

Quick Start Guide

1. Introduction

This guide introduces you to the main teaching content found in the **Generative AI Teaching Kit** and provides basic instructions to access features of the kit.

The kit and associated content are developed jointly by NVIDIA and the Thayer School of Engineering at Dartmouth College. All material is available under the [Creative Commons Attribution-Noncommercial License](#). This teaching kit enables you to equip your students with the skills and knowledge in the rapidly evolving field of GenAI. The kit explores the practical implementation of GenAI with NVIDIA GPUs through hands-on experimentation with natural language processing (NLP), large language models (LLMs), diffusion models for images and video, multimodal LLM architecture, distributed model training and accelerating inference.

This kit includes the following modules, which combine theory, algorithms, programming, and examples.

- **Module 1:** Introduction to Generative AI
- **Module 2:** Word Embeddings, Tokens, and NLP
- **Module 3:** Large Language Models and the Transformer
- **Module 4:** LLM Scaling Laws and LLM Families
- **Module 5:** Multimodal Learning and Its Applications
- **Module 6:** Diffusion Models in Generative AI
- **Module 7:** Model Training (Pre-Training, Instruction Following, and PEFT)
- **Module 8:** LLM Orchestration
- **Module 9:** Scaling Model Training to Distributed Workloads

All materials are provided in electronic form for ease of use as-is or modified to meet the needs of your specific course.

1.1 Does the Kit Include GPU Compute Resources?

Much of the hands-on content is built on Colab which provides access to GPUs in the cloud. Students can also access GPU resources in other ways such as local GPU cards or computing clusters with GPUs at your school.

Google Colab and NVIDIA have teamed up to provide educators with the compute they need to teach the labs and exercises. As a qualified Teaching Kit educator, you are eligible to receive free Google Colab compute credits! Instructions for redemption can be found in [Free Google Colab Credits.pdf](#) in the Teaching Kit download package.

Additionally, the Generative AI Teaching Kit also includes access to **free online DLI courses and certificate opportunities for students** - a value of up to \$90 per person per course (see “2.7 NVIDIA DLI Online Courses and Certificates” below).

1.2 System Requirements and Environment Setup

Generative AI as a field is heavily dependent on access to NVIDIA GPUs. The [Google Colab](#) platform provides seamless access to different GPUs in the cloud. This course benefits from GPUs with at least 16GB of VRAM, with 24GB recommended. Currently the L4 GPU is the recommended GPU to run this course, with A100s only needed for extra speed. Models with lower amounts of GPU VRAM can be used, however there may be some models that, even after quantization, may not fit in memory. If this happens you may need to look for a smaller model to use in-place which may reduce the performance and expected results.

NOTE: You should have received an email invitation to the Teaching Kit's [BitBucket repository](#) that contains the most recent version of the lab solutions and demos. Please contact NVDLI@nvidia.com if you have not yet received this email invitation or if it has expired.

2. Generative AI Teaching Kit Content

The following are the different Teaching Kit content types available.

2.1 Syllabus

The online syllabus is available at <https://developer.nvidia.com/gen-ai-teaching-kit-syllabus> (also pointed to by *syllabus.html*). It outlines the content for every module and will link to the lecture videos (see "2.3 Lecture Videos" below) when they are available in a future release. The syllabus also links to the most relevant DLI online courses for each module.

2.2 Lecture Slides

The PowerPoint *.ppt* lecture slides are designed for instructor-led teaching to introduce the necessary information needed for students to understand principles and concepts.

2.3 Lecture Videos

You and your students will be able to view the lecture videos linked from the online [syllabus](#) when they become available in a future release. These videos will be based on the lecture slides and will be able to add a "flipped", self-paced classroom aspect to your course.

2.4 Demos

The demo notebooks (Jupyter notebooks in the *.ipynb* format) are designed to be guided introductions to practical implementations of the content presented in the lectures.

These notebooks are intended to be included in the educational material during the module teaching lessons. The *Demos* folder in each module, mirrored in both the downloadable Teaching Kit *.zip* file and the [repository](#), contain the notebooks for each sub-module. Each demo begins with a description and continues with self-guided instructions.

2.5 Labs

The Lab notebooks, also provided as Jupyter notebooks in the *.ipynb* and *.md* formats, are based on the demo notebooks and give students the hands-on opportunity to implement tools and explore the topics covered in each module more deeply.

