Twin Cities Campus
Advanced Wearable Products Post-Baccalaureate Certificate
Design, Housing & Apparel
College of Design

Link to a list of faculty for this program.

Contact Information:
240 McNeal Hall, 1985 Buford Ave, St. Paul, MN 55108
Email: dhagrad@umn.edu
Website: http://dha.design.umn.edu/programs/grad/index.html

• Program Type: Post-baccalaureate credit certificate/licensure/endorsement
• Requirements for this program are current for Fall 2018
• Length of program in credits: 12
• This program does not require summer semesters for timely completion.
• N/A
• Degree: Advanced Wearable Products PBacc Certificate

Along with the program-specific requirements listed below, please read the General Information section of the catalog website for requirements that apply to all major fields.

The Advanced Wearable Products certificate is a supplemental curriculum intended to provide and deepen interdisciplinary skills and knowledge related to the design, development, and assessment of wearable functional products including wearable technology, functional clothing, and personal protective equipment.

Accreditation
This program is accredited by N/A

Program Delivery
This program is available:
• via classroom (the majority of instruction is face-to-face)

Prerequisites for Admission
Required: undergraduate degree in a related discipline.

For an online application or for more information about graduate education admissions, see the General Information section of the catalog website.

Program Requirements
Use of 4xxx courses toward program requirements is permitted under certain conditions with adviser approval.

Coursework
Take 12 or more credit(s) from the following:
• DES 5185 - Human Factors in Design (3.0 cr)
• APST 5224 - Functional Clothing Design (4.0 cr)
• DES 8151 - Product Development: Theory and Practice (3.0 cr)
• ADES 4196 - Internship in Apparel Design (1.0 - 4.0 cr)
• DES 5188 - Anthropometrics, Sizing & Fit (4.0 cr)
Twin Cities Campus
Architecture M.Arch.
School of Architecture
College of Design

Link to a list of faculty for this program.

Contact Information:
School of Architecture, College of Design, University of Minnesota, 145 Rapson Hall, 89 Church Street S.E., Minneapolis, MN 55455
(612-624-7866; fax: 624-5743)
Website: http://arch.design.umn.edu

- Program Type: Master's
- Requirements for this program are current for Fall 2018
- Length of program in credits: 59 to 90
- This program does not require summer semesters for timely completion.
- Degree: Master of Architecture

Along with the program-specific requirements listed below, please read the General Information section of the catalog website for requirements that apply to all major fields.

Architecture encompasses the making and study of the buildings and environments that we inhabit. The concerns of architecture involve a wide variety of areas of study, including the art of representing built projects through drawings and computer graphics; the technology of building structure, building materials, and natural and mechanical systems; the history, theory, and art of making, using, and understanding buildings as cultural artifacts for human use; and the practice of architecture in the context of sustainable environmental systems, urban form, and business economics. The School of Architecture offers one accredited professional degree, the Master of Architecture (M.Arch.), and a non-professional research degree, the Master of Science (MS) in architecture, with four potential tracks: heritage conservation and preservation, metropolitan design, research practices, and sustainable design.

The Master of Architecture degree is the accredited three-year professional program that prepares students for licensure and practice in the discipline of architecture as a speculative, analytic, and investigative endeavor. Through rigorous methods of inquiry developed in the design studio, lectures, and seminars, students acquire the breadth of knowledge required of the professional architect, including: the techniques and processes of representation, communication, and analysis; the history and theory of making architecture and urban form for human use; and the technology, systems, processes, and economics of construction and practice. The 90-credit M.Arch. professional degree program is accredited by the National Architectural Accrediting Board (NAAB). A portfolio for admission is required.

The Master of Science in architecture is a nonprofessional degree offering advanced studies and research methods in heritage conservation and preservation, metropolitan design, research practices, or sustainable design. The nonprofessional MS in architecture seeks advanced students from architecture, building science, art history, geography, archaeology, landscape architecture, environmental design, or related disciplines to pursue multidisciplinary graduate study and research in sustainable building practices and historic preservation. The School of Architecture also offers a concurrent degree program that combines the M.Arch. professional degree and the MS in architecture. Students may take a total of 24 credits in common between the two academic programs. See information on the MS in architecture for degree requirements.

Program Delivery
This program is available:
- via classroom (the majority of instruction is face-to-face)

Prerequisites for Admission
The preferred undergraduate GPA for admittance to the program is 3.00.

Applicants must submit their test score(s) from the following:
- GRE

International applicants must submit score(s) from one of the following tests:
- TOEFL
  - Internet Based - Total Score: 79
  - Internet Based - Writing Score: 21
  - Internet Based - Reading Score: 19
  - Paper Based - Total Score: 550
- IELTS

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Information current as of August 31, 2018
- Total Score: 6.5
- MELAB
- Final score: 80

Key to test abbreviations (GRE, TOEFL, IELTS, MELAB).

For an online application or for more information about graduate education admissions, see the General Information section of the catalog website.

Program Requirements

Plan C: Plan C requires 59 to 90 major credits and up to null credits outside the major. There is no final exam. A capstone project is required.

Capstone Project: The Master's Final Project is a 10-credit studio-based design exploration under the supervision of a studio faculty mentor.

This program may not be completed with a minor.

Use of 4xxx courses towards program requirements is not permitted.

A minimum GPA of 2.80 is required for students to remain in good standing.

At least 4 semesters must be completed before filing a Degree Program Form.

Advanced placement into the second year is possible for students with a Bachelor of Science or other pre-professional degree and excellent English language proficiency.

Required Coursework (61 credits)
Take the following required courses for a total of 61 credits:
ARCH 5411 - Principles of Design Theory (3.0 cr)
ARCH 5412 - Architecture: A Global and Cultural History (3.0 cr)
ARCH 5561 - Tech 1, Structures for Building (3.0 cr)
ARCH 5562 - Tech 2, Intro to Building Technology (3.0 cr)
ARCH 5563 - Tech 3: Advanced Building Technology Integrated Building Systems (3.0 cr)
ARCH 5564 - Tech 4: Building Structural Systems (3.0 cr)
ARCH 5621 - Professional Practice in Architecture (3.0 cr)
ARCH 8251 - Graduate Architectural Design I (9.0 cr)
ARCH 8253 - Graduate Architectural Design III (6.0 cr)
ARCH 8255 - Graduate Architectural Design V (6.0 cr)
ARCH 8299 - Master's Final Project (10.0 cr)
ARCH 5518 - Environmental Technology: Integrative Ecological Design for Responsive Architecture (3.0 cr)
ARCH 5413 - Modern and Contemporary Global Architecture (3.0 cr)
ARCH 8254 - Technical Applications in Design (3.0 cr)

Project Modules (9 credits)
Take 9 credits (3 courses) from the following:
ARCH 5250 - Advanced Topics in Design (1.0 - 6.0 cr)
or ARCH 8250 - Advanced Topics in Design (1.0 - 6.0 cr)

Catalysts (2 credits)
Take the following course twice for a total of 2 credits:
ARCH 5110 - Architecture as Catalyst (1.0 cr)

Electives (18 credits)
Take 18 credits of Architecture electives. At least 3 credits must be in ARCH 54xx or 84xx.
Arch 5xxx
or Arch 8xxx

Advanced Standing (59 credits)
Students with a Bachelor of Science in Architecture may be eligible for a waiver of the required first-year coursework.

Required Courses (40 credits)
Take the following courses for 40 credits:
ARCH 5563 - Tech 3: Advanced Building Technology Integrated Building Systems (3.0 cr)
ARCH 5564 - Tech 4: Building Structural Systems (3.0 cr)
ARCH 5621 - Professional Practice in Architecture (3.0 cr)
ARCH 8253 - Graduate Architectural Design III (6.0 cr)
ARCH 8255 - Graduate Architectural Design V (6.0 cr)
ARCH 8299 - Master's Final Project (10.0 cr)
ARCH 8254 - Technical Applications in Design (3.0 cr)
ARCH 5411 - Principles of Design Theory (3.0 cr)
ARCH 5413 - Modern and Contemporary Global Architecture (3.0 cr)

Project Modules (3 credits)
Take one of the following courses once for 3 credits:
ARCH 5250 - Advanced Topics in Design (1.0 - 6.0 cr)
or ARCH 8250 - Advanced Topics in Design (1.0 - 6.0 cr)

Catalysts (1 credit)
Take the following course for 1 credit:
ARCH 5110 - Architecture as Catalyst (1.0 cr)
Take 15 credits of Architecture electives. At least 3 credits must be in ARCH 54xx or 84xx.
Arch 5xxx
or Arch 8xxx

Joint- or Dual-degree Coursework: M.Arch/M.S.-Architecture
Student may take a total of 24 credits in common among the academic programs.
Twin Cities Campus
Architecture M.S.
School of Architecture
College of Design

Link to a list of faculty for this program.

Contact Information:
School of Architecture, University of Minnesota, 145 Rapson Hall, 89 Church Street SE, Minneapolis, MN 55455 (612-624-7866; fax: 612-624-5743)
Email: archinfo@umn.edu
Website: http://arch.cdes.umn.edu

- Program Type: Master's
- Requirements for this program are current for Fall 2018
- Length of program in credits: 30 to 34
- This program does not require summer semesters for timely completion.
- Degree: Master of Science

Along with the program-specific requirements listed below, please read the General Information section of the catalog website for requirements that apply to all major fields.

The School of Architecture offers four distinct master of science in architecture degrees:
1) MS in architecture, sustainable design track (plan A or B);
2) MS in architecture, heritage conservation and preservation track (plan A or B);
3) MS in architecture, metropolitan design track (plan A, B, or C); and,
4) MS in architecture, research practices track (plan C only).

Each of the above has its own unique application requirements, prerequisites, and curriculum structure. Prospective applicants are encouraged to consult the degree programs section of the School of Architecture website for additional information: http://arch.design.umn.edu. Students who successfully complete the a master of science in architecture degree are eligible to receive 936 hours of IDP credit that is 17% of the 5,600 hours of mandatory internship for registration as an architect. To receive the IDP credit, the MS degree must be earned after receiving the M.Arch degree. The MS metropolitan design track requires summer semester coursework. The other three MS tracks do not require summer semester work.

Program Delivery
This program is available:
- via classroom (the majority of instruction is face-to-face)

Prerequisites for Admission
Other requirements to be completed before admission:
Each of the master of science in architecture programs has its own unique application requirements, prerequisites, and curriculum structure. Prospective applicants are encouraged to consult the degree programs section of the School of Architecture website for additional information: http://arch.design.umn.edu.

Applicants must submit their test score(s) from the following:
- GRE

International applicants must submit score(s) from one of the following tests:
- TOEFL
- IELTS
- MELAB

Key to test abbreviations (GRE, TOEFL, IELTS, MELAB).

