

Claude Certified Developer – Foundations

Course description

A hands-on, code-first course for software engineers building applications with Claude. You will work directly with the Claude API, prompt engineering for developers, tool use and function calling, structured output, streaming, and Claude Agent SDK fundamentals—building real integrations and gaining production-ready patterns you can apply immediately.

- Course level: Beginner (Developer track)
- Duration: 2 days

Activities

This is a code-first course: approximately 75% hands-on with build-along labs using the Claude API and official SDKs, plus demonstrations and code walkthroughs.

Course objectives

In this course, you will learn to:

- Authenticate and call the Claude API using official SDKs
- Engineer prompts programmatically with system prompts and messages
- Implement tool use and function calling to extend Claude's abilities
- Enforce structured (JSON) output and validate model responses
- Stream responses and handle latency, errors, and retries
- Use the Claude Agent SDK to build simple agentic workflows

- Apply prompt caching and manage the context window efficiently
- Integrate Claude into backend and application code responsibly

Intended audience

This course is intended for developers building applications with Claude:

- Backend, frontend, and full-stack software developers building with Claude
- AI/ML engineers integrating LLMs into applications
- Automation and integration engineers
- Technical professionals transitioning into AI-assisted development

Prerequisites

We recommend that attendees of this course have:

- Proficiency in at least one programming language (Python or JavaScript recommended)
- Basic understanding of REST APIs and JSON
- Familiarity with terminal/CLI usage
- An Anthropic API key or access to the Claude Developer Platform
- Recommended: completion of the Associate – Foundations course or equivalent knowledge

Course outline

Module 1: Getting Started with the Claude API

- Claude Developer Platform and authentication
- The Messages API: requests, responses, and roles
- The Claude model family and selecting appropriate models
- Parameters: temperature, max tokens, and stop sequences
- Lab: Make your first API call
- Lab: Compare parameters and model behavior

Module 2: Prompt Engineering for Developers

- System prompts, user/assistant turns, and message design
- Few-shot prompting and examples in code
- Prompt templates and reusable patterns
- Prefilling responses and controlling tone and format
- Lab: Build a parameterized prompt template
- Lab: Use prefill to constrain output

Module 3: Structured Output & Reliability

- Enforcing JSON and schema-conformant output
- Validation and retry loops
- Programmatic enforcement versus prompt-based guidance
- Handling edge cases and malformed responses
- Lab: Extract structured JSON with validation and retries

Module 4: Tool Use & Function Calling

- Defining tools and JSON schemas
- The tool-use request/response loop
- Chaining multiple tools and parallel calls
- Writing tool descriptions Claude can reliably use
- Lab: Build a weather/lookup tool integration
- Lab: Chain tools to complete a task

Module 5: Streaming, Caching & Error Handling

- Streaming responses for a responsive user experience
- Prompt caching with cache breakpoints
- Rate limits, retries, and backoff strategies
- Token counting and context-window management
- Lab: Add streaming to an application
- Lab: Apply prompt caching to reduce cost and latency

Module 6: Introduction to the Claude Agent SDK

- Agentic loops: observe–think–act–respond
- Building a simple agent with the Agent SDK
- Adding tools and guardrails to an agent
- Responsible AI and secure API usage
- Lab: Build a minimal tool-using agent with the Agent SDK

Module 7: Exam Preparation & Integration Patterns

- Consolidating key learning objectives and integration patterns
- Production-ready patterns and best-practices review
- Certification assessment preparation and practice questions

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About CloudThat

Established in 2012, CloudThat is an award-winning company and the first in India to offer cloud training and consulting services for individuals and enterprises worldwide. Recently, it won Google Cloud's New Training Partner of the Year Award for 2025, becoming the first company in the world in 2025 to hold awards from all three major cloud giants: AWS, Microsoft, and Google. CloudThat notably won consecutive AWS Training Partner of the Year (APJ) awards in 2023 and 2024 and the Microsoft Training Services Partner of the Year Award in 2024, bringing its total award count to an impressive 12 awards in the last 8 years.

CloudThat specializes in Cloud Migration, Data Platforms, DevOps, IoT, and cutting-edge technologies like Gen AI & AI/ML. As a Microsoft Solutions Partner, AWS Premier Tier Training Partner, Google Cloud Platform Partner, and collaborator with leading organizations like HPE, Oracle, Nvidia and Databricks, CloudThat has trained over 850,000 professionals across 600+ cloud certifications, empowering students and professionals worldwide to advance their skills and careers.

To know more about our cloud certification training, email at sales@cloudthat.com or call us at **+91-8880002200** or **+1-8555588830** for those from outside India.