INDUSTRIAL DESIGN

http://www.design.iastate.edu/industrialdesign/index.php

B.I.D. Bachelor of Industrial Design Students in this program take a carefully defined sequence of courses developed to give them exposure and practice in the areas of theory and skill required by industrial design. These include drawing, form development, history, creative thinking, engineering principles, research, design methodology, human factors, computer-aided design, manufacturing and commercial factors. In their third year, students will select electives from concentration tracks arranged around specialty areas and current issues in the profession. The upper level studio classes are reserved for study abroad, internships, and sponsored projects with students from other departments and colleges.

Curriculum in Industrial Design

The Curriculum in Industrial Design leads to a 132.5 credit undergraduate Bachelor of Industrial Design including the 30.5 credit core Design Program.

Admission into the professional program depends upon available resources and is subject to the approval of a faculty committee at the completion of the Core Design Program. Applicants are reviewed on the basis of academic performance, a portfolio of original work, and a written essay.

Transfer students with studio credits from other programs, colleges, and universities must present for departmental review a portfolio of work done in those courses in order to have the credits apply toward studio requirements. Students are required to present this portfolio upon admission and prior to registration for classes. Arrangements for this process must be made with department advisors.

A 45 graduate credit post-professional graduate program is also offered leading to the degree Master of Industrial Design. (NOTE: Applicants without a degree or background in industrial design may be required to complete up to 18 additional credits of coursework.)

Total Degree Requirements: 132.5 cr.

Only 65 cr. from a two-year institution may apply which may include up to 16 technical cr.; 9 P-NP cr. of free electives; 2.00 minimum GPA.

International Perspective: 3 cr.

U.S. Diversity: 3 cr.

Communications: 10 cr.

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<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>ENGL 150</td>
<td>Critical Thinking and Communication (*)</td>
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<td>ENGL 250</td>
<td>Written, Oral, Visual, and Electronic Composition (*)</td>
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<tr>
<td>LIB 160</td>
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<tr>
<td>COMST 101</td>
<td>Introduction to Communication Studies</td>
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<td>COMST 102</td>
<td>Introduction to Interpersonal Communication</td>
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<td>CMDIS 286</td>
<td>Communicating with the Deaf</td>
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<tr>
<td>SP CM 110</td>
<td>Listening</td>
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<td>Fundamentals of Public Speaking</td>
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<tr>
<td>THTRE 251</td>
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Total Credits 10

* with a C- or better

Humanities: 6 cr.

6 cr. from program curriculum sheet

Social Sciences: 6 cr.

6 cr. from program curriculum sheet

Math/Physics/Biol.Sciences: 6 cr.

6 cr. from program curriculum sheet

General Education Courses: 9 cr.

6 cr. of course level 300-400 from program curriculum sheet: complete 3 cr. from department curriculum sheet.

College of Design Core: 11.5 cr.

DSN S 102  Design Studio I  4
DSN S 115  Design Collaborative Seminar  0.5-1
or DSN S 110  Design Exchange Seminar I  4
DSN S 131  Design Representation  4
DSN S 183  Design Cultures  3

Total Credits 11.5-12

History, Theory and Criticism: 15 cr.

IND D 231  Introduction to Industrial Design  3
IND D 387  History of Industrial Design I  3
IND D 388  History of Industrial Design II  3
Two courses from the approved course list; must include one 300 level or higher.

Industrial Design: 60 cr.

IND D 201  Industrial Design Studio I  6
IND D 202  Industrial Design Studio II  6
IND D 232  Creative Thinking for Industrial Design  3
ARTID 251  Human Factors in Design  3
ENGR 260  Engineering: Getting from Thought to Thing  3
ENGR 270  Survey of How Things Work  3
IND D 301  Industrial Design Studio III  6
IND D 332  Design Research Methods  3
IND D 334  Materials and Processes for Industrial Design  3
IND D 341  Computer Aided Industrial Design I  3
IND D 499  Senior Project  6
IND D 543  Portfolio and Professional Practice  3
Two of the following:  12
- IND D 397  Industrial Design Internship
- IND D 495  Study Abroad Option
- IND D 507  Industrial Design Practicum

Total Credits 60

Concentration track electives: 9 cr.

Sequence of electives assembled to create a focused area of study.

See also: a 4-year plan of study grid showing course template by semester.