For an online application or for more information about graduate education admissions, see the General Information section of the catalog website.
Program Requirements

Plan A: Plan A requires 18 major credits, 6 credits outside the major, and 10 thesis credits. The final exam is oral.

Plan B: Plan B requires 27 to 28 major credits and 6 credits outside the major. The final exam is oral.

Plan C: Plan C requires 24 to 30 major credits and 0 to 6 credits outside the major. The final exam is oral.

This program may be completed with a minor.

Use of 4xxx courses toward program requirements is permitted under certain conditions with adviser approval.

Joint- or Dual-degree Coursework: M.Arch/MS-ArchitectureMLA/MS-Architecture Student may take a total of 24 credits in common among the academic programs.

Program Sub-plans

A sub-plan is not required for this program.

Students may not complete the program with more than one sub-plan.

Sustainable Design

This sub-plan is limited to students completing the program under Plan A or Plan B.

The sustainable design track of the MS admits from diverse design and environmental backgrounds. Candidates for the program include, practicing design professionals, architecture graduate students, engineering and environmental science professionals, and related disciplines. Ideal applicants will have a clear sustainable design research agenda, experience in environmental design or design production, and a desire to develop new knowledge in the sustainable design field.

The sustainable design track's goals are to foster sustainable design education, research, and practice and to create a significant positive impact on sustainable design in the region and nation. It will achieve these goals by providing courses and research opportunities that:

- Promote excellence and innovations in regional and global ecological design practice and research.
- Contribute to the evolving and emerging sustainable design practice and research knowledge base, which includes ecological, environmental, social, and economic issues and impacts.
- Provide architectural designers and researchers with qualitative and quantitative knowledge, methods, and tools to implement sustainable design in professional practice.

Required Coursework

Take the following courses for a total of 12 credits:
- ARCH 8561 - Sustainable Design Theory and Practice (3.0 cr)
- ARCH 8567 - Site and Water Issues in Sustainable Design (3.0 cr)
- ARCH 8563 - Energy and Indoor Environmental Quality Issues in Sustainable Design (3.0 cr)
- ARCH 8565 - Materials Performance in Sustainable Building (3.0 cr)

Architectural Electives

Take at least 6 ARCH elective credits, in consultation with the advisor or director of graduate studies.

Arch Electives

Take 6 - 7 credit(s) from the following:
- ARCH 5521 - Material Investigation: Concrete (4.0 cr)
- ARCH 5523 - Material Investigation: Steel and Glass (4.0 cr)
- ARCH 5527 - Material Investigations: Stone and Water (4.0 cr)
- ARCH 5541 - Material Strategies (3.0 cr)

Electives Outside Architecture

Take at least 6 credits outside the major, in consultation with the advisor or director of graduate studies.

Take 6 - 7 credit(s) from the following:
- SSM 5414 - Advanced Residential Building Science (4.0 cr)
- DES 5168 - Evidence-Based Design (3.0 cr)
- EEB 5053 - Ecology: Theory and Concepts (4.0 cr)
- ESPM 5242 - Methods for Environmental and Natural Resource Policy Analysis (3.0 cr)
- ESPM 5245 - Sustainable Land Use Planning and Policy (3.0 cr)
- ESPM 5251 - Natural Resources in Sustainable International Development (3.0 cr)
- ESPM 5256 - Natural Resource Law and the Management of Public Lands and Waters (3.0 cr)
- ESPM 5261 - Economics and Natural Resources Management (4.0 cr)
- ESPM 5603 - Environmental Life Cycle Analysis (3.0 cr)
• ESPM 5605 - Recycling: Extending Raw Materials Supplies (3.0 cr)
• HSCI 5244 - Nature's History: Science, Humans, and the Environment (3.0 cr)
• LA 5413 - Introduction to Landscape Architectural History (3.0 cr)
• LA 5514 - Making the Mississippi (3.0 cr)
• PA 5211 - Land Use Planning (3.0 cr)
• PA 5253 - Designing Planning and Participation Processes (3.0 cr)
• PA 5271 - Geographic Information Systems: Applications in Planning and Policy Analysis (3.0 cr)
• PA 5511 - Community Economic Development (3.0 cr)
• PA 5721 - Energy Systems and Policy (3.0 cr)
• PA 5722 - Economics of Natural Resource and Environmental Policy (3.0 cr)
• PA 8203 - Neighborhood Revitalization Strategies and Theories (4.0 cr)
• PSY 5960 - Topics in Psychology (1.0 - 4.0 cr)

Plan A Requirements
Take 10 master's thesis credits.
ARCH 8777 - Thesis Credits: Master's (1.0 - 18.0 cr)

Plan B Requirements
Take at least 10 additional credits, in consultation with the advisor or director of graduate studies.

Additional credits
Take 10 - 11 credit(s) from the following:
• ARCH 5521 - Material Investigation: Concrete (4.0 cr)
  or ARCH 5523 - Material Investigation: Steel and Glass (4.0 cr)
  or ARCH 5527 - Material Investigations: Stone and Water (4.0 cr)
  or ARCH 5541 - Material Strategies (3.0 cr)
  or SSM 5414 - Advanced Residential Building Science (4.0 cr)
  or DES 5188 - Evidence-Based Design (3.0 cr)
  or ESPM 5242 - Methods for Environmental and Natural Resource Policy Analysis (3.0 cr)
  or ESPM 5245 - Sustainable Land Use Planning and Policy (3.0 cr)
  or ESPM 5251 - Natural Resources in Sustainable International Development (3.0 cr)
  or ESPM 5256 - Natural Resource Law and the Management of Public Lands and Waters (3.0 cr)
  or ESPM 5261 - Economics and Natural Resources Management (4.0 cr)
  or ESPM 5603 - Environmental Life Cycle Analysis (3.0 cr)
  or ESPM 5605 - Recycling: Extending Raw Materials Supplies (3.0 cr)
  or HSCI 5244 - Nature's History: Science, Humans, and the Environment (3.0 cr)
  or LA 5413 - Introduction to Landscape Architectural History (3.0 cr)
  or LA 5514 - Making the Mississippi (3.0 cr)
  or PA 5211 - Land Use Planning (3.0 cr)
  or PA 5253 - Designing Planning and Participation Processes (3.0 cr)
  or PA 5271 - Geographic Information Systems: Applications in Planning and Policy Analysis (3.0 cr)
  or PA 5511 - Community Economic Development (3.0 cr)
  or PA 5721 - Energy Systems and Policy (3.0 cr)
  or PA 5722 - Economics of Natural Resource and Environmental Policy (3.0 cr)
  or PA 8203 - Neighborhood Revitalization Strategies and Theories (4.0 cr)
  or PSY 5960 - Topics in Psychology (1.0 - 4.0 cr)

Heritage Conservation & Preservation
This sub-plan is limited to students completing the program under Plan A or Plan B.

The heritage conservation and preservation track of the Architecture MS offers courses and research opportunities in the study of the preservation of historic buildings, districts, and landscapes, as well as the design and management of cultural heritage sites. The track explores heritage on several distinct but related levels. It examines the materiality of heritage resources through documentation, diagnosis, and the design of treatment interventions. It also encourages critical analysis and assessment of the cultural values that underlie and define preservation policies, laws, and professional norms. Through fieldwork, case studies, and courses that investigate regional, national, and global heritage, the track focuses on the philosophy, policy, technology, economics, and social implications of heritage preservation.

Required Coursework
Take the following courses for a total of 6 credits:

ARCH 5671 - Historic Preservation (3.0 cr)
ARCH 5673 - Historic Property Research and Documentation (3.0 cr)

Heritage Conservation and Preservation Electives
Take 2 courses from the following list for at least 6 credits:
ARCH 5410 - Topics in Architectural History (3.0 cr)
ARCH 5411 - Principles of Design Theory (3.0 cr)
ARCH 5412 - Architecture: A Global and Cultural History (3.0 cr)
ARCH 5670 - Topics in Historic Preservation (1.0 - 3.0 cr)
ARCH 5672 - Historic Building Conservation (3.0 cr)
ARCH 5674 - World Heritage Conservation (3.0 cr)
ARCH 5676 - Economics of Heritage Preservation (3.0 cr)
ARCH 5677 - Preservation of the Vernacular Built Environment and Cultural Landscape (3.0 cr)
ARCH 5678 - Preservation & Sustainability (3.0 cr)

Architecture Electives
Take at least 6 ARCH elective credits, in consultation with the advisor or director of graduate studies.
Take 6 - 7 credit(s) from the following:
- ARCH 5441 - Minnesota: Architecture and Landscapes (3.0 cr)
- ARCH 5711 - Theory and Principles of Urban Design (3.0 cr)
- ARCH 4435 - History of American Architecture (3.0 cr)
- ARCH 5609 - Development and Implementation of Research (3.0 cr)

Electives Outside Architecture
Take at least 6 credits outside the major, in consultation with the advisor or director of graduate studies.
Take 6 - 7 credit(s) from the following:
- ESPM 5245 - Sustainable Land Use Planning and Policy (3.0 cr)
- LA 5413 - Introduction to Landscape Architectural History (3.0 cr)
- LA 5514 - Making the Mississippi (3.0 cr)
- PA 5211 - Land Use Planning (3.0 cr)
- PA 5253 - Designing Planning and Participation Processes (3.0 cr)
- PA 5271 - Geographic Information Systems: Applications in Planning and Policy Analysis (3.0 cr)
- PA 5511 - Community Economic Development (3.0 cr)
- PA 5221 - Private Sector Development (3.0 cr)
- PA 8203 - Neighborhood Revitalization Strategies and Theories (4.0 cr)
- HSG 8463 - Housing: Race and Class (3.0 cr)
- MST 5011 - Museum History and Philosophy (3.0 cr)
- MST 5012 - Museum Practices (3.0 cr)

Plan A Requirements
Take 10 master's thesis credits.
ARCH 8777 - Thesis Credits: Master's (1.0 - 18.0 cr)

Plan B Requirements
Take an additional 9 to 10 credits, in consultation with the advisor or director of graduate studies.
Take 9 - 10 credit(s) from the following:
- ARCH 5441 - Minnesota: Architecture and Landscapes (3.0 cr)
- ARCH 5711 - Theory and Principles of Urban Design (3.0 cr)
- ARCH 5435 - History of American Architecture (3.0 cr)
- ESPM 5245 - Sustainable Land Use Planning and Policy (3.0 cr)
- LA 5413 - Introduction to Landscape Architectural History (3.0 cr)
- LA 5514 - Making the Mississippi (3.0 cr)
- PA 5211 - Land Use Planning (3.0 cr)
- PA 5253 - Designing Planning and Participation Processes (3.0 cr)
- PA 5271 - Geographic Information Systems: Applications in Planning and Policy Analysis (3.0 cr)
- PA 5511 - Community Economic Development (3.0 cr)
- PA 5221 - Private Sector Development (3.0 cr)
- PA 8203 - Neighborhood Revitalization Strategies and Theories (4.0 cr)
- HSG 8463 - Housing: Race and Class (3.0 cr)
- MST 5011 - Museum History and Philosophy (3.0 cr)
- MST 5012 - Museum Practices (3.0 cr)

Metropolitan Design
This sub-plan is limited to students completing the program under Plan A, Plan B, or Plan C.

