

The AI Prompt Library for Lesson Planning

STRUCTURED ENGINEERING REPOSITORIES FOR HIGH-IMPACT CHEMISTRY INSTRUCTION

Supercharge Curricula Generation: Standard AI models frequently generate generic, shallow lesson plans when unconstrained. This repository library outlines topic-targeted system prompts explicitly structured to build advanced educational assets for chemical engineering instructors without degrading conceptual depth.

1. Topic: Thermodynamics Structural Workflows

Module A: Multi-Tier State Functions & Enthalpy Matrix

THERMODYNAMICS

Engineered to construct rigid, math-focused breakdown layouts analyzing state vs. path functions, Hess's law cycles, and Gibbs free energy parameters.

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Act as an expert physical chemistry professor designing an undergraduate lecture syllabus module on Chemical Thermodynamics. Build a comprehensive 3-step lesson plan analyzing [TOPIC, e.g., Gibbs Free Energy and Spontaneity].
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The lesson plan must contain:
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1. Conceptual Roadmap: Clear, concise distinctions between state functions and path functions.
2. Derivation Sequence: A structured, mathematical walkthrough parsing the temperature dependence of Gibbs energy ($\Delta G = \Delta H - T\Delta S$).
3. Active Evaluation: 3 variable practical problems with multi-step conversion factor milestones explicitly annotated for classroom evaluation.

2. Topic: Organic Synthesis Concept Analogies

Module B: Electrophilic Substitution & Retrosynthetic Logic

ORGANIC CHEMISTRY

Designed to build highly relatable, memorable macro-world analogies to demystify electron transport shifts and retrosynthetic bond disconnections.

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Act as a creative science communicator and organic chemistry teacher. I am introducing [MECHANISM, e.g., Electrophilic Aromatic Substitution (EAS) or Retrosynthetic Analysis] to a classroom.
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Generate an instructional asset containing:
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1. Macro-World Analogy: Develop exactly one high-impact, accurate analogy that explains electron density movement or molecule disassembly without introducing misconceptions.
2. Electron-Pushing Guide: Step-by-step description of nucleophile/electrophile interactions or disconnection rules using clean text-based structural cues.
3. Common Pitfalls List: Isolate 3 classic conceptual misunderstandings students face during exams regarding this transformation track.