Industrial Design
Innovation requires breaking boundaries and making connections between diverse disciplines. As a creative profession, industrial design deals with the design of innovative, sustainable and durable solutions for people, nonhumans, economy and society which may take many forms from tangible artifacts to expansive system designs. The Master of Industrial Design (M.I.D.) program at Iowa State University specifically emphasizes strategy and innovation with a strong focus on empathetic human-centered design research. It is centralized on the creation and application of new knowledge through in-depth investigations culminating in a written thesis. At the same time, students expand their design practice skills using innovative methodologies, collaboratively throughout the entire design process. Students explore, generate, transfer and implement multidisciplinary information and technologies into foundational knowledge for the discipline of industrial design.

The M.I.D. is traditionally recognized as a terminal degree in industrial design. The graduate program is designed to offer significant mix of skills and experiences, including faculty-directed research programs, internships, international travel, industry-sponsored coursework and design teaching experience. The graduate research focuses on three main areas: 1) Innovation through Design, 2) Design as Strategy, and 3) Human-Centered Design. These areas are defined by the existing faculty members’ research and creative activities, and focus on developing a new type of industrial designer mastering in any one of these specializations. Program faculty have extensive expertise in design thinking, human-centered research methods, cultural issues, product realization, design management, eco-design, social responsibility, and entrepreneurship.

The M.I.D. is a 63-credit study, distributed across three consecutive years. Applicants are required to have design and/or engineering degrees from accredited institutions or relevant industry experience.

M.I.D. Program Philosophy

The goal of the Industrial Design graduate program is to create an agile program that addresses current and emerging issues in design strategy, innovation and human-centered design. Its position, in one of the most comprehensive design colleges in the country, facilitates the integration of methodologies and skillsets from multiple disciplines. Additionally, ties to the nationally ranked College of Engineering, the College of Business and industry collaborators create some truly unique degree specializations. Students are able to explore advanced concepts in such areas as extended manufacturer responsibility, supply chain and logistics, international vendor relations, advanced materials and biopolymers, and alternative business models.

Curriculum Outline

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<td>IND D 231</td>
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<td>IND D 387</td>
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<td>IND D 332</td>
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<td>IND D 341</td>
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Total Credits: 138.5-139

Graduate Study

The Master of Industrial Design (M.I.D.)

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<tr>
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<tr>
<td>IND D 501</td>
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<tr>
<td>IND D 533X Human-Centered Research Methods</td>
<td>3 PSYCH 501/508/522 or RESEV 554/580 (qualitative research methods)</td>
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<tr>
<td>MGMT 502/503/504</td>
<td>3 RESEV 552/553 (quantitative research methods)</td>
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<td>1 IND D 511</td>
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10 10
Second Year

Fall Credits Spring Credits
IND D 503 3 IND D 504 3
(vertical studio with (vertical sponsored
juniors)
IND D 632 3 IND D 632 3
GR ST 529 3 IND D 540 3
IND D 511 1 10
9

Third Year

Fall Credits Spring Credits
IND D 699 6 IND D 699 6
IND D 543 3 Elective 3
Elective 3 Elective 3

12 12

Total Credits: 63

Summer: Study Abroad/Internship/Research Assistantship (optional)

Courses primarily for undergraduates:

IND D 201: Industrial Design Studio I
(0-12) Cr. 6. F.
Prereq: Admission to the industrial design program, enrollment in IND D 231.
Product scale form development and visual communication.

IND D 202: Industrial Design Studio II
(0-12) Cr. 6. S.
Prereq: IND D 201
Principles of structure and function in products.

IND D 231: Introduction to Industrial Design
(3-0) Cr. 3. F.
Prereq: DSN S 102 and DSN S 131; enrollment in 201; admission to the industrial design program through department review or permission of instructor.
The history, definition, scope, and basic principles of industrial design.
Overview of technical, artistic, and sociological context of the profession.

IND D 232: Creative Thinking for Industrial Design
(3-0) Cr. 3. S.
Prereq: IND D 231
Exploration of strategies, methods, and processes associated with creative thinking skills and problem solving. Discussion of the nature of creativity and its implications in different contexts that cross content boundaries.

IND D 301: Industrial Design Studio III
(0-12) Cr. 6. F.
Prereq: IND D 202
Systematic design methodology and integration of creative thinking techniques.

IND D 302: Industrial Design Studio IV
(0-12) Cr. 6. F.S.
Prereq: IND D 301 or permission of instructor
Exploration of commercial factors in industrial design.

IND D 322: Design Research Methods
(3-0) Cr. 3. F.
Prereq: IND D 231 or permission of instructor.
Survey of qualitative and quantitative methods with an emphasis on contextual user-centered research. Integration of user data collection, visualization, and synthesis as a source for design. Experience of a small-scale research practice related to industrial design.