The metropolitan design track of the architecture MS is an advanced program intended for individuals who are keenly interested in the study of cities and their metropolitan regions. The track combines strong design instruction supported by applied research courses in urban design history and theory. The objective is to train students to work across a large range of urban scales and become familiar with the social, ecological, economic, and political interactions that eventually shape the quality of city living. It is open to professionals from the design disciplines and provides concurrent options for graduate students enrolled in the M.Arch and MLA professional programs. Concurrent students must graduate from the Architecture MS (metropolitan design track) after they have successfully completed their professional programs.

Required Coursework
Take the following courses for a total of 12 credits:
ARCH 5711 - Theory and Principles of Urban Design (3.0 cr)
ARCH 5721 - Case Studies in Urban Design (3.0 cr)
ARCH 8255 - Graduate Architectural Design V (6.0 cr)

Electives Outside Architecture
Take at least 6 credits outside the major, in consultation with the advisor or director of graduate studies.
Take 6 - 7 credit(s) from the following:
• PA 5501 - Theories and Policies of Development (3.0 cr)
• PA 5511 - Community Economic Development (3.0 cr)
• PA 8203 - Neighborhood Revitalization Strategies and Theories (4.0 cr)
• HSG 5467 - Housing and the Social Environment (4.0 cr)
• HSG 8463 - Housing: Race and Class (3.0 cr)
• HSG 5463 - Housing Policy (3.0 cr)
• LA 5405 - Interdisciplinary Studies in Landscape Architecture (1.0 - 6.0 cr)
• LA 5204 - Metropolitan Landscape Ecology (3.0 cr)
• PA 5721 - Energy Systems and Policy (3.0 cr)
• PA 5722 - Economics of Natural Resource and Environmental Policy (3.0 cr)
• PA 5723 - Water Policy (3.0 cr)
• PA 5204 - Urban Spatial and Social Dynamics (3.0 cr)
• PA 5211 - Land Use Planning (3.0 cr)
• PA 5212 - Managing Urban Growth and Change (3.0 cr)
• PA 5231 - Transit Planning and Management (3.0 cr)
• PA 5261 - Housing Policy (3.0 cr)
• PA 5802 - Global Economic Policy (3.0 cr)
• PA 8202 - Networks and Places: Transportation, Land Use, and Design (4.0 cr)

Remaining Electives
Take elective credits from the following list, in consultation with the advisor or director of graduate studies, to meet minimum major and total course credit requirements:
Take 6 - 7 credit(s) from the following:
• ARCH 5410 - Topics in Architectural History (3.0 cr)
• ARCH 5441 - Minnesota: Architecture and Landscapes (3.0 cr)
• ARCH 5731 - Territorial City (3.0 cr)
• ARCH 5671 - Historic Preservation (3.0 cr)
• ARCH 5361 - 3-D Computer Architectural Modeling and Design (3.0 cr)
• ARCH 5750 - Topics in Urban Design (1.0 - 4.0 cr)
• PA 5511 - Community Economic Development (3.0 cr)
• PA 8203 - Neighborhood Revitalization Strategies and Theories (4.0 cr)
• HSG 5467 - Housing and the Social Environment (4.0 cr)
• HSG 8463 - Housing: Race and Class (3.0 cr)
• LA 5405 - Interdisciplinary Studies in Landscape Architecture (1.0 - 6.0 cr)
• ARCH 8561 - Sustainable Design Theory and Practice (3.0 cr)
• LA 5204 - Metropolitan Landscape Ecology (3.0 cr)
• PA 5721 - Energy Systems and Policy (3.0 cr)
• PA 5722 - Economics of Natural Resource and Environmental Policy (3.0 cr)
• PA 5723 - Water Policy (3.0 cr)
• PA 5204 - Urban Spatial and Social Dynamics (3.0 cr)
• PA 5211 - Land Use Planning (3.0 cr)
• PA 5212 - Managing Urban Growth and Change (3.0 cr)
• PA 5231 - Transit Planning and Management (3.0 cr)
• PA 5261 - Housing Policy (3.0 cr)
• PA 5802 - Global Economic Policy (3.0 cr)
• PA 8202 - Networks and Places: Transportation, Land Use, and Design (4.0 cr)

Plan A Requirements
Take 10 master's thesis credits.
ARCH 8777 - Thesis Credits: Master's (1.0 - 18.0 cr)

Research Practices
This sub-plan is limited to students completing the program under Plan C.

The Research Practices track addresses two goals: providing a structured path to licensure totaling seven years, and integrating research with practice.

MS-RP students are required to maximize their progress toward completing the Architectural Experience Program (AXP) during their MS program. This means work in a firm or other AXP setting is required while enrolled in the program, including each semester and summer between semesters. Exceptions will be made for extraordinary circumstances (such as grant-funded research or personal...
situation).

**Required Coursework**
Take the following courses for a total of 18 credits:
- ARCH 5609 - Development and Implementation of Research (3.0 cr)
- ARCH 5621 - Professional Practice in Architecture (3.0 cr)
- ARCH 5651 - Building Stories (3.0 cr)
- ARCH 5686 - Research Practices Final Project: Research into Practice (4.0 cr)
- ARCH 5687 - Research Practices Final Project: Practice into Research (4.0 cr)
- ARCH 5688 - Research Practices Final Project: Representation of Case Studies (1.0 cr)

**Required Practicum**
Take the following course twice:
- ARCH 5630 - Practicum: Advanced Issues in Practice (3.0 cr)

**Electives**
Take two 3-credit elective courses from architecture or non-architecture offerings, in consultation with the adviser or director of graduate studies.
- ARCH 5xxx
- ARCH 8xxx
- xxxx 5xxx
- xxxx 6xxx
- xxxx 7xxx
- xxxx 8xxx
Twin Cities Campus
Design M.A.
Design, Housing & Apparel
College of Design

Link to a list of faculty for this program.

Contact Information:
Design Graduate Program, 240 McNeal Hall, 1985 Buford Avenue, St. Paul, MN 55108.
Email: dhagrad@umn.edu
Website: http://dha.design.umn.edu/programs/grad

- Program Type: Master's
- Requirements for this program are current for Fall 2018
- Length of program in credits: 34
- This program does not require summer semesters for timely completion.
- Degree: Master of Arts

Along with the program-specific requirements listed below, please read the General Information section of the catalog website for requirements that apply to all major fields.

The design graduate program focuses on the study of relationships between humans and their designed environments. This focus is based on the assumption that design and analysis of environments contributes to the improvement of the human condition. The program addresses theory, research, and application, using a shared disciplinary base from the arts and social and behavioral sciences. The goal of the program is for students to analyze, evaluate, and integrate theoretical frameworks related to humans and their designed environments.

Applications submitted to the design graduate program specify a track and degree objective. Formal tracks are:
- Apparel studies (including dress, history, and culture; product development; and retail merchandising and consumer studies)
- Graphic design
- Housing studies
- Interior design

Program Delivery
This program is available:
- via classroom (the majority of instruction is face-to-face)

Prerequisites for Admission
The preferred undergraduate GPA for admittance to the program is 3.00.

Eligibility requirements are located on the track pages of the design graduate program website: http://dha.design.umn.edu/programs/grad.

Special Application Requirements:
Application requirements: http://dha.design.umn.edu/programs/grad/admissions.html

Applicants must submit their test score(s) from the following:
- GRE
  - General Test - Verbal Reasoning: 153
  - General Test - Quantitative Reasoning: 144
  - General Test - Analytical Writing: 4

International applicants must submit score(s) from one of the following tests:
- TOEFL
  - Internet Based - Total Score: 79
  - Internet Based - Writing Score: 21
  - Internet Based - Reading Score: 19
  - Paper Based - Total Score: 550

The preferred English language test is Test of English as Foreign Language.

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The University of Minnesota is an equal opportunity educator and employer.
Information current as of August 31, 2018
Key to test abbreviations (GRE, TOEFL).

For an online application or for more information about graduate education admissions, see the General Information section of the catalog website.

Program Requirements

Plan A: Plan A requires 18 major credits, 6 credits outside the major, and 10 thesis credits. The final exam is oral.

Plan B: Plan B requires 28 major credits and 6 credits outside the major. The final exam is oral.

This program may be completed with a minor.

Use of 4xxx courses toward program requirements is permitted under certain conditions with adviser approval.

A minimum GPA of 2.80 is required for students to remain in good standing.

At least 2 semesters must be completed before filing a Degree Program Form.

Students may be required to complete additional credits upon recommendation of their committee.

Design Program Core Requirements

DES 8181 - Research Ethics (1.0 cr)

Related Field Coursework

Students are required to take a minimum of 6 credits in a related field. Courses are selected with the approval of the advisor and committee.

Program Sub-plans

Students are required to complete one of the following sub-plans. Students may not complete the program with more than one sub-plan.

Apparel Studies

The apparel studies track advances both theoretical knowledge and applications for textile and apparel products and their relationship to human behavior using a design lens. Students may focus on product development; dress, history, and culture; or retail merchandising and consumer studies. Within each of these areas of emphasis within the track, the student completes related coursework as well as research or creative production that culminates in a thesis. The MA degree is focused on the arts and humanities and is appropriate for the dress, history, and culture emphasis.

Evaluation and Analysis Coursework

Students are required to take a minimum of 6 credits in evaluation and analysis. Students may take other courses with the approval of the advisor and committee.

