

Capability is a *system parameter*.

Every complex system depends on what people can do inside it. That dependency is measurable, designable, and too important to leave to chance. LENS is the Johns Hopkins concentration that engineers it.

THE PROBLEM

Systems don't fail because the technology breaks. They fail because *someone couldn't do what the system required*.

Hardware gets reliability analysis. Software gets tested to specification. Human capability gets a training program bolted on at the end — and when the system underperforms, no one can say whether the gap sat in the people, the design, or the organization around both. LENS treats capability as the interface between what a system demands of its people and the impact it delivers — an interface that can be specified, instrumented, measured, and engineered.

THE FIVE COMPETENCIES

- 1 Systems Analysis** *see the whole system*
Trace how human capability and system performance depend on each other.
- 2 Iterative Development** *build, test, refine*
Build through engineering cycles that survive contact with real operations.
- 3 Human-System Collaboration** *work together*
Design partnerships — human-AI among them — that keep people in command.
- 4 Test and Evaluation** *show what works*
Produce decision-grade evidence; tell a learning gap from a system gap.
- 5 Navigating Sociotechnical Constraints** *make it work in the real world*
Fit the design to the constraints that decide whether it survives in the field.

See the whole system. Build, test, refine. Work together. Show what works. Make it work in the real world.

WHERE IT APPLIES

Representative, not exhaustive

A domain is **high-consequence** when the cost of a capability gap is paid by people who did not choose the risk, and the payment is not fully recoverable.

- Healthcare & patient safety
- Education, training & the learning workforce
- Aviation & aerospace
- Defense & national security
- Industry, energy & enterprise systems
- Disaster prevention & recovery
- Algorithms, governance & public systems

THE PROGRAM

DEGREE

M.Ed. in Learning Design & Technology — LENS concentration, Johns Hopkins School of Education with the Applied Physics Laboratory

FORMAT

Online and asynchronous, part-time, built for working professionals

SCOPE

10 courses · 30 credits

CAPSTONE

An end-to-end project on a real capability problem at a partner organization

STANDARDS

Aligned to the emerging IEEE ICICLE learning engineering competencies

WHO IT'S FOR

Two audiences, equally: education and training professionals moving toward systems practice, and engineers and technical professionals moving toward learning design.

No one carries every tool of the field. LENS develops integrators who can lead and work within a learning engineering team.

250K+

DEATHS A YEAR, CONTESTED ESTIMATE

attributed to medical error in the U.S. The figure is disputed; what it counts is not individual mistakes but system-wide failings and poorly coordinated care.

Makary & Daniel, BMJ, 2016 · Johns Hopkins

~10 yr

OF UNMET TRAINING REQUIREMENTS

The Marine Corps has been unable to meet training requirements in the Indo-Pacific — the theater the National Defense Strategy designates as the department's top priority.

GAO-24-107463 · 2022 National Defense Strategy

\$100M

SPENT, THEN SHUT DOWN IN 14 MONTHS

inBloom collapsed not because the technology failed, but because governance, privacy, and stakeholder trust were treated as afterthoughts rather than design constraints.

Data & Society, 2017 · nine states withdrew