ENGINEERING DESIGN INNOVATION

Degree Types: MS

The Master of Science in Engineering Design Innovation (https://design.northwestern.edu/engineering-design-innovation/) (EDI) at the Segal Design Institute is an 18-month, full-time design innovation graduate program that teaches students from a variety of backgrounds how to address complex design problems using an equity-centered approach to human-centered design.

EDI students practice user observation, ideation, rapid prototyping, and iteration in a project-based studio environment. They work with multiple stakeholders, students, faculty, industry partners, and practicing professionals to tackle real problems in context.

Students graduate from EDI and take on roles as Product Managers, Design Researchers, Product Designer Engineers, Experience and Service Designers ready to design new products and services that responsibly consider the needs of multiple stakeholders in complex ecosystems.

Typically those applying for the EDI program are recent graduates or have one to three years industry experience. We admit applicants with a variety of academic degrees across disciplines in STEM, humanities, and the arts. One of the strengths of our cohort model is the diversity of expertise our students have across various fields.

Contact the EDI program at edi@northwestern.edu.

Additional resources:

- Department website (https://design.northwestern.edu/engineering-design-innovation/)
- Program handbook(s)

Degrees Offered

- Engineering Design Innovation BS/MS (https://catalogs.northwestern.edu/tgs/engineering-design-innovation/engineering-design-innovation-bach-mast/)
- Engineering Design Innovation MS (https://catalogs.northwestern.edu/tgs/engineering-design-innovation/engineering-design-innovation-ms/)

Learning objective(s)/Students should be able to…

- Demonstrate expertise in design research methods
- Identify and frame unique opportunities from qualitative data
- Synthesize opportunities to viable solutions
- Demonstrate mastery in visual communication, complex storytelling, and presentation skills
- Demonstrate prototyping expertise in UI, Service, and Product Design
- Demonstrate high degree of professionalism, collaborative capabilities, and team leadership
- Demonstrate mastery of design thinking and methods

Engineering Design Innovation (EDI) Courses

DSGN 315-0 Design, Technology, and Research (1 Unit)
A jointly offered CS and Segal learning initiative that empowers students to drive cutting-edge research that shapes new experiences with people and technology. Students work with a mentor to identify a direction of research, explore and iterate over designs, prototype at varying fidelities, build working systems, conduct evaluative studies, and report findings through conference publications. DTR adapts agile development and design-based research practices with scrums, sprints, studio critique, design logs, and pair research. This class may be repeated for credit.

DSGN 350-0 Intellectual Property and Innovation (1 Unit)
Explores the critical role of designers, business strategists and engineers in the invention/creative process. All issues relating to patents and patentability of inventions, copyrights and the protection of the expressions of ideas, trademarks and source identifiers are reviewed and analyzed in the context of multiple engineering domains.

DSGN 395-0 Special Topics (1 Unit)
Topics relevant to design and approved by the institute.
Prerequisite: consent of instructor.

DSGN 401-1 Human-Centered Design Studio 1 (1 Unit)
This course is part one of the year-long studio sequence required in the EDI program, and provides a project-based introduction to human-centered product design. The entire class typically works with a single corporate client, who defines a problem area for the class to explore in teams. Teaching methods include lectures, labs, reading, homework assignments, and project deliverables.

DSGN 401-2 Human-Centered Design Studio 2 (1 Unit)
This course builds upon DSGN 401-1, continuing to explore design of human-centered interactions. Students are challenged to design an experience which grows out of the interactions between a person and a product or service. Personas, use cases and scenarios will be introduced for modeling experiences. In this studio-based course, teaching methods include lectures, labs, reading, homework assignments and project deliverables.

DSGN 401-3 Human-Centered Design Studio 3 (1 Unit)
This course builds upon DSGN 401-1, continuing the theme of designing interactions. Students are challenged to design a service experience in a specific opportunity area working with an external project partner. In this studio-based course, teaching methods include lectures, labs, reading, homework assignments and project deliverables.

DSGN 410-0 Design Research (1 Unit)
In this course, students learn the value of field research in the human-centered design process. In addition to homework assignments and labs, students work on a cumulative team-based research and design project that includes generative research, analysis and synthesis, brainstorming, concept generation, and concept evaluation. Open to EDI students only.

DSGN 420-1 Design Communications: Visual Design and Storytelling (0.5 Unit)
The first 5 weeks will focus on how to translate complex information, extracted from the strategic design process into simple visual solutions. This class will help students create visualization of their ideas and communicate their individual design hybridity. Students who take this class can apply these methods to their future projects, helping them express their ideas to others, by making their ideas more visible, tangible, and real, creating a better emotional connection with their audience. But most importantly, this class will allow students to develop new creative methods in design processes and give back to the design community.

DSGN 420-2 Design Communications: Ethics and Identity in Design (0.5 Unit)
This class will bolster a student's ability to ask critical questions of themselves in their role as a designer when tackling complex social

issues. Through in-depth class discussions and deep self-reflection, this class will provide intellectual rigor to the many conflicts of interests and perverse incentives that persist when designers enter the social sector.

DSGN 430-0 Product Management for Technology Companies: An Entrepreneurial Perspective (1 Unit)
This course, DSGN 430-0-1 Product Management, equips students with the frameworks, tools and direct experience to become effective product managers. The course focuses equally on product management in technology startup firms and product management in large technology firms.

DSGN 450-0 Differentiation by Design (1 Unit)
Introduces students to opportunities for innovation throughout the entire new product development process. Lectures supported by case studies, readings, relevant outside experts, and real world examples.

DSGN 455-0 Design Strategy (1 Unit)
Introduces students to the power of design as a differentiator in the marketplace. Human centered design and strategic design thinking are leading the charge in meaningful innovation that consumers and business find relevant. This course is a highly interactive studio with real world examples, case studies, guest lectures from industry, class discussions, and storytelling, along with hands on design thinking exercises and assignments.

DSGN 474-0 Brand and Design Leadership (1 Unit)
We will explore the brand, design, and leadership concepts: as separate notions, how they intersect and how different configurations can create value and even lead to similar outcomes. We will discuss various formal frameworks and contextualize them with real-world models, examples and stories. Guest speakers of diverse career backgrounds will share their own frameworks and stories.

DSGN 495-0 Special Topics in Engineering Design (1 Unit)

DSGN 497-0 Advanced Topics in Engineering Design (0.5 Unit)

DSGN 499-0 Independent Research Project (0.5-2 Units)

DSGN 519-0 Responsible Conduct of Research Training (0 Unit)