Take 6 or more credit(s) from the following:
- DES 8102 - Quantitative Research Methods (3.0 cr)
- DES 8103 - Qualitative and Mixed Methods Research (3.0 cr)

Concentration

Dress, History, and Culture

Theory and Philosophy Coursework

Students take a minimum of 3 credits in this category.
DES 8164 - Innovation Theory and Analysis (3.0 cr)
or DES 8112 - Design Theory (3.0 cr)

Plan A Requirements

Take 8 or more credit(s) from the following:
- APST 5193 - Directed Study in Apparel Studies (1.0 - 4.0 cr)
- APST 5218 - Fashion, Design, and the Global Industry (3.0 cr)
- APST 8192 - Readings in Apparel Studies (1.0 - 3.0 cr)
- APST 8193 - Directed Study (1.0 - 3.0 cr)
• APST 8267 - Dress and Culture (3.0 cr)
• APST 8268 - Behavioral Aspects of Dress (3.0 cr)
• DES 5165 - Design and Globalization (3.0 cr)
• DES 8112 - Design Theory (3.0 cr)
• DES 8113 - Teaching and Assessment (2.0 cr)
• DES 8115 - Grant Writing (2.0 cr)
• DES 8164 - Innovation Theory and Analysis (3.0 cr)
• DES 8166 - Material Culture and Design (3.0 cr)
• DES 8167 - Aesthetics of Design (3.0 cr)

**Thesis credits**
Students take a minimum of 10 thesis credits.
• DES 8777 - Thesis Credits: Master's (1.0 - 18.0 cr)

**or Plan B Requirements**
All Plan B Master's students are required to register for DES 8222, Plan B Master's Project, the last semester of the program.
Take 15 or more credit(s) from the following:
• APST 5193 - Directed Study in Apparel Studies (1.0 - 4.0 cr)
• APST 5218 - Fashion, Design, and the Global Industry (3.0 cr)
• APST 8192 - Readings in Apparel Studies (1.0 - 3.0 cr)
• APST 8193 - Directed Study (1.0 - 3.0 cr)
• APST 8267 - Dress and Culture (3.0 cr)
• APST 8268 - Behavioral Aspects of Dress (3.0 cr)
• DES 5165 - Design and Globalization (3.0 cr)
• DES 8112 - Design Theory (3.0 cr)
• DES 8113 - Teaching and Assessment (2.0 cr)
• DES 8115 - Grant Writing (2.0 cr)
• DES 8164 - Innovation Theory and Analysis (3.0 cr)
• DES 8166 - Material Culture and Design (3.0 cr)
• DES 8167 - Aesthetics of Design (3.0 cr)

**Plan B Master's Project**
Students take a minimum of 3 credits in this category.
• APST 8222 - Plan B Master's Project (3.0 cr)

**OR**

**Product Development**

**Theory and Philosophy Coursework**
Students take a minimum of 3 credits in this category.
DES 8112 - Design Theory (3.0 cr)

**or** DES 8164 - Innovation Theory and Analysis (3.0 cr)

**Plan A Requirements**
Take 8 or more credit(s) from the following:
• APST 5193 - Directed Study in Apparel Studies (1.0 - 4.0 cr)
• APST 5218 - Fashion, Design, and the Global Industry (3.0 cr)
• APST 5224 - Functional Clothing Design (4.0 cr)
• APST 8192 - Readings in Apparel Studies (1.0 - 3.0 cr)
• APST 8193 - Directed Study (1.0 - 3.0 cr)
• DES 5185 - Human Factors in Design (3.0 cr)
• DES 8113 - Teaching and Assessment (2.0 cr)
• DES 8114 - Design Studio (4.0 cr)
• DES 8115 - Grant Writing (2.0 cr)
• DES 8151 - Product Development: Theory and Practice (3.0 cr)
• DES 8166 - Material Culture and Design (3.0 cr)
• DES 8167 - Aesthetics of Design (3.0 cr)
• GDES 8361 - Color, Design, and Human Perception (3.0 cr)

**Thesis Credits**
Students take a minimum of 10 thesis credits.
• DES 8777 - Thesis Credits: Master's (1.0 - 18.0 cr)

**or Plan B Requirements**
Plan B Master's students are required to take DES 8222, Master's Plan B Project, the final semester of the program.
Take 15 or more credit(s) from the following:
• APST 5193 - Directed Study in Apparel Studies (1.0 - 4.0 cr)
• APST 5218 - Fashion, Design, and the Global Industry (3.0 cr)
• APST 5224 - Functional Clothing Design (4.0 cr)
• APST 8192 - Readings in Apparel Studies (1.0 - 3.0 cr)
• APST 8193 - Directed Study (1.0 - 3.0 cr)
• DES 5185 - Human Factors in Design (3.0 cr)
• DES 8113 - Teaching and Assessment (2.0 cr)
• DES 8114 - Design Studio (4.0 cr)
• DES 8115 - Grant Writing (2.0 cr)
• DES 8151 - Product Development: Theory and Practice (3.0 cr)
• DES 8166 - Material Culture and Design (3.0 cr)
• DES 8167 - Aesthetics of Design (3.0 cr)
• GDES 8361 - Color, Design, and Human Perception (3.0 cr)

• Plan B Master's Project
  Students take a minimum of 3 credits in this category.
  • APST 8222 - Plan B Master's Project (3.0 cr)

-OR-

Retail Merchandising and Consumer Studies

Theory and Philosophy Coursework
  APST 8272 - Digital Consumers: Theories in Retail and Consumer Studies (3.0 cr)

Plan A Requirements
  Take 8 or more credit(s) from the following:
  • APST 5117 - Retail Environments and Human Behavior (3.0 cr)
  • APST 5123 - Living in a Consumer Society (3.0 cr)
  • APST 5193 - Directed Study in Apparel Studies (1.0 - 4.0 cr)
  • APST 8192 - Readings in Apparel Studies (1.0 - 3.0 cr)
  • APST 8193 - Directed Study (1.0 - 3.0 cr)
  • APST 8267 - Dress and Culture (3.0 cr)
  • APST 8268 - Behavioral Aspects of Dress (3.0 cr)
  • APST 8271 - Retailing: Strategic Perspectives (3.0 cr)
  • DES 8113 - Teaching and Assessment (2.0 cr)
  • DES 8115 - Grant Writing (2.0 cr)
  • DES 8151 - Product Development: Theory and Practice (3.0 cr)
  • DES 8166 - Material Culture and Design (3.0 cr)
  • DES 8167 - Aesthetics of Design (3.0 cr)

• Thesis Credits
  Students take a minimum of 10 thesis credits.
  • DES 8777 - Thesis Credits: Master's (1.0 - 18.0 cr)

or Plan B Requirements
  Plan B Master's students are required to take APST 8222, Master's Plan B Project, the final semester of the program.
  Take 15 or more credit(s) from the following:
  • APST 5117 - Retail Environments and Human Behavior (3.0 cr)
  • APST 5123 - Living in a Consumer Society (3.0 cr)
  • APST 5193 - Directed Study in Apparel Studies (1.0 - 4.0 cr)
  • APST 8192 - Readings in Apparel Studies (1.0 - 3.0 cr)
  • APST 8193 - Directed Study (1.0 - 3.0 cr)
  • APST 8267 - Dress and Culture (3.0 cr)
  • APST 8268 - Behavioral Aspects of Dress (3.0 cr)
  • APST 8271 - Retailing: Strategic Perspectives (3.0 cr)
  • DES 8113 - Teaching and Assessment (2.0 cr)
  • DES 8115 - Grant Writing (2.0 cr)
  • DES 8151 - Product Development: Theory and Practice (3.0 cr)
  • DES 8166 - Material Culture and Design (3.0 cr)
  • DES 8167 - Aesthetics of Design (3.0 cr)

• Plan B Master's Project
  Students take a minimum of 3 credits in this category.
  • APST 8222 - Plan B Master's Project (3.0 cr)

Graphic Design
  The track in graphic design focuses on design theory, process, and methods related to design practice and research. Potential areas of study include graphic design history, theory, and critical narrative; design creativity; color and design; user-centered design; design authorship; data visualization; and interactive design.

Theory and Philosophy Coursework
  Students take a minimum of 3 credits in this category.
  DES 8112 - Design Theory (3.0 cr)
  or DES 8164 - Innovation Theory and Analysis (3.0 cr)

Evaluation and Analysis Coursework
  Students take a minimum of 6 credits in this category.
DES 8102 - Quantitative Research Methods (3.0 cr)
or DES 8103 - Qualitative and Mixed Methods Research (3.0 cr)
or GDES 5388 - Graphic Design Research (3.0 cr)

Concentration

Plan A Requirements
Students are required to take DES 8114, and GDES 8361 or GDES 8362.
Take 8 or more credit(s) from the following:
• DES 8113 - Teaching and Assessment (2.0 cr)
• DES 8114 - Design Studio (4.0 cr)
• DES 8115 - Grant Writing (2.0 cr)
• GDES 4131W - History of Graphic Design [WI] (4.0 cr)
• GDES 4330 - Surface Fabric Design Workshop (4.0 cr)
• GDES 4345 - Advanced Typography (4.0 cr)
• GDES 5193 - Directed Study in Graphic Design (1.0 - 4.0 cr)
• GDES 5311 - Illustration (3.0 cr)
• GDES 5341 - Interactive Design (3.0 cr)
• GDES 5342 - Advanced Web Design (3.0 cr)
• GDES 5371 - Data Visualization Studio (3.0 cr)
• GDES 5372 - Data Visualization for Interactive Platforms (3.0 cr)
• GDES 5383 - Digital Illustration and Animation (3.0 cr)
• GDES 5386 - Fundamentals of Game Design (3.0 cr)
• GDES 8192 - Readings in Graphic Design (1.0 - 3.0 cr)
• GDES 8193 - Directed Study (1.0 - 3.0 cr)
• GDES 8361 - Color, Design, and Human Perception (3.0 cr)
• GDES 8362 - The Nature of Representation in Visual Communication (3.0 cr)

Thesis Credits
Students take a minimum of 10 thesis credits.
• DES 8777 - Thesis Credits: Master's (1.0 - 18.0 cr)

-OR-

Plan B Requirements
Students are required to take DES 8114, and GDES 8361 or GDES 8362. Plan B Master's students are required to take GDES 8222, Plan B Master's Project, the last semester of the program.
Take 15 or more credit(s) from the following:
• DES 8113 - Teaching and Assessment (2.0 cr)
• DES 8114 - Design Studio (4.0 cr)
• DES 8115 - Grant Writing (2.0 cr)
• GDES 4131W - History of Graphic Design [WI] (4.0 cr)
• GDES 4330 - Surface Fabric Design Workshop (4.0 cr)
• GDES 4345 - Advanced Typography (4.0 cr)
• GDES 5193 - Directed Study in Graphic Design (1.0 - 4.0 cr)
• GDES 5311 - Illustration (3.0 cr)
• GDES 5341 - Interactive Design (3.0 cr)
• GDES 5342 - Advanced Web Design (3.0 cr)
• GDES 5371 - Data Visualization Studio (3.0 cr)
• GDES 5372 - Data Visualization for Interactive Platforms (3.0 cr)
• GDES 5383 - Digital Illustration and Animation (3.0 cr)
• GDES 5386 - Fundamentals of Game Design (3.0 cr)
• GDES 8192 - Readings in Graphic Design (1.0 - 3.0 cr)
• GDES 8193 - Directed Study (1.0 - 3.0 cr)
• GDES 8361 - Color, Design, and Human Perception (3.0 cr)
• GDES 8362 - The Nature of Representation in Visual Communication (3.0 cr)

Plan B Master's Project
Students take a minimum of 3 credits in this category.
• GDES 8222 - Plan B Master's Project (3.0 cr)

Housing Studies
The housing studies track advances both theoretical and applied knowledge in the housing field. Through research experiences, students are prepared to assist people and communities in addressing housing-related issues. Courses emphasize human needs and behavior, analysis of designed environments, policy and community development, and housing of specific subpopulations such as the elderly or low-income families with children.

