Prerequisite Knowledge

To hit the ground running, ensure you're familiar with these key areas:

Core Programming Skills

- Proficiency in Python is essential.
- Knowledge of JavaScript and basic web development using popular frameworks like React, Vue, or Next is helpful for integrating AI features into applications.

AI Fundamentals

- Basics of machine learning (ML), deep learning, and RLHF.
- Familiarity with popular AI frameworks like TensorFlow or PyTorch.
- Foundational AI concepts like transformers, embeddings, and prompt engineering.

System Design

- Experience in designing and building scalable systems using AWS, Azure, or GCP.
- Understanding REST APIs and WebSocket integration.
- Familiarity with database systems (SQL and NoSQL), like MongoDB or Postgres.

Version Control & Collaboration

- Proficiency in Git for version control.
- Experience working collaboratively on GitHub.

Project Management Tools

- Understanding of user stories, task management, and basic product design.
- Familiarity with tools like Jira, Trello, or Asana to track project progress and collaborate effectively.

Tools You'll Be Using

Prepare to work with these tools and platforms during the program:

1. **AI Frameworks and APIs:**
    - Hugging Face, OpenAI, LangChain, D-ID/HeyGen, RAG systems.
2. **Development Tools:**
    - VS Code or PyCharm (choose your IDE).
    - Docker for containerization.
3. **Cloud Platforms:**

    - AWS, Google Cloud, or Azure for deploying and testing AI systems.
4. **Data Storage and Retrieval:**
    - Familiarity with vector databases like Pinecone, Weaviate, or FAISS.
    - Use of relational databases for structured data.

Mindset and Habits for Success

1. **Embrace Rapid Iteration:**
    - You'll be expected to build and rebuild quickly, learning from each iteration.
2. **Stay Open to Feedback:**
    - Feedback from peers, mentors, and evaluators is critical. Use it to refine your approach and improve your work.
3. **Prioritize Time Management:**
    - The program is intense, and deadlines are tight. Plan your time effectively and focus on high-impact tasks.
4. **Collaboration is Key:**
    - While individual projects dominate the first stages, teamwork is essential for the capstone project. Develop strong communication and collaboration skills.

Recommended Preparatory Activities

1. **Refresh Your Skills:**
    - Take online courses or tutorials to brush up on Python, AI frameworks, and system design.
    - Review foundational ML/AI concepts and techniques.
2. **Explore AI Applications:**
    - Familiarize yourself with popular apps like Slack, Google Drive, MyFitnessPal, and Robinhood. Understand their core features and how AI could enhance them.
3. **Practice Coding:**
    - Solve coding challenges on platforms like LeetCode, HackerRank, or Codewars to ensure your programming skills are sharp.
4. **Experiment with AI APIs:**
    - Try integrating APIs from OpenAI or Hugging Face into small projects to get comfortable with AI-first development.
5. **Study Past Innovations:**
    - Research AI advancements in healthcare, finance, and creative industries to gain inspiration for your projects.