Degree Proposal
Bachelor of Science in Engineering Design
College of Engineering

Executive Summary

The Bachelor of Science in Engineering Design is a new four-year undergraduate degree designed for the Bay Area/Oakland campus. It prepares a new kind of engineer: one who learns by doing from day one, works fluently with AI as a professional tool, and operates across disciplinary boundaries through iterative design thinking. The program serves learners who want to walk into a makerspace on their first day of class, not a lecture hall. These are students motivated by building, testing, and iterating on real human-centered engineering problems rather than completing years of abstract coursework before touching applied challenges.

Three defining characteristics set this degree apart: it is **experiential-first**, with real industry projects driving learning from the opening week; it is **AI-infused**, embedding AI tools throughout every course as part of how students do engineering work; and it is **industry-integrated**, with companies co-creating curriculum, projects, and career pathways. The result is a degree that produces graduates ready to tackle engineering challenges no one has faced before, not by memorizing standard approaches, but by developing the judgment, fluency, creative problem-solving capabilities, and cross-disciplinary design skills that define the engineer of the future.

Curriculum

The four-year plan of study is built around a progressive design sequence that serves as the curriculum's backbone. In the first year, students complete foundational coursework in mathematics, physics, and the university's Cornerstone of Engineering sequence, then move into core engineering courses during the summer. In the second year, students take courses spanning thermal systems, electronic systems, computational modeling, and forces and motion while completing their first integration project, the Stepping Stone, which requires them to synthesize mechanical, thermal, and electrical analysis on an industry-sponsored team challenge. The first co-op follows in the spring. Third-year students advance to thermal-fluid systems, materials science and statistics, and data science while completing the Keystone design project, which demands validated, multidisciplinary modeling across multiple engineering domains and creative problem-solving. A second co-op follows. In the fourth year, students complete a two-semester industry-sponsored Capstone, moving from project scoping and state-of-the-art analysis through concept development, detailed design, prototyping, testing, and delivery of a working solution to an industry sponsor.

Resources

The BS in Engineering Design will be offered through the College of Engineering at the Bay Area/Oakland campus, with oversight from the Dean's Office and an industry advisory board comprising representatives from partner companies and Bay Area engineering firms.

A faculty advisory committee will guide curriculum development and academic affairs, ensuring the program remains responsive to both accreditation requirements and evolving industry needs.

The faculty model draws on two primary sources: Northeastern faculty with engineering expertise and professors of practice recruited from Bay Area industry partners. This combination ensures that instruction is grounded in both rigorous academic foundations and current professional practice. Faculty will be hired in phases aligned with enrollment growth, beginning with core courses in the first two years and expanding as students advance into upper-division and concentration coursework.

The Provost's Office and the College of Engineering will partner with campus operations to provide comprehensive student support including academic advising, co-op coordination, student services, library resources, and marketing. The Oakland campus will provide dedicated makerspace and prototyping facilities essential to the experiential-first curriculum. Industry partners will contribute project sponsorship, co-op placements, capstone mentorship, and guest instruction.

Contribution to the University Academic Plan

The BS in Engineering Design advances Northeastern's strategic priorities in experiential learning, global campus expansion, and deep industry partnership. It is the academic anchor for the Oakland campus vision: an industry-embedded, AI-powered learning environment where education and enterprise operate as one with human creativity and empathy at its core. The program's AI integration aligns directly with the College of Engineering's AI Readiness Implementation Plan, which calls for AI fluency to be embedded across all undergraduate programs. This degree is designed from the ground up to meet that standard. By combining Northeastern's signature co-op model with an experiential-first design pedagogy and a Bay Area location, the program expands the university's presence in the nation's leading innovation ecosystem and creates a new model for how engineering education can respond to rapidly shifting industry demand.