Theory and Philosophy: Required Course
HSG 8467 - Theoretical Perspectives in Housing Studies (3.0 cr)

**Evaluation and Analysis Coursework**

Students take a minimum of 6 credits in this category.
Take 6 or more credit(s) from the following:
- DES 8102 - Quantitative Research Methods (3.0 cr)
- DES 8103 - Qualitative and Mixed Methods Research (3.0 cr)
- EPSY 5261 - Introductory Statistical Methods (3.0 cr)

**Concentration**

**Plan A Requirements**

8 credits are required, including at least two courses from the following: HSG 5463, HSG 5467, and HSG 8463.
Take 8 or more credit(s) from the following:
- DES 8113 - Teaching and Assessment (2.0 cr)
- DES 8115 - Grant Writing (2.0 cr)
- HSG 4461 - Housing Development and Management (4.0 cr)
- HSG 4465 - Housing in a Global Perspective (3.0 cr)
- HSG 5170 - Topics in Housing Studies (1.0 - 4.0 cr)
- HSG 5193 - Directed Study in Housing Studies (1.0 - 4.0 cr)
- HSG 5462 - Housing and Community Development (3.0 cr)
- HSG 5463 - Housing Policy (3.0 cr)
- HSG 5467 - Housing and the Social Environment (4.0 cr)
- HSG 5481 - Promoting Independence in Housing and Community (3.0 cr)
- HSG 8170 - Topics in Housing Studies (1.0 - 3.0 cr)
- HSG 8180 - Professional Seminar (1.0 - 2.0 cr)
- HSG 8192 - Readings in Housing Studies (1.0 - 3.0 cr)
- HSG 8193 - Directed Study (1.0 - 3.0 cr)
- HSG 8463 - Housing: Race and Class (3.0 cr)

**Thesis Credits**

Students take a minimum of 10 credits in this category.
DES 8777 - Thesis Credits: Master's (1.0 - 18.0 cr)

**Plan B Requirements**

Students select at least two of the following courses: HSG 5463, HSG 5467, and HSG 8463.
Take 15 or more credit(s) from the following:
- DES 8113 - Teaching and Assessment (2.0 cr)
- DES 8115 - Grant Writing (2.0 cr)
- HSG 4461 - Housing Development and Management (4.0 cr)
- HSG 4465 - Housing in a Global Perspective (3.0 cr)
- HSG 5170 - Topics in Housing Studies (1.0 - 4.0 cr)
- HSG 5193 - Directed Study in Housing Studies (1.0 - 4.0 cr)
- HSG 5462 - Housing and Community Development (3.0 cr)
- HSG 5463 - Housing Policy (3.0 cr)
- HSG 5467 - Housing and the Social Environment (4.0 cr)
- HSG 5481 - Promoting Independence in Housing and Community (3.0 cr)
- HSG 8170 - Topics in Housing Studies (1.0 - 3.0 cr)
- HSG 8180 - Professional Seminar (1.0 - 2.0 cr)
- HSG 8192 - Readings in Housing Studies (1.0 - 3.0 cr)
- HSG 8193 - Directed Study (1.0 - 3.0 cr)
- HSG 8463 - Housing: Race and Class (3.0 cr)

**Plan B Master's Project**

HSG 8222 - Plan B Master's Project (3.0 cr)

**Interior Design**

Graduate study in the interior design track emphasizes the theory, research, and specialized practice components of design as applied to people’s health, safety, and welfare in the interior environment, including design education, sustainability, social/cultural issues, aspects of professional practice, and facilities research (educational, office, criminal justice, and residential). Students are prepared for teaching and research positions as well as design specializations within the profession.

**Theory and Philosophy Coursework**

DES 8112 - Design Theory (3.0 cr)
or DES 8164 - Innovation Theory and Analysis (3.0 cr)
or DES 8166 - Material Culture and Design (3.0 cr)

**Evaluation and Analysis Coursework**
Students should take a minimum of six credits. Statistics course is required and either DES 8102 or DES 8103.

Take 6 or more credit(s) from the following:
- DES 8102 - Quantitative Research Methods (3.0 cr)
- DES 8103 - Qualitative and Mixed Methods Research (3.0 cr)
- EPSY 5261 - Introductory Statistical Methods (3.0 cr)
- EPSY 5262 - Intermediate Statistical Methods (3.0 cr)
- EPSY 8252 - Statistical Methods in Education II (3.0 cr)
- EPSY 8266 - Statistical Analysis Using Structural Equation Methods (3.0 cr)
- EPSY 8267 - Applied Multivariate Analysis (3.0 cr)

Concentration
Take 8 or more credit(s) from the following:
- DES 5165 - Design and Globalization (3.0 cr)
- DES 5168 - Evidence-Based Design (3.0 cr)
- DES 5185 - Human Factors in Design (3.0 cr)
- DES 8113 - Teaching and Assessment (2.0 cr)
- DES 8115 - Grant Writing (2.0 cr)
- IDES 8192 - Readings in Interior Design (1.0 - 3.0 cr)
- IDES 8193 - Directed Study (1.0 - 3.0 cr)
- GDES 8361 - Color, Design, and Human Perception (3.0 cr)

Thesis Credits
Students take a minimum of 10 credits in this category.
- DES 8777 - Thesis Credits: Master's (1.0 - 18.0 cr)
Twin Cities Campus
Design M.F.A.
Design, Housing & Apparel
College of Design

Link to a list of faculty for this program.

Contact Information:
Director of Graduate Studies, Design Graduate Program, 240 McNeal Hall, 1985 Buford Avenue, St. Paul, MN 55108.
Email: dha.grad@umn.edu
Website: http://dha.design.umn.edu/programs/grad

- Program Type: Master's
- Requirements for this program are current for Fall 2018
- Length of program in credits: 60
- This program does not require summer semesters for timely completion.
- Degree: Master of Fine Arts

Along with the program-specific requirements listed below, please read the General Information section of the catalog website for requirements that apply to all major fields.

The design graduate program focuses on the study of relationships between humans and their designed environments. This focus is based on the assumption that design and analysis of environments contributes to the improvement of the human condition. The program addresses theory, research, and application, using a shared disciplinary base from the arts and social and behavioral sciences. The goal of the program is for students to analyze, evaluate, and integrate theoretical frameworks related to humans and their designed environments.

Applications submitted to the design graduate program specify the track and degree objective.

The MFA is available in the graphic design track only.

The track in graphic design focuses on design theory, process, and methods related to design practice and research. Potential areas of study include graphic design history, theory, and critical narrative; design creativity; color and design; user-centered design; design authorship; data visualization; and interactive design.

Program Delivery
This program is available:
- via classroom (the majority of instruction is face-to-face)

Prerequisites for Admission
The preferred undergraduate GPA for admittance to the program is 3.00.

Eligibility requirements are located on the track pages of the design graduate program website:
http://dha.design.umn.edu/programs/grad.

Special Application Requirements:
Application requirements: http://dha.design.umn.edu/programs/grad/admissions.html

Applicants must submit their test score(s) from the following:
- GRE
  - General Test - Verbal Reasoning: 153
  - General Test - Quantitative Reasoning: 144
  - General Test - Analytical Writing: 4

International applicants must submit score(s) from one of the following tests:
- TOEFL
  - Internet Based - Total Score: 79
  - Internet Based - Writing Score: 21
  - Internet Based - Reading Score: 19
  - Paper Based - Total Score: 550
The preferred English language test is Test of English as Foreign Language

Key to test abbreviations (GRE, TOEFL).

For an online application or for more information about graduate education admissions, see the General Information section of the catalog website.

Program Requirements

Plan C: Plan C requires 52 major credits and 8 credits outside the major. The final exam is oral. A capstone project is required.

Capstone Project: MFA coursework and research culminates in a creative thesis, which includes a paper and extensive creative project.

This program may be completed with a minor.

Use of 4xxx courses toward program requirements is permitted under certain conditions with adviser approval.

A minimum GPA of 2.80 is required for students to remain in good standing.

At least 2 semesters must be completed before filing a Degree Program Form.

Students may be required to complete additional credits upon recommendation of their committee.

Design Program Core Requirement

DES 8181 - Research Ethics (1.0 cr)

Related Field

Students are required to take a minimum of 8 credits in a related field. Courses are selected with the approval of the advisor and committee.

Theory and Philosophy

Take 6 or more credit(s) from the following:
- DES 8112 - Design Theory (3.0 cr)
- DES 8164 - Innovation Theory and Analysis (3.0 cr)

Evaluation and Analysis

Take 6 or more credit(s) from the following:
- GDES 5388 - Graphic Design Research (3.0 cr)
- DES 8102 - Quantitative Research Methods (3.0 cr)
- DES 8103 - Qualitative and Mixed Methods Research (3.0 cr)

Concentration

All students are required to take DES 8114, GDES 8361, and GDES 8362.

Take 27 or more credit(s) from the following:
- DES 8113 - Teaching and Assessment (2.0 cr)
- DES 8114 - Design Studio (4.0 cr)
- DES 8115 - Grant Writing (2.0 cr)
- GDES 4131W - History of Graphic Design [WI] (4.0 cr)
- GDES 4330 - Surface Fabric Design Workshop (4.0 cr)
- GDES 4345 - Advanced Typography (4.0 cr)
- GDES 5193 - Directed Study in Graphic Design (1.0 - 4.0 cr)
- GDES 5311 - Illustration (3.0 cr)
- GDES 5341 - Interactive Design (3.0 cr)
- GDES 5342 - Advanced Web Design (3.0 cr)
- GDES 5371 - Data Visualization Studio (3.0 cr)
- GDES 5372 - Data Visualization for Interactive Platforms (3.0 cr)
- GDES 5383 - Digital Illustration and Animation (3.0 cr)
- GDES 5386 - Fundamentals of Game Design (3.0 cr)
- GDES 8192 - Readings in Graphic Design (1.0 - 3.0 cr)
- GDES 8193 - Directed Study (1.0 - 3.0 cr)
- GDES 8361 - Color, Design, and Human Perception (3.0 cr)
- GDES 8362 - The Nature of Representation in Visual Communication (3.0 cr)

MFA Creative Thesis Credits
Take 12 credits or more of the following:
GDES 8990 - MFA Creative Thesis (6.0 cr)

Program Sub-plans
Students are required to complete one of the following sub-plans. Students may not complete the program with more than one sub-plan.

Graphic Design
All Design MMFA students must complete the graphic design track. See program requirements above.
**Twin Cities Campus**  
**Design M.S.**  
**Design, Housing & Apparel**  
**College of Design**

Link to a list of faculty for this program.