IND D 334: Materials and Processes for Industrial Design
(3-0) Cr. 3. S.
Prereq: IND D 201 and IND D 231.
Introduction to materials and manufacturing methods for mass production and distribution of products.

IND D 341: Computer Aided Industrial Design I
(0-6) Cr. 3. F.S.
Prereq: IND D 301
Emphasis on the computer as an industrial design and visualization tool.

IND D 351: Applied Human Factors Lab
(0-1) Cr. 1. F.
Prereq: IND D 231 and enrollment in ARTID 251
Theory and application of human factors issues in the industrial design field, specifically their impact on the relationship of the user, the product, and the product systems.

IND D 387: History of Industrial Design I
(3-0) Cr. 3. F.
Prereq: 30 credits earned at ISU
Historical perspective of industrial objects starting at the Industrial Revolution 1830 to 1960. Discussion of social, political, cultural and technological context for industrial design.
Meets U.S. Diversity Requirement

IND D 388: History of Industrial Design II
(3-0) Cr. 3. S.
Prereq: 30 credits earned at ISU.
Historical perspective of industrial objects 1960 to present. Discussion of social, political, cultural and technological context for industrial design.

IND D 397: Industrial Design Internship
(0-12) Cr. 6. F.S.S.S.
Prereq: IND D 202, 18 credits in industrial design, permission of instructor.
Professional industrial design, off-campus experience.

IND D 401: Industrial Design Studio
(0-12) Cr. 6. F.S.
Prereq: IND D 301 or permission of instructor
Advanced topics focused on industrial design applications. Topics vary each time offered.

IND D 490: Special Topics
Cr. arr. Repeatable. F.S.S.S.
Prereq: Completion of industrial design studio or permission of instructor.
Advanced topics focused on industrial design applications. Topics vary each time offered. A. Theory, Criticism, Methodology B. Experimental Techniques C. Three Dimensional Design D. Distributed Collaboration.

IND D 490A: Special Topics: Theory, Criticism, Methodology
Cr. arr. Repeatable. F.S.S.S.
Prereq: Completion of industrial design studio or permission of instructor.
Advanced topics focused on industrial design applications. Topics vary each time offered.
IND D 490B: Special Topics: Experimental Techniques  
Cr. arr. Repeatable. F.S.SS.  
Prereq: Completion of industrial design studio or permission of instructor.  
Advanced topics focused on industrial design applications. Topics vary each time offered.

IND D 490C: Special Topics: Three-Dimensional Design  
Cr. arr. Repeatable. F.S.SS.  
Prereq: Completion of industrial design studio or permission of instructor.  
Advanced topics focused on industrial design applications. Topics vary each time offered.

IND D 490D: Special Topics: Distributed Collaboration  
Cr. arr. Repeatable. F.S.SS.  
Prereq: Completion of industrial design studio or permission of instructor.  
Advanced topics focused on industrial design applications. Topics vary each time offered.

IND D 495: Study Abroad Option  
(0-12) Cr. 6. F.S.SS.  
Prereq: IND D 202 and permission of instructor  
International study abroad program. Visits to design studios, showrooms, museums and manufacturing facilities.

IND D 499: Senior Project  
(0-12) Cr. 6. S.  
Prereq: IND D 495 or IND D 507 and senior standing  
Advanced practice in specialized area of industrial design. Topics vary.

Courses primarily for graduate students, open to qualified undergraduates:

IND D 501: Industrial Design Studio Intensive I  
(0-12) Cr. 6. F.  
Prereq: Admission into the Graduate Intensive Track or graduate standing in the industrial design program.  
Basic concepts and techniques for industrial design. Emphasis on form development, structure, function and communication.

IND D 502: Industrial Design Studio Intensive II  
(0-12) Cr. 6. S.  
Prereq: Admission into the Graduate Intensive Track or graduate standing in the industrial design program.  
Advanced concepts and techniques for industrial design. Emphasis on systematic design methodology and commercial factors, and visual and verbal communication of design problems and solutions.

IND D 503: Industrial Design Studio I  
(0-12) Cr. 6. F.  
Prereq: Admission to the industrial design graduate program or completion of Graduate Intensive Track.  
Advanced, project-based application of industrial design concepts and techniques.

IND D 504: Industrial Design Studio II  
(0-12) Cr. 6. S.  
Prereq: IND D 502.  
Advanced, project based application of industrial design concepts and techniques, with an emphasis on service and system design, and its implications for the community.