The *Instructions* folder found in each module's lab folder in the Teaching Kit *.zip* file contains the lab's instructional notebook. Each notebook begins with a description of the lab, objectives, prerequisites and detailed instructions.

The *Solutions* folder found in each module's lab folder in the solutions [repository](#) contain the same notebooks but with the associated solutions for the instructor.

2.6 Knowledge Checks

The *Knowledge Checks* folder found in each module in the Teaching Kit *.zip* file contain multiple choice questions and answers based on the lecture slides. These come in *.csv* file format for ease of use and modification to be used for in-class quiz and exam problem sets.

2.7 NVIDIA DLI Online Courses and Certificates

The Teaching Kit includes access to **free [online DLI courses](#)** and certificate opportunities for your students – **a value of up to \$90 per person per course**. DLI training reinforces AI, Data Science and Accelerated Computing concepts presented in the Teaching Kit and trains students on how to apply those concepts to end-to-end projects. Through built-in assessments, students can earn certificates that prove subject matter competency which can be leveraged for academic and professional career growth. Each course presents a self-paced learning environment with access to a GPU-accelerated workstation in the cloud. All students need is a web browser and Internet connection to get started. *Although these courses are designed to be taken online self-paced, you are free to administer them to your students in a live setting.*

The online DLI courses are suggested in specific modules in the [syllabus](#) and *DLI Online Courses* folder found in most modules in Teaching Kit download package.

To enable these or any other online DLI courses for your students please send your developer.nvidia.com account email address to NVDLI@nvidia.com with subject line "GenAI Teaching Kit DLI Online Course Access". You will then receive information about how to give free access to your students.

Detailed descriptions of all available DLI courses can be found at www.nvidia.com/dli.

3. LLM Technical Certification Discounts for Students

Your students can receive a **50% discount** on the following NVIDIA certification exams through the NVIDIA Generative AI Teaching Kit:

- NVIDIA-Certified Associate: Generative AI LLMs [certification exam](#)
- NVIDIA-Certified Associate: Generative AI Multimodal [certification exam](#)

As an educator, you also get **free access to both exams**.

3.1 About the Certification Exams

- The [NCA-Generative AI LLMs certification exam](#) validates foundational knowledge in developing, integrating, and maintaining AI-powered applications using generative AI and large language models (LLMs) with NVIDIA solutions.
- The [NCA-Generative AI Multimodal certification exam](#) confirms essential skills for designing, implementing, and managing AI systems that interpret and synthesize data across text, image, and audio modalities.

Both exams are online, remotely proctored, and consist of 50 questions with a 60-minute time limit. See the certification exam detail pages for more information.

3.2 Preparing for the Exams

We recommend students learn through most of the content and complete all the DLI online courses included in the Generative AI Teaching Kit syllabus before taking these exams. These courses are free for both you and your students (see DLI Online Courses and Certificates.pdf in the Generative AI Teaching Kit).

3.3 How to Request the Discounts

To obtain the 50% discount codes for your students (and free access for yourself), please:

- Email your *developer.nvidia.com* account address to NVDLI@nvidia.com
- Use the subject line: "GenAI Teaching Kit Cert Exam Discounts"

We'll reply with the necessary discount codes and redemption instructions.

3.4 Learn More about NVIDIA Certification

For details on all available NVIDIA Certification exams, visit [NVIDIA Certification home page](#).

4. About the NVIDIA Deep Learning Institute (DLI)

The NVIDIA Deep Learning Institute (DLI) offers hands-on training for developers, data scientists, and researchers looking to solve challenging problems with deep learning and accelerated computing. Through built-in assessments, students can earn certificates that prove subject matter competency and can be leveraged for professional career growth.

Become a DLI Certified Instructor

Apply to become a certified [DLI University Ambassador](#) to teach formal instructor-led workshops at your university to students, faculty, and researchers at no cost.

Attend Instructor-led Training

In addition to online, self-paced courses, DLI offers all fundamentals and industry-specific courses as in-person workshops led by DLI-certified instructors. View upcoming workshops near you at www.nvidia.com/dli.

Questions? Contact us at NVDLI@nvidia.com.

Ready to apply for DLI University Ambassadorship or add new instructor certifications towards a specialization? Apply at developer.nvidia.com/dli/cip/application-amb