**Contact Information:**
Design Graduate Program, 240 McNeal Hall, 1985 Buford Avenue, St. Paul, MN 55108. 
Email: dha@umn.edu 
Website: http://dha.design.umn.edu/programs/grad

- Program Type: Master's
- Requirements for this program are current for Fall 2018
- Length of program in credits: 34
- This program does not require summer semesters for timely completion.
- Degree: Master of Science

Along with the program-specific requirements listed below, please read the General Information section of the catalog website for requirements that apply to all major fields.

The design graduate program focuses on the study of relationships between humans and their designed environments. This focus is based on the assumption that design and analysis of environments contributes to the improvement of the human condition. The program addresses theory, research, and application, using a shared disciplinary base from the arts and social and behavioral sciences. The goal of the program is for students to analyze, evaluate, and integrate theoretical frameworks related to humans and their designed environments.

Applications submitted to the design graduate program specify the track and degree objective.

Formal tracks are:
- Apparel studies (including dress, history, and culture; product development; and retail merchandising and consumer studies)
- Graphic design
- Housing studies
- Interior design

**Program Delivery**
This program is available:  
- via classroom (the majority of instruction is face-to-face)

**Prerequisites for Admission**
The preferred undergraduate GPA for admittance to the program is 3.00.

Eligibility requirements are located on the track pages of the design graduate program website: http://dha.design.umn.edu/programs/grad.

**Special Application Requirements:**
Application requirements: http://dha.design.umn.edu/programs/grad/admissions.html

Applicants must submit their test score(s) from the following:
- GRE
  - General Test - Verbal Reasoning: 144
  - General Test - Quantitative Reasoning: 153
  - General Test - Analytical Writing: 4

International applicants must submit score(s) from one of the following tests:
- TOEFL
  - Internet Based - Total Score: 79
  - Internet Based - Writing Score: 21
  - Internet Based - Reading Score: 19
  - Paper Based - Total Score: 550

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The University of Minnesota is an equal opportunity educator and employer.  
Information current as of August 31, 2018
The preferred English language test is Test of English as Foreign Language

Key to test abbreviations (GRE, TOEFL).

For an online application or for more information about graduate education admissions, see the General Information section of the catalog website.

Program Requirements

**Plan A:** Plan A requires 18 major credits, 6 credits outside the major, and 10 thesis credits. The final exam is oral.

**Plan B:** Plan B requires 28 major credits and 6 credits outside the major. The final exam is oral.

This program may be completed with a minor.

Use of 4xxx courses toward program requirements is permitted under certain conditions with adviser approval.

A minimum GPA of 2.80 is required for students to remain in good standing.

At least 2 semesters must be completed before filing a Degree Program Form.

Students may be required to complete additional credits upon recommendation of their committee.

**Design Program Core Requirement**

DES 8181 - Research Ethics (1.0 cr)

**Related Field Coursework**

Students are required to take a minimum of 6 credits in a related field. Courses are selected with the approval of the advisor and committee.

**Program Sub-plans**

Students are required to complete one of the following sub-plans. Students may not complete the program with more than one sub-plan.

**Apparel Studies**

The apparel studies track advances both theoretical knowledge and applications for textile and apparel products and their relationship to human behavior using a design lens. Students may focus on product development; dress, history, and culture; or retail merchandising and consumer studies. Within each of these areas of emphasis within the track, the student completes related coursework as well as research or creative production that culminates in a thesis. The MS degree is focused in a scientific, social science or technical direction and is appropriate for the product development and the retail merchandising and consumer studies emphasis areas.

**Evaluation and Analysis Coursework**

Students are required to take a minimum of 6 credits in evaluation and analysis. Students may take other courses with the approval of the advisor and committee.

Take 6 or more credit(s) from the following:
- DES 8102 - Quantitative Research Methods (3.0 cr)
- DES 8103 - Qualitative and Mixed Methods Research (3.0 cr)

**Concentration**

**Dress, History, and Culture**

**Theory and Philosophy Coursework**

Students take a minimum of 3 credits in this category.

DES 8164 - Innovation Theory and Analysis (3.0 cr)

or DES 8112 - Design Theory (3.0 cr)

**Plan A Requirements**

Take 8 or more credit(s) from the following:
- APST 5193 - Directed Study in Apparel Studies (1.0 - 4.0 cr)
- APST 5218 - Fashion, Design, and the Global Industry (3.0 cr)
• APST 8192 - Readings in Apparel Studies (1.0 - 3.0 cr)
• APST 8193 - Directed Study (1.0 - 3.0 cr)
• APST 8267 - Dress and Culture (3.0 cr)
• APST 8268 - Behavioral Aspects of Dress (3.0 cr)
• DES 5165 - Design and Globalization (3.0 cr)
• DES 8112 - Design Theory (3.0 cr)
• DES 8113 - Teaching and Assessment (2.0 cr)
• DES 8115 - Grant Writing (2.0 cr)
• DES 8164 - Innovation Theory and Analysis (3.0 cr)
• DES 8166 - Material Culture and Design (3.0 cr)
• DES 8167 - Aesthetics of Design (3.0 cr)

**Thesis credits**
Students take a minimum of 10 thesis credits.
• DES 8777 - Thesis Credits: Master's (1.0 - 18.0 cr)

or **Plan B Requirements**
All Plan B Master's students are required to register for DES 8222 Plan B Master's Project the last semester of the program.
Take 15 or more credit(s) from the following:
• APST 5193 - Directed Study in Apparel Studies (1.0 - 4.0 cr)
• APST 5218 - Fashion, Design, and the Global Industry (3.0 cr)
• APST 8192 - Readings in Apparel Studies (1.0 - 3.0 cr)
• APST 8193 - Directed Study (1.0 - 3.0 cr)
• APST 8267 - Dress and Culture (3.0 cr)
• APST 8268 - Behavioral Aspects of Dress (3.0 cr)
• DES 5165 - Design and Globalization (3.0 cr)
• DES 8112 - Design Theory (3.0 cr)
• DES 8113 - Teaching and Assessment (2.0 cr)
• DES 8115 - Grant Writing (2.0 cr)
• DES 8164 - Innovation Theory and Analysis (3.0 cr)
• DES 8166 - Material Culture and Design (3.0 cr)
• DES 8167 - Aesthetics of Design (3.0 cr)

**Plan B Master's Project**
Students take a minimum of 3 credits in this category.
• APST 8222 - Plan B Master's Project (3.0 cr)

-OR-

**Product Development**

**Theory and Philosophy Coursework**
Students take a minimum of 3 credits in this category.
DES 8112 - Design Theory (3.0 cr)
or DES 8164 - Innovation Theory and Analysis (3.0 cr)

**Plan A Requirements**
Take 8 or more credit(s) from the following:
• APST 5193 - Directed Study in Apparel Studies (1.0 - 4.0 cr)
• APST 5218 - Fashion, Design, and the Global Industry (3.0 cr)
• APST 5224 - Functional Clothing Design (4.0 cr)
• APST 8192 - Readings in Apparel Studies (1.0 - 3.0 cr)
• APST 8193 - Directed Study (1.0 - 3.0 cr)
• DES 5165 - Design and Globalization (3.0 cr)
• DES 8112 - Design Theory (3.0 cr)
• DES 8113 - Teaching and Assessment (2.0 cr)
• DES 8114 - Design Studio (4.0 cr)
• DES 8115 - Grant Writing (2.0 cr)
• DES 8151 - Product Development: Theory and Practice (3.0 cr)
• DES 8166 - Material Culture and Design (3.0 cr)
• DES 8167 - Aesthetics of Design (3.0 cr)
• GDES 8361 - Color, Design, and Human Perception (3.0 cr)

**Thesis Credits**
Students take a minimum of 10 thesis credits.
• DES 8777 - Thesis Credits: Master's (1.0 - 18.0 cr)

or **Plan B Requirements**
Plan B Master's students are required to take DES 8222 Master's Plan B Project the final semester of the program.
Take 15 or more credit(s) from the following:
• APST 5193 - Directed Study in Apparel Studies (1.0 - 4.0 cr)
• APST 5218 - Fashion, Design, and the Global Industry (3.0 cr)
• APST 5224 - Functional Clothing Design (4.0 cr)
• APST 8192 - Readings in Apparel Studies (1.0 - 3.0 cr)
• APST 8193 - Directed Study (1.0 - 3.0 cr)
• DES 5185 - Human Factors in Design (3.0 cr)
• DES 8113 - Teaching and Assessment (2.0 cr)
• DES 8114 - Design Studio (4.0 cr)
• DES 8115 - Grant Writing (2.0 cr)
• DES 8151 - Product Development: Theory and Practice (3.0 cr)
• DES 8166 - Material Culture and Design (3.0 cr)
• DES 8167 - Aesthetics of Design (3.0 cr)
• GDES 8361 - Color, Design, and Human Perception (3.0 cr)

• Plan A Master's Project
  Students take a minimum of 3 credits in this category.
  • APST 8222 - Plan B Master's Project (3.0 cr)

- OR -

Retail Merchandising and Consumer Studies

Theory and Philosophy Coursework
  APST 8272 - Digital Consumers: Theories in Retail and Consumer Studies (3.0 cr)

Plan A Requirements
  Take 8 or more credit(s) from the following:
  • APST 5117 - Retail Environments and Human Behavior (3.0 cr)
  • APST 5123 - Living in a Consumer Society (3.0 cr)
  • APST 5193 - Directed Study in Apparel Studies (1.0 - 4.0 cr)
  • APST 8192 - Readings in Apparel Studies (1.0 - 3.0 cr)
  • APST 8193 - Directed Study (1.0 - 3.0 cr)
  • APST 8267 - Dress and Culture (3.0 cr)
  • APST 8268 - Behavioral Aspects of Dress (3.0 cr)
  • APST 8271 - Retailing: Strategic Perspectives (3.0 cr)
  • DES 8113 - Teaching and Assessment (2.0 cr)
  • DES 8115 - Grant Writing (2.0 cr)
  • DES 8151 - Product Development: Theory and Practice (3.0 cr)
  • DES 8166 - Material Culture and Design (3.0 cr)
  • DES 8167 - Aesthetics of Design (3.0 cr)

• Thesis Credits
  Students take a minimum of 10 thesis credits.
  • DES 8777 - Thesis Credits: Master's (1.0 - 18.0 cr)

or Plan B Requirements
  Plan B Master's students are required to take APSt 8222 Master's Plan B Project the final semester of the program.
  Take 15 or more credit(s) from the following:
  • APST 5117 - Retail Environments and Human Behavior (3.0 cr)
  • APST 5123 - Living in a Consumer Society (3.0 cr)
  • APST 5193 - Directed Study in Apparel Studies (1.0 - 4.0 cr)
  • APST 8192 - Readings in Apparel Studies (1.0 - 3.0 cr)
  • APST 8193 - Directed Study (1.0 - 3.0 cr)
  • APST 8267 - Dress and Culture (3.0 cr)
  • APST 8268 - Behavioral Aspects of Dress (3.0 cr)
  • APST 8271 - Retailing: Strategic Perspectives (3.0 cr)
  • DES 8113 - Teaching and Assessment (2.0 cr)
  • DES 8115 - Grant Writing (2.0 cr)
  • DES 8151 - Product Development: Theory and Practice (3.0 cr)
  • DES 8166 - Material Culture and Design (3.0 cr)
  • DES 8167 - Aesthetics of Design (3.0 cr)

• Plan B Master's Project
  Students take a minimum of 3 credits in this category.
  • APST 8222 - Plan B Master's Project (3.0 cr)

Graphic Design

The track in graphic design focuses on design theory, process, and methods related to design practice and research. Potential areas of study include graphic design history, theory, and critical narrative; design creativity; color and design; design authorship; data visualization; and interactive design.

