Free AI Training and Learning Content from Deeplearning.ai



DeepLearning.ai offers an extensive catalog of **free, practical AI learning content**, ranging from 1-hour hands-on coding short courses to downloadable eBooks, annotated course slides, and weekly industry briefings.

While DeepLearning.ai introduced a Pro membership tier for full multi-course specializations, graded quizzes, and verified certificates, **all short and full courses and foundational beginner courses offer their video lectures and code examples 100% free, along with the entire Resource Center** (with a free account).

1. Free Short Courses

DeepLearning.ai hosts over **100 short courses** (typically 1–2 hours each) built in partnership with AI labs and developer platforms like OpenAI, Anthropic, Hugging Face, LangChain, Google Cloud, LlamaIndex, Meta, and Neo4j. The training materials are completely free, except for graded assignments and certificate.

Key free tracks include:

1. AI Agents & Protocols

Course link	Main focus
Building Code Agents with Hugging Face smolagents	Build agents that write and execute code, use sandboxing, and perform multi-agent research tasks.
MCP: Build Rich-Context AI Apps with Anthropic	Build MCP servers and clients that connect AI applications to tools, data, and prompts.
Agent Skills with Anthropic	Package reusable instructions and workflows as skills; combine them with MCP and subagents.
Claude Code: A Highly Agentic Coding Assistant	Use Claude Code to explore, develop, test, refactor, and debug projects.
Practical Multi AI Agents and Advanced Use Cases with crewAI	Build collaborating agents for project planning, lead scoring, reporting, and content creation.
Loop Engineering with LangChain Deep Agents	Build execution, verification, event-triggered, and improvement loops around agents.
Building Adaptive AI Agents	Help agents improve through reusable skills, code knowledge graphs, and model adaptation.
AI Agents for Image and Video Generation	Build agents that generate visual media, evaluate the output, and iterate.

Course link	Main focus
Voice for AI Agents and Applications	Add voice to applications and existing agents, or make voice a tool an agent can invoke.
Knowledge Graphs for AI Agent API Discovery	Use knowledge graphs to help agents find APIs and call them in the correct sequence.

2. RAG, Search & Memory

RAG means retrieval-augmented generation: supplying an AI model with relevant retrieved information to help it answer questions. These courses address document preparation, retrieval quality, structured knowledge, and assistant memory.

Course link	Main focus
Building AI Assistants with On-Device Memory	Build local memory that stores, retrieves, filters, and forgets text, voice, and image experiences; created with Qdrant.
Building and Evaluating Advanced RAG	Improve retrieval using sentence-window and auto-merging techniques; evaluate context relevance, groundedness, and answer relevance.
Knowledge Graphs for RAG	Use Neo4j, Cypher, and LangChain to build question-answering systems over connected information.
Preprocessing Unstructured Data for LLM Applications	Extract and normalize information from PDFs, slides, documents, tables, images, and HTML for RAG applications.

3. Fine-Tuning, Evaluation & LLMOps

These courses cover adapting models, measuring their behavior, testing applications, and serving models efficiently.

Course link	Main focus
Evaluating and Debugging Generative AI	Use Weights & Biases for experiment tracking, versioning, evaluation, and tracing.
Automated Testing for LLMOps	Create rules-based and model-graded evaluations, then automate them with CircleCI.
Finetuning Large Language Models	Learn when to fine-tune, prepare training data, and train and evaluate a model.
Fine-tuning & RL for LLMs: Intro to Post-training	Understand fine-tuning, reinforcement learning, evaluation, and production considerations for post-training.
Fast LLM Inference with Cerebras — catalog link; select the course by name	Learn fast inference for latency-sensitive applications such as live personalization and real-time tool workflows.

2. Free Materials for Beginner and Full Courses

- AI Python for Beginners *(11.5 hours)*: Andrew Ng's flagship beginner coding course teaching Python fundamentals from scratch with an AI coding assistant built right into the browser.
- Build with Andrew *(1 hour)*: A no-code introduction showing non-programmers how to describe an idea in plain English and turn it into a working app using AI.
- Free Video Audits on Longer Courses: Flagship programs like Agentic AI, Generative AI for Everyone, AI Prompting for Everyone, AI for Everyone, and the Machine Learning in Production allow you to watch the video lessons and access the code examples for free.

3. Free eBooks & Strategic Guides

In the **Resources hub**, you can download full-length PDFs and career guides at no cost:

- *Machine Learning Yearning (by Andrew Ng)*: A classic, practical eBook focused on how to structure machine learning projects, diagnose errors, and prioritize engineering decisions.
- *How to Build Your Career in AI (by Andrew Ng)*: A step-by-step roadmap covering foundational skill building, scoping portfolio projects, and navigating AI job interviews.
- AI Engineering Skills Map: A data-backed guide analyzing over 10,000 job postings and hiring manager interviews to outline the four core skills needed for AI engineering roles.
- Complete Technical Guides: Written deep dives including *A Complete Guide to Natural Language Processing* and *Your Guide to Generative AI Courses*.