IND D 507: Industrial Design Practicum  
(0-12) Cr. 6. F.S.  
Prereq: Evidence of satisfactory experience in area of specialization; admitted by application and written permission of instructor only.  
Studio project focused on topics generated with external partners. Topics vary.

IND D 511: Colloquium  
(1-0) Cr. 1. Repeatable. F.S.  
Prereq: Admission into the Graduate Intensive Track or graduate standing in the industrial design program.  
Presentation and discussion of creative activity carried out in various design disciplines and their relationship to industrial design. Seminar sessions focusing on exemplary pieces of design research undertaken by faculty and graduate students in the design field.

IND D 532: Design Thinking  
(3-0) Cr. 3. S.  
Prereq: Admission into the Graduate Intensive Track or graduate standing in the industrial design program, or permission of instructor.  
Exploration of problem-solving methods for systems, products, and processes across all contexts. Strategies for problem-solution co-evolution process, with a focus on collaborative and interdisciplinary design to investigate real-world problems and opportunities.

IND D 534: Product Realization for Industrial Design  
(3-0) Cr. 3. S.  
Prereq: Admission into the Graduate Intensive Track or graduate standing in the industrial design program.  
Introduction to materials and manufacturing methods for products. Exploration of emerging materials and new applications.

IND D 540: Visual Communication for Industrial Design  
(0-6) Cr. 3. F.S.  
Prereq: Admission into the Graduate Intensive Track or graduate standing in the industrial design program.  
Exploration of multiple visual communication techniques used in industrial design and product development.

IND D 541: Computer Aided Industrial Design  
(0-6) Cr. 3. F.S.  
Prereq: Completion of industrial design studio or permission of instructor.  
Exploration of the computer as an industrial design and visualization tool. Advanced concepts in computer to machine interface for manufacture.

IND D 543: Portfolio and Professional Practice  
(1-4) Cr. 3. F.S.  
Prereq: Senior or Graduate standing in the industrial design program.  
Discussion of industrial design practice and career planning. Development and preparation of personal promotional materials for a range of media.

IND D 551: Human Factors  
(3-0) Cr. 3. S.  
Prereq: IND D 532  
Human factors issues and the study of relationships between the user, the product, and the human body and its physical functions. Investigations of bio-mechanics, anthropometry, instrumental displays and control, and their measurement as they relate to the design process.
IND D 590: Special Topics
(1-4) Cr. 3. Repeatable. F.S.SS.
Prereq: Completion of industrial design studio or permission of instructor.
Advanced topics focused on industrial design applications. Topics include theory, criticism, methodology, experimental techniques, three dimensional design, distributed collaboration.

IND D 592: Special Projects
Cr. arr. Repeatable. F.S.SS.
Prereq: Completion of industrial design studio or permission of instructor.
Planned projects in topics related to theory, criticism, methodology, experimental techniques, three dimensional design, distributed collaboration.

IND D 595: Study Abroad Option
(0-12) Cr. 6. Repeatable. F.S.SS.
Prereq: Completion of industrial design studio or permission of instructor.
International study abroad program. Visits to design studios, showrooms, museums and manufacturing facilities.

IND D 597: Internship
(0-12) Cr. 6. Repeatable. F.S.SS.
Prereq: Completion of Industrial design studio or permission of instructor.
Professional industrial design, off-campus experience.

Courses for graduate students:

IND D 601: Graduate Project I
(0-12) Cr. 6. F.
Prereq: IND D 632
Advanced creative component in specialized area of focus within industrial design. Culminates in a development plan and supporting documentary.

IND D 602: Graduate Project II
(0-12) Cr. 6. S.
Prereq: IND D 601
Advanced creative component in specialized area of focus within industrial design. Culminates in a physical or digital artifact and supporting documentation.

IND D 631: Design Research Methods
(3-0) Cr. 3. F.
Prereq: Admission into the Graduate Intensive Track, graduate standing in the industrial design program, or permission of instructor.
Cross-disciplinary research methods to examine the impact of industrial design on humans, environments, and social contexts. Examination and critique of current research methods employed in the field, and application of a selection of these methods to a variety of research questions.

IND D 632: Thesis Preparation
(3-0) Cr. 3. S.
Prereq: IND D 631
Exploration and formulation of graduate thesis or project topics, with proposed studies and investigations. Introduction to structuring a design research prospectus and university requirements for graduation. Determine Faculty Committee and Program of Study and file forms with Graduate College.

IND D 699: Thesis
(0-12) Cr. 6. Repeatable. F.S.SS.
Prereq: IND D 632
Advanced research component in specialized area of focus within industrial design. Culminates in a thesis document.