Theory and Philosophy Coursework
  Students take a minimum of 3 credits in this category.
  DES 8112 - Design Theory (3.0 cr)
  or DES 8164 - Innovation Theory and Analysis (3.0 cr)

Evaluation and Analysis Coursework
Students take a minimum of 6 credits in this category.
- DES 8102 - Quantitative Research Methods (3.0 cr)
or - DES 8103 - Qualitative and Mixed Methods Research (3.0 cr)
or - GDES 5388 - Graphic Design Research (3.0 cr)

Concentration

Plan A Requirements
Students are required to take DES 8114, and GDES 8361 or GDES 8362.

Take 8 or more credit(s) from the following:
- DES 8113 - Teaching and Assessment (2.0 cr)
- DES 8114 - Design Studio (4.0 cr)
- DES 8115 - Grant Writing (2.0 cr)
- GDES 4131W - History of Graphic Design [WI] (4.0 cr)
- GDES 4330 - Surface Fabric Design Workshop (4.0 cr)
- GDES 4345 - Advanced Typography (4.0 cr)
- GDES 5193 - Directed Study in Graphic Design (1.0 - 4.0 cr)
- GDES 5311 - Illustration (3.0 cr)
- GDES 5341 - Interactive Design (3.0 cr)
- GDES 5342 - Advanced Web Design (3.0 cr)
- GDES 5371 - Data Visualization Studio (3.0 cr)
- GDES 5372 - Data Visualization for Interactive Platforms (3.0 cr)
- GDES 5383 - Digital Illustration and Animation (3.0 cr)
- GDES 5386 - Fundamentals of Game Design (3.0 cr)
- GDES 8192 - Readings in Graphic Design (1.0 - 3.0 cr)
- GDES 8193 - Directed Study in Graphic Design (1.0 - 3.0 cr)
- GDES 8361 - Color, Design, and Human Perception (3.0 cr)
- GDES 8362 - The Nature of Representation in Visual Communication (3.0 cr)

-Thesis Credits
Students take a minimum of 10 thesis credits.
- DES 8777 - Thesis Credits: Master's (1.0 - 18.0 cr)

-OR-

Plan B Requirements
Students are required to take DES 8114 and GDES 8361 or GDES 8362.

Take 15 or more credit(s) from the following:
- DES 8113 - Teaching and Assessment (2.0 cr)
- DES 8114 - Design Studio (4.0 cr)
- DES 8115 - Grant Writing (2.0 cr)
- GDES 4131W - History of Graphic Design [WI] (4.0 cr)
- GDES 4330 - Surface Fabric Design Workshop (4.0 cr)
- GDES 4345 - Advanced Typography (4.0 cr)
- GDES 5193 - Directed Study in Graphic Design (1.0 - 4.0 cr)
- GDES 5311 - Illustration (3.0 cr)
- GDES 5341 - Interactive Design (3.0 cr)
- GDES 5342 - Advanced Web Design (3.0 cr)
- GDES 5371 - Data Visualization Studio (3.0 cr)
- GDES 5372 - Data Visualization for Interactive Platforms (3.0 cr)
- GDES 5383 - Digital Illustration and Animation (3.0 cr)
- GDES 5386 - Fundamentals of Game Design (3.0 cr)
- GDES 8192 - Readings in Graphic Design (1.0 - 3.0 cr)
- GDES 8193 - Directed Study (1.0 - 3.0 cr)
- GDES 8361 - Color, Design, and Human Perception (3.0 cr)
- GDES 8362 - The Nature of Representation in Visual Communication (3.0 cr)

-Plan B Master's Project
Students take a minimum of 3 credits in this category the last semester of the program.
- GDES 8222 - Plan B Master's Project (3.0 cr)

Housing Studies
The housing studies track advances both theoretical and applied knowledge in the housing field. Through research experiences, students are prepared to assist people and communities in addressing housing-related issues. Courses emphasize human needs and behavior, analysis of designed environments, policy and community development, and housing of specific subpopulations such as the elderly or low-income families with children.

Theory and Philosophy: Required Course
HSG 8467 - Theoretical Perspectives in Housing Studies (3.0 cr)

Evaluation and Analysis Coursework
Students take a minimum of 6 credits in this category.
Take 6 or more credit(s) from the following:
• DES 8102 - Quantitative Research Methods (3.0 cr)
• DES 8103 - Qualitative and Mixed Methods Research (3.0 cr)
• EPSY 5261 - Introductory Statistical Methods (3.0 cr)

Concentration

Plan A Requirements
Students take a total of at least 8 credits from this list; at least two courses must be chosen from the following: HSG 5463, HSG 5467, and HSG 8463.
Take 8 or more credit(s) from the following:
• DES 8113 - Teaching and Assessment (2.0 cr)
• DES 8115 - Grant Writing (2.0 cr)
• HSG 4461 - Housing Development and Management (4.0 cr)
• HSG 4465 - Housing in a Global Perspective (3.0 cr)
• HSG 5170 - Topics in Housing Studies (1.0 - 4.0 cr)
• HSG 5193 - Directed Study in Housing Studies (1.0 - 4.0 cr)
• HSG 5462 - Housing and Community Development (3.0 cr)
• HSG 5463 - Housing Policy (3.0 cr)
• HSG 5467 - Housing and the Social Environment (4.0 cr)
• HSG 5468 - Promoting Independence in Housing and Community (3.0 cr)
• HSG 8170 - Topics in Housing Studies (1.0 - 3.0 cr)
• HSG 8180 - Professional Seminar (1.0 - 2.0 cr)
• HSG 8192 - Readings in Housing Studies (1.0 - 3.0 cr)
• HSG 8193 - Directed Study (1.0 - 3.0 cr)
• HSG 8463 - Housing: Race and Class (3.0 cr)

Thesis Credits
Students take a minimum of 10 credits in this category.
DES 8777 - Thesis Credits: Master's (1.0 - 18.0 cr)

-OR-

Plan B Requirements
Students take a total of at least 15 credits from this list; at least two courses must be chosen from the following: HSG 5463, HSG 5467, and HSG 8463.
Take 15 or more credit(s) from the following:
Take 15 or more credit(s) from the following:
• DES 8113 - Teaching and Assessment (2.0 cr)
• DES 8115 - Grant Writing (2.0 cr)
• HSG 4461 - Housing Development and Management (4.0 cr)
• HSG 4465 - Housing in a Global Perspective (3.0 cr)
• HSG 5170 - Topics in Housing Studies (1.0 - 4.0 cr)
• HSG 5193 - Directed Study in Housing Studies (1.0 - 4.0 cr)
• HSG 5462 - Housing and Community Development (3.0 cr)
• HSG 5463 - Housing Policy (3.0 cr)
• HSG 5467 - Housing and the Social Environment (4.0 cr)
• HSG 5468 - Promoting Independence in Housing and Community (3.0 cr)
• HSG 8170 - Topics in Housing Studies (1.0 - 3.0 cr)
• HSG 8180 - Professional Seminar (1.0 - 2.0 cr)
• HSG 8192 - Readings in Housing Studies (1.0 - 3.0 cr)
• HSG 8193 - Directed Study (1.0 - 3.0 cr)
• HSG 8463 - Housing: Race and Class (3.0 cr)

Plan B Master's Project
Students take a minimum of 3 credits the final semester of the program.
• HSG 8222 - Plan B Master's Project (3.0 cr)

Interior Design
This sub-plan is limited to students completing the program under Plan A.

Graduate study in the interior design track emphasizes the theory, research, and specialized practice components of design as applied to people's health, safety, and welfare in the interior environment, including design education, sustainability, social-cultural issues, aspects of professional practice, and facilities research (educational, office, criminal justice, and residential). Students are prepared for
teaching and research positions as well as design specializations within the profession.

**Theory and Philosophy Coursework**
- DES 8112 - Design Theory (3.0 cr)
- or DES 8164 - Innovation Theory and Analysis (3.0 cr)
- or DES 8166 - Material Culture and Design (3.0 cr)

**Evaluation and Analysis Coursework**
Students should take a minimum of six credits. A statistics course is required and either DES 8102 or DES 8103.
Take 6 or more credit(s) from the following:
- DES 8102 - Quantitative Research Methods (3.0 cr)
- DES 8103 - Qualitative and Mixed Methods Research (3.0 cr)
- EPSY 5261 - Introductory Statistical Methods (3.0 cr)
- EPSY 5262 - Intermediate Statistical Methods (3.0 cr)
- EPSY 8252 - Statistical Methods in Education II (3.0 cr)
- EPSY 8266 - Statistical Analysis Using Structural Equation Methods (3.0 cr)
- EPSY 8267 - Applied Multivariate Analysis (3.0 cr)

**Concentration**
Take 8 or more credit(s) from the following:
- DES 5165 - Design and Globalization (3.0 cr)
- DES 5168 - Evidence-Based Design (3.0 cr)
- DES 8113 - Teaching and Assessment (2.0 cr)
- DES 8115 - Grant Writing (2.0 cr)
- IDES 8192 - Readings in Interior Design (1.0 - 3.0 cr)
- IDES 8193 - Directed Study (1.0 - 3.0 cr)
- GDES 8361 - Color, Design, and Human Perception (3.0 cr)

**Thesis Credits**
Students take a minimum of 10 credits in this category.
- DES 8777 - Thesis Credits: Master's (1.0 - 18.0 cr)
Twin Cities Campus
Design Minor
Design, Housing & Apparel
College of Design

Link to a list of faculty for this program.

Contact Information:
Design Graduate Program, 240 McNeal Hall, 1985 Buford Avenue, St. Paul, MN 55108.
Email: dhagrad@umn.edu
Website: http://dha.design.umn.edu/programs/grad

- Program Type: Graduate minor related to major
- Requirements for this program are current for Fall 2018
- Length of program in credits (Masters): 9
- Length of program in credits (Doctorate): 12
- This program does not require summer semesters for timely completion.