4. Downloadable Course Slides & Interactive "AI Notes"

Even if you don't pay for full specialization certificates, DeepLearning.AI gives away the **annotated lecture decks and interactive math tutorials** for the following courses. On each course page, scroll to "Course Slides" and select the download option.

Slide collection	Official link
Machine Learning Specialization	Course page — slide downloads under "Course Slides"
Deep Learning Specialization	Course page — slide downloads under "Course Slides"
Mathematics for Machine Learning and Data Science	Course page — slide downloads under "Course Slides"
Natural Language Processing Specialization	Course page — slide downloads under "Course Slides"
Generative Adversarial Networks (GANs) Specialization	Resources page — find "Generative Adversarial Networks (GANs) Specialization — Course Slides" deeplearning
AI for Everyone	Course page — slide downloads under "Course Slides"

AI Notes: Long-form, interactive visual tutorials designed to build intuition around neural network initialization and parameter optimization.

Tutorial	Direct link and coverage
Initializing neural networks	Read the interactive tutorial — explains how initialization affects training, vanishing and exploding gradients, and Xavier initialization.
Parameter optimization in neural networks	Read the interactive tutorial — covers loss and cost functions, gradient descent, learning rate, batch size, and comparisons of Momentum, RMSprop, and Adam. You can adjust parameters and observe their effects.

5. Weekly Newsletters & Events

- The Batch: DeepLearning.AI's free weekly newsletter summarizing the most important AI research papers, industry shifts, and policy news, accompanied by a weekly editorial letter from Andrew Ng.
- DeepLearning.AI About page — "Our Ecosystem"**:** Scroll to the Workera section. It describes free assessments for identifying skill gaps and developing a personalized learning pathway, and links onward to Workera. The assessments are provided by Workera, not hosted directly on DeepLearning.AI.
- How to Learn Machine Learning: Explains how Workera assessments can help you plan your next learning steps, covering areas such as mathematics, computer science, Python, computer vision, and natural language processing.

6. AI Agents Short Courses

To master building and evaluating **AI agents using DeepLearning.AI's free short courses**, follow a four-stage progression: start with core single-agent loops and tool protocols, move into stateful multi-agent orchestration, add memory and retrieval, and finish with observability and evaluation.

Each course takes 1 to 2 hours and runs in a browser-based Jupyter environment with pre-configured API keys.

Recommended Learning Path

Stage	Course Title	Partner
1. Foundations	Building Code Agents with Hugging Face smolagents	Hugging Face
1. Foundations	MCP: Build Rich-Context AI Apps with Anthropic	Anthropic
2. Orchestration	AI Agents in LangGraph	LangChain
2. Orchestration	Practical Multi AI Agents and Advanced Use Cases with crewAI	crewAI

Stage	Course Title	Partner
3. Memory & RAG	Building Agentic RAG with LlamaIndex	LlamaIndex
3. Memory & RAG	LLMs as Operating Systems: Agent Memory	Letta (MemGPT)
4. Evaluation	Evaluating and Debugging Generative AI	Weights & Biases
4. Evaluation	Building and Evaluating Advanced RAG	TruLens

4-week Study Schedule

This 4-week study schedule paces all 8 DeepLearning.AI short courses at **2 courses per week** (~3–4 hours of weekday study), reserving weekends for building a progressive, end-to-end **AI Research & Operations Assistant** that evolves as you unlock each new capability.

Week	Weekday Courses (Mon–Fri)	Core Skills Acquired	Weekend Capstone Mini-Project
Week 1	1. *Building Code Agents with smolagents* 2. *MCP: Build Rich-Context AI Apps*	Core agent loops, Python code execution, and standardized MCP tool servers	CLI File & Web Research Agent connected to local files and live search
Week 2	3. *AI Agents in LangGraph* 4. *Practical Multi AI Agents with crewAI*	Stateful graphs, human-in-the-loop approval, and role-based agent teams	**Multi-Agent Content & Code Review Pipeline** with approval gates
Week 3	5. *Building Agentic RAG with LlamaIndex* 6. *LLMs as Operating Systems: Agent Memory*	Dynamic multi-document routing and persistent cross-session memory	Personalized Knowledge Base Assistant that remembers user preferences
Week 4	7. *Evaluating and Debugging Generative AI* 8. *Building and Evaluating Advanced RAG*	Trajectory tracing, latency/error debugging, and automated groundedness scoring	**Production Evaluation Suite** benchmarking your agent on 20 test cases