.

Undisclosed AI-generated text will be treated as copied content.

3. Task D1 – AAA Course Map (1 page)

Create a one-page concept map (*hand-drawn and photographed is acceptable, or digital*).

Minimum requirements:

- At least **12 nodes** and **10 directed edges**.
- At least **5 edges** must include a short justification (e.g., “Loss guides optimization”).
- Include the following mandatory nodes: **data, tensor shape, layer, activation, loss, optimizer, training loop, generalization, regularization, CNN, RNN, Transformer**.

NOTE: You are not expected to know all details. Use this to build a *big picture* of the subject you are about to start.

4. Task D2 – Evidence Table (8 rows, with built-in prompts)

Deep Learning has many summaries and resources online, some of which may not be of high quality. In this course, you must practice choosing sources.

Build a table with **8 rows** for the following eight built-in prompts for your favourite LLM:

1. AI vs ML vs DL: define each in 1–2 lines and give one example of each.
2. What “learning” means in DL: explain the training loop without equations.
3. Vector/matrix as tensors: explain shape and rank with one example.
4. Weights and bias: what do they represent conceptually?
5. Activation: Why do we need non-linearity? (one intuition)
6. Loss vs optimizer: what is each one used for?
7. Optimization vs generalization: what is overfitting and how do we detect it?
8. Course preview: choose ONE (**CNN** or **Transformer**) and explain where it is used and what input it expects.

For **each row**:

- Include at least **one official/primary source overall** (e.g., textbook chapter, library documentation, original paper, course notes).
- You may include secondary sources (tutorials/videos/blogs), but you must label them **SECONDARY**.
- You must paste an **evidence snippet** of ≤ 25 words and the **URL**.
- Finally, last column: you must paraphrase in your own words and add a one-line credibility note (“why I trust this source”).

Feel free to work in paragraphs instead of creating a big table. If you go for the table, you can use this:

Prompt	URL	Evidence snippet (≤ 25 words)	Claim in your own words	Source type & why credible
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