Key Implementation Requirements

1. User Input and Configuration Management

- **Structured Input Format:** The system should support structured input through YAML, JSON, or an intuitive UI form.
- **Configuration Options:** Users should be able to define:
  - Course title, description, objectives
  - Module structure, topics, and subtopics
  - Preferred style, tone, and content format
  - Interactive elements such as quizzes or discussion prompts
  - Additional resources (e.g., recommended readings, external links)
- **AI Model Tuning Parameters:**
  - Creativity control (temperature)
  - Response length (max tokens)
  - Diversity settings (top_p, frequency_penalty, presence_penalty)
  - Selection of different AI models (e.g., GPT-4, Gemini, Claude)

2. Automated Content Generation

- **AI-Powered Scripting:** The system should process the input configuration and generate:
  - Course scripts (lesson content, key points, quiz questions)
  - Speaker narration scripts
  - Interactive Q&A and discussion prompts
- **Adaptive Style & Tone:** AI should adjust tone and complexity based on the input configuration (e.g., beginner-friendly vs. expert-level).

3. AI Video Generation & Rendering

- **Text-to-Speech (TTS) Integration:** The system should convert AI-generated text into **narration audio** using **realistic voice synthesis** (e.g., Amazon Polly, Google WaveNet, ElevenLabs).
- **AI Avatar Support (Optional):** Option to integrate AI-generated **virtual presenters or avatars** for a more engaging experience.
- **Dynamic Visuals:** Generate and synchronize:
  - AI-generated slides & graphics (e.g., OpenAI's DALL·E for illustrations)
  - Auto-captioning and subtitles
  - Animated text and diagrams

4. Review and Refinement Workflow

- **Interactive Editing Interface:** Users should be able to preview, edit, and refine AI-generated content before finalizing videos.
- **Configuration Reusability:** Ability to save and reuse configurations for future content updates.