Welcome to the "Hands-on Generative AI Engineering with Large Language Models" course! My name is Quang Duong, and I am a senior AI Engineer. I am excited to have you enrolled in this course. This comprehensive course is designed to equip you with the essential skills and knowledge to work effectively with large language models (LLMs) and develop advanced Generative AI applications using LLMs.

In this first section, I would like to present an overview of the course structure and learning paths to guide your journey.

The course is divided into seven parts, guiding you through hands-on, crucial aspects of generative AI, large language models, and components to build and deploy LLM-based applications.

In the first part, we will understand the software prerequisites for Python projects, set up your development environment, and get comfortable with the tools and libraries you'll be using throughout the course.

Next, in parts 2 and 3, we will dive into the "Attention Is All You Need" paper to understand the theoretical underpinnings of Transformers, how they revolutionized NLP, and the mechanics behind their operation. Then, we will translate your theoretical understanding into practice by implementing Transformers in Python and PyTorch. This hands-on approach will solidify your understanding and give you practical experience.

In part 4, we will learn how to leverage the powerful tools and libraries provided by Hugging Face. This section will teach you how to use pre-trained models, datasets, and other resources to streamline your generative AI projects.

Finally, in the last three parts, 5, 6, and 7, we will:

1. Understand the building blocks required for creating sophisticated AI applications, including vector embeddings, prompt engineering, and integrating various LLM frameworks.
2. Apply your knowledge to build complete web applications. This part of the course will guide you through creating various AI assistants and chatbots, culminating in complex, task-specific applications.
3. Learn how to deploy your applications using Docker, ensuring they are scalable and can communicate efficiently between frontend and backend components.

To sum up, what we will learn in this course:

1. Part 1: Be proficient in setting up Python projects for AI development.
2. Part 2: Understand the inner workings of Transformer models.
3. Part 3: Gain hands-on experience with implementing and training Transformers with Python and PyTorch.
4. Part 4: Be able to use the Hugging Face ecosystem for advanced AI projects.
5. Part 5: Learn essential components for LLM-based applications.
6. Part 6: Implement LLM-based applications, like task-specific AI assistants and simple and advanced chatbots.
7. Part 7: Create and serve practical AI solutions using industry-standard tools.

By following this structured approach, you'll gain a comprehensive understanding of generative AI and large language models, from the foundational concepts to the development and deployment of advanced AI applications.

For the learning path, I designed the course in 7 parts, but we can group it into 4 groups:

1. Group 1: Set up development environment and tools that serve all practical aspects of the course.
2. Group 2: Mastering Transformer models from theoretical to practical implementation.
3. Group 3: A guide to leveraging the Hugging Face ecosystem to build advanced generative AI projects.
4. Group 4: Hands-on experience in building and deploying LLM-based applications in practice.

You can learn all of them one by one, or learn them separately, or skip the parts/groups that you are already familiar with. This course design will help you have a flexible learning path, depending on your experience and your needs. I hope it will provide a flexible and effective learning experience.

Enjoy your learning journey!