SEGAL DESIGN INSTITUTE

design.northwestern.edu

Human-Centered Design Projects

The Segal Design Institute is the unit of the McCormick School that promotes the importance of design throughout the undergraduate curriculum and is dedicated to fostering innovation among engineering and non-engineering students and faculty. Our students work on projects that produce tangible results and improve the lives of people around the world. Our team-based approach to education encourages students to use design thinking to solve complex, authentic problems in product, interaction, service, and business design.

Programs of Study

• Manufacturing and Design Engineering Degree (https://catalogs.northwestern.edu/undergraduate/engineering-applied-science/segal-design-institute/manufacturing-design-engineering-degree/)
• Segal Design Certificate (https://catalogs.northwestern.edu/undergraduate/engineering-applied-science/segal-design-institute/segal-design-certificate/)

DSGN 106-1 Design Thinking and Communication (0.5 Unit)
Integrated introduction to the engineering design process and technical communication. Approaches to unstructured and poorly defined problems; conceptual and detailed design; team structure and teamwork; project planning; written, oral, graphical, and interpersonal communications; use of software tools; discussion of societal and business issues. One lecture, two workshops, lab. Registration for both quarters required. Primarily intended for first-year students.

DSGN 106-2 Design Thinking and Communication (0.5 Unit)
Integrated introduction to the engineering design process and technical communication. Approaches to unstructured and poorly defined problems; conceptual and detailed design; team structure and teamwork; project planning; written, oral, graphical, and interpersonal communications; use of software tools; discussion of societal and business issues. One lecture, two workshops, lab. Registration for both quarters required. Primarily intended for first-year students.

DSGN 306-0 UX Design (1 Unit)
Hands-on course covering the full range of user experience design, from screen-based experience to interaction with physical products to end-to-end environment design. Prerequisite: DSGN 106-1 or DSGN 208-0.

DSGN 308-0 Human-Centered Product Design (1 Unit)
Project-based course focusing on user needs: observational methods, brainstorming, prototyping, business models, and the social and engineering concerns for product design. Prerequisite: DSGN 106-1 or DSGN 208-0.

DSGN 320-0 Introduction to Industrial Design Methods (1 Unit)
Process of product development from an industrial design perspective.

DSGN 346-0 Design for Fabrication: NX (1 Unit)
Final project involving design and manufacture, g-code generation, and CNC, with emphasis on design for manufacturing considerations. Prerequisite: MECH_ENG 240-0 or consent of instructor.

DSGN 346-0 Design for Fabrication: NX (1 Unit)
Final project involving design and manufacture, g-code generation, and CNC, with emphasis on design for manufacturing considerations. Prerequisite: MECH_ENG 240-0 or consent of instructor.

DSGN 350-0 Intellectual Property and Innovation (1 Unit)
The critical role of engineers in the invention/creative process and of technologists in wealth creation.

DSGN 360-0 Design Competition (1 Unit)
Undergraduate teams compete in McCormick’s annual autonomous robot contest. Work begins winter quarter; teams must pass a qualifying milestone to register for credit in spring quarter. Students may register for this course no more than twice.

DSGN 370-0 Portfolio Development & Presentation (1 Unit)
Creation of design projects that showcase engineering work and further career goals.
The portfolio physically presents a story that embodies its creator’s goals. Prerequisite: Reserved for Juniors and Seniors.

**DSGN 375-0 Data as Art (1 Unit)**
Information visualization across multiple disciplines.

**DSGN 380-1 Industrial Design Projects I (1 Unit)** Design thinking; user-centric principles of design and DFM. Industrial design project for personal portfolio development. Concept ideation and sketching; use of discovery research and data visualization; problem framing and prototyping; design for manufacturing, Keyshot rendering, rapid prototyping. Pt 1 in two-course sequence. Prerequisites: DSGN 243-0 and either DSGN 240-0 or MECH_ENG 240-0 or either DSGN 320-0 or DSGN 320-0; or consent of the instructor. Reserved for Juniors and Seniors.

**DSGN 380-2 Industrial Design Projects II (1 Unit)** Design thinking; user-centric principles of design and DFM. Industrial design project for personal portfolio development. Concept ideation and sketching; use of discovery research and data visualization; problem framing and prototyping; design for manufacturing, Keyshot rendering, rapid prototyping. Prerequisite: DSGN 380-1.

**DSGN 382-1 Service Design Studio I (1 Unit)** This course explores the human centered approach to the design of services. Students will explore and apply design thinking to client sponsored projects and synthesize both user and client needs to the design of tangible consumer touch points. This includes experiences plans, digital interface designs, communication models, organizational designs, systems and/or brand tonality deliverables. Pt 1 in two-course sequence. Prerequisite: DSGN 305-0 or DSGN 306-0 or DSGN 308-0; or consent of instructor. Reserved for Juniors and Seniors.

**DSGN 382-2 Service Design Studio II (1 Unit)** This course explores the human centered approach to the design of services. Students will explore and apply design thinking to client sponsored projects and synthesize both user and client needs to the design of tangible consumer touch points. This may include experiences plans, digital interface designs, communication models, organizational designs, systems and/or brand tonality deliverables. Prerequisite: DSGN 382-1.

**DSGN 384-1 Interdisciplinary Design Projects I (1 Unit)** Open-ended, team-based product or system design projects in real-world settings. Sequence must be taken in consecutive quarters. Project research, concept development, professional communication, advanced topics in design. One of DSGN 305, DSGN 306, or DSGN 308 is recommended before taking this course. Pt 1 in two-course sequence. Prerequisite: DSGN 106-1 or DSGN 208-0. Reserved for Juniors and Seniors.

**DSGN 384-2 Interdisciplinary Design Projects II (1 Unit)** Open-ended, team-based product or system design projects in real-world settings. Sequence must be taken in consecutive quarters. Implementation, evaluation, communication, documentation. Prerequisite: DSGN 384-1.

**DSGN 386-0 Manufacturing Engineering Design (1 Unit)** Hands-on design project addressing manufacturing engineering design topics, such as automation, quality control, process planning, tooling design, concurrent engineering, and continuous improvement. Factory-CAD, Factory-FLOW, and Factory-VIEW. Prerequisite: MECH_ENG 240-0 or consent of instructor. Reserved for Juniors and Seniors.

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

**DSGN 397-0 Advanced Topics in Design (0.5 Unit)** Topics suggested by students and faculty and approved by the institute.

**DSGN 399-0 Independent Study Project (1 Unit)** Independent study on a manufacturing engineering topic supervised by a faculty member. Prerequisite: consent of instructor.