



Problem Solving and AI

Syllabus

The course moves through four modules built around a five-phase framework—Problem Definition, Stakeholder Analysis, Solution Specification, Solution Proposition, and Implementation & Impact—encouraging you to apply each to a real challenge from your own professional context. At each phase, you will use a Large Language Model (LLM) as a thinking partner to challenge your assumptions, generate stakeholder perspectives, pressure-test your features, assess your competitive landscape, and stress-test your pitch before you commit resources to it. By the end of the course, you will have a complete, pitch-ready project brief grounded in evidence not assumption.

Modules		Case Studies	Takeaways	Key Exercises
Module 1	Discovering the Right Problem	• A major US airline: Elevating its in-airport experience to match its in-flight reputation. • Prosthetics research: Revealing why roughly a third of patients stop using advanced prosthetic limbs, even as the technology keeps improving.	• Distinguish a vague idea from a specific, user-level problem. • Apply the 5-Whys method to uncover the root cause of an issue. • Stress-test a problem statement against a skeptical stakeholder's perspective.	• Large Language Model (LLM) activity: The Root Cause Skeptic, a 5-Whys dialogue with an LLM. • LLM activity: The Skeptical Stakeholder, pressure-test your problem statement against a skeptical stakeholder's objections. • AI Innovation Worksheet 1: Problem Definition
Module 2	The Person Behind the Problem	• Google Glass: Illustrating the risk of strong engineering without a clear user problem. • A US packaged foods brand: Using in-home observation to uncover a packaging problem the store shelf didn't reveal. • A national property management company: Aligning residents, associates, and leadership around a new AI tool.	• Identify key stakeholders in a solution ecosystem. • Explore the gap between what stakeholders say they want and what they need. • Explain how stakeholder misalignment undermines even well-designed solutions. • Analyze incentive alignment across your stakeholder ecosystem.	• LLM activity: The Persona Generator, expand a single persona into a realistic range of stakeholders. • LLM activity: The Implicit Needs Investigator, surface unstated needs. • LLM activity: Your Empathy Map, uncover what's driving behavior. • AI Innovation Worksheet 2: Stakeholder Analysis

Modules		Case Studies	Takeaways	Key Exercises
Module 3	From Friction to Features	- Slack: Turning a failed side project into a \$27B pivot. - A major US airline: Translating must-have features into a working prototype. - Amazon and Meta: Charting two different paths for jumping to a new growth curve. - Starbucks: Asking the same ROI question of two AI investments.	- Explain why iteration is central to problem solving. - Distinguish what a solution must do from why it's worth building. - Translate user friction into a focused set of must-have features.	- LLM activity: The Feature Organizer, sort and pressure-test candidate features. - LLM activity: Your Competitive Landscape, map the realistic alternatives to your solution. - LLM activity: The Prototype Planner, turn your must-have features into a prototype plan. - AI Innovation Worksheet 3: Solution Specification - AI Innovation Worksheet 4: Solution Proposition
		- A major US airline: Choosing a first-adopter site and piloting a wayfinding system in one of its busiest airports. - Prosthetics research: Running a formal clinical trial with success metrics for four different stakeholders, on the way to a new standard of care.	- Explain why the first adopter is rarely the final user. - Design a pilot plan with a clear control/test structure and metrics that will give a decision-maker the confidence to scale. - Synthesize all five phases into a pitch-ready project brief.	- LLM activity: How to Use AI as a Skeptic, stress test your solution before you pitch it. - LLM activity: The Brief Coach, get AI feedback on your Project Brief. - AI Innovation Worksheet 5: Implementation & Impact - Final deliverable: completed Project Brief

Learning requirements: In order to earn a Certificate of Completion from Harvard Online, participants must thoughtfully complete all 4 modules, including satisfactory completion of the associated worksheets and project briefs, by stated deadlines.