Along with the program-specific requirements listed below, please read the General Information section of the catalog website for requirements that apply to all major fields.

The design graduate program focuses on the study of relationships between humans and their designed environments. This focus is based on the assumption that design and analysis of environments contributes to the improvement of the human condition. The program addresses theory, research, and application, using a shared disciplinary base from the arts and social and behavioral sciences. The goal of the program is for students to analyze, evaluate, and integrate theoretical frameworks related to humans and their designed environments.

Program Delivery
This program is available:
- via classroom (the majority of instruction is face-to-face)

Prerequisites for Admission
The preferred undergraduate GPA for admittance to the program is 3.00.

For an online application or for more information about graduate education admissions, see the General Information section of the catalog website.

Program Requirements
Use of 4xxx courses toward program requirements is permitted under certain conditions with adviser approval.

Program Sub-plans
Students are required to complete one of the following sub-plans. Students may not complete the program with more than one sub-plan.

Masters
Students select a minimum of 9 credits in consultation with their advisor and the director of graduate studies for the design graduate program.

Doctoral
Students select a minimum of 12 credits in consultation with their advisor and the director of graduate studies for the design graduate program.
Twin Cities Campus
Design Ph.D.
Design, Housing & Apparel
College of Design

Link to a list of faculty for this program.

Contact Information:
Design Graduate Program, 240 McNeal Hall, 1985 Buford Avenue, St. Paul, MN 55108
Email: dhagrad@umn.edu
Website: http://dha.design.umn.edu/programs/grad

- Program Type: Doctorate
- Requirements for this program are current for Fall 2018
- Length of program in credits: 64
- This program does not require summer semesters for timely completion.
- Degree: Doctor of Philosophy

Along with the program-specific requirements listed below, please read the General Information section of the catalog website for requirements that apply to all major fields.

The design graduate program focuses on the study of relationships between humans and their designed environments. This focus is based on the assumption that design and analysis of environments contributes to the improvement of the human condition. The program addresses theory, research, and application, using a shared disciplinary base from the arts and social and behavioral sciences. The goal of the program is for students to analyze, evaluate, and integrate theoretical frameworks related to humans and their designed environments.

Applications submitted to the design graduate program specify a track and degree objective.

Formal tracks are:
- Apparel studies (including dress, history, and culture; product development; and retail merchandising and consumer studies)
- Graphic design
- Housing studies
- Interior design (including evidence-based design)

Program Delivery
This program is available:
- via classroom (the majority of instruction is face-to-face)

Prerequisites for Admission
The preferred undergraduate GPA for admittance to the program is 3.00.

Eligibility requirements are located on the track pages of the design graduate program website:
http://dha.design.umn.edu/programs/grad.

Special Application Requirements:
Application requirements: http://dha.design.umn.edu/programs/grad/admissions.html

Applicants must submit their test score(s) from the following:
- GRE
  - General Test - Verbal Reasoning: 144
  - General Test - Quantitative Reasoning: 153
  - General Test - Analytical Writing: 4

International applicants must submit score(s) from one of the following tests:
- TOEFL
  - Internet Based - Total Score: 79
  - Internet Based - Writing Score: 21
  - Internet Based - Reading Score: 19
  - Paper Based - Total Score: 550
The preferred English language test is Test of English as Foreign Language.

Key to test abbreviations (GRE, TOEFL).

For an online application or for more information about graduate education admissions, see the General Information section of the catalog website.

Program Requirements
28 credits are required in the major.
12 credits are required outside the major.
24 thesis credits are required.

This program may be completed with a minor.

Use of 4xxx courses toward program requirements is permitted under certain conditions with adviser approval.

A minimum GPA of 3.0 is required for students to remain in good standing.

At least 2 semesters must be completed before filing a Degree Program Form.

Students may be required to complete additional credits upon recommendation of their committee.

Design Program Core Requirements
DES 8181 - Research Ethics (1.0 cr)

Related Field Coursework
Students are required to take a minimum of 12 credits in a related field. Courses are selected with the approval of the advisor and committee.

Doctoral Dissertation Credits
Students take a minimum of 24 credits of DES 8888. With the permission of the advisor, up to 10 credits may be taken prior to passing the preliminary oral examination.
DES 8888 - Thesis Credit: Doctoral (1.0 - 24.0 cr)

Program Sub-plans
Students are required to complete one of the following sub-plans. Students may not complete the program with more than one sub-plan.

Apparel Studies
The apparel studies track advances both theoretical knowledge and applications for apparel and worn products and their relationship to human behavior. Students may focus on product development; dress, history, and culture; or retail merchandising and consumer studies. Within each of these areas of emphasis within the track, the student completes related coursework as well as research or creative production that culminates in a thesis.

Evaluation and Analysis Coursework
Students are required to take a minimum of 9 credits in evaluation and analysis, including 3 credits in statistics.
DES 8102 - Quantitative Research Methods (3.0 cr)
DES 8103 - Qualitative and Mixed Methods Research (3.0 cr)

Statistics
Take 3 or more credit(s) from the following:
• EPSY 5261 - Introductory Statistical Methods (3.0 cr)
• EPSY 5262 - Intermediate Statistical Methods (3.0 cr)
• EPSY 8252 - Statistical Methods in Education II (3.0 cr)
• EPSY 8266 - Statistical Analysis Using Structural Equation Methods (3.0 cr)
• EPSY 8267 - Applied Multivariate Analysis (3.0 cr)

Concentration
Dress, History, and Culture
Theory and Philosophy Coursework
Students take a minimum of 6 credits in this category.

**DES 8164 - Innovation Theory and Analysis (3.0 cr)**

**DES 8112 - Design Theory (3.0 cr)**

**Dress, History, and Culture Concentration Coursework**

Take 12 or more credit(s) from the following:

- **APST 5193** - Directed Study in Apparel Studies (1.0 - 4.0 cr)
- **APST 5218** - Fashion, Design, and the Global Industry (3.0 cr)
- **APST 8192** - Readings in Apparel Studies (1.0 - 3.0 cr)
- **APST 8193** - Directed Study (1.0 - 3.0 cr)
- **APST 8267** - Dress and Culture (3.0 cr)
- **APST 8268** - Behavioral Aspects of Dress (3.0 cr)
- **DES 5165** - Design and Globalization (3.0 cr)
- **DES 8112** - Design Theory (3.0 cr)
- **DES 8113** - Teaching and Assessment (2.0 cr)
- **DES 8115** - Grant Writing (2.0 cr)
- **DES 8164** - Innovation Theory and Analysis (3.0 cr)
- **DES 8166** - Material Culture and Design (3.0 cr)
- **DES 8167** - Aesthetics of Design (3.0 cr)

-OR-

**Product Development**

**Theory and Philosophy Coursework**

Students take a minimum of 6 credits in this category.

**DES 8112** - Design Theory (3.0 cr)

**DES 8164** - Innovation Theory and Analysis (3.0 cr)

**Product Development Concentration Coursework**

Take 12 or more credit(s) from the following:

- **APST 5193** - Directed Study in Apparel Studies (1.0 - 4.0 cr)
- **APST 5218** - Fashion, Design, and the Global Industry (3.0 cr)
- **APST 5224** - Functional Clothing Design (4.0 cr)
- **APST 8192** - Readings in Apparel Studies (1.0 - 3.0 cr)
- **APST 8193** - Directed Study (1.0 - 3.0 cr)
- **DES 5185** - Human Factors in Design (3.0 cr)
- **DES 8113** - Teaching and Assessment (2.0 cr)
- **DES 8114** - Design Studio (4.0 cr)
- **DES 8115** - Grant Writing (2.0 cr)
- **DES 8151** - Product Development: Theory and Practice (3.0 cr)
- **DES 8166** - Material Culture and Design (3.0 cr)
- **DES 8167** - Aesthetics of Design (3.0 cr)
- **GDES 8361** - Color, Design, and Human Perception (3.0 cr)

-OR-

**Retail Merchandising and Consumer Studies**

**Theory and Philosophy Coursework**

Students take a minimum of 6 credits in this category.

**APST 8272** - Digital Consumers: Theories in Retail and Consumer Studies (3.0 cr)

Take 3 or more credit(s) from the following:

- **APST 8268** - Behavioral Aspects of Dress (3.0 cr)
- **DES 8112** - Design Theory (3.0 cr)
- **DES 8164** - Innovation Theory and Analysis (3.0 cr)

**Retail Merchandising and Consumer Studies Concentration Coursework**

Take 12 or more credit(s) from the following:

- **APST 5117** - Retail Environments and Human Behavior (3.0 cr)
- **APST 5123** - Living in a Consumer Society (3.0 cr)
- **APST 5193** - Directed Study in Apparel Studies (1.0 - 4.0 cr)
- **APST 8192** - Readings in Apparel Studies (1.0 - 3.0 cr)
- **APST 8193** - Directed Study (1.0 - 3.0 cr)
- **APST 8267** - Dress and Culture (3.0 cr)
- **APST 8268** - Behavioral Aspects of Dress (3.0 cr)
- **APST 8271** - Retailing: Strategic Perspectives (3.0 cr)
- **DES 8113** - Teaching and Assessment (2.0 cr)
- **DES 8115** - Grant Writing (2.0 cr)
- **DES 8151** - Product Development: Theory and Practice (3.0 cr)
- **DES 8166** - Material Culture and Design (3.0 cr)
- **DES 8167** - Aesthetics of Design (3.0 cr)
Graphic Design
The track in graphic design focuses on design theory, process, and methods related to design practice and research. Potential areas of study include graphic design history, theory, and critical narrative; design creativity; color and design; user-centered design; design authorship; data visualization; and interactive design.

Theory and Philosophy Coursework
Students take a minimum of 6 credits in this category.

DES 8112 - Design Theory (3.0 cr)
or DES 8164 - Innovation Theory and Analysis (3.0 cr)

Evaluation and Analysis Coursework
Students take a minimum of 9 credits in this category, including 3 credits in statistics.

Take 6 or more credit(s) from the following:
• DES 8102 - Quantitative Research Methods (3.0 cr)
• DES 8103 - Qualitative and Mixed Methods Research (3.0 cr)
• GDES 5388 - Graphic Design Research (3.0 cr)

Statistics
Take 3 or more credit(s) from the following:
• EPSY 5261 - Introductory Statistical Methods (3.0 cr)
• EPSY 5262 - Intermediate Statistical Methods (3.0 cr)
• EPSY 8252 - Statistical Methods in Education II (3.0 cr)
• EPSY 8266 - Statistical Analysis Using Structural Equation Methods (3.0 cr)
• EPSY 8267 - Applied Multivariate Analysis (3.0 cr)

Graphic Design Concentration Coursework
Students are required to take GDES 8361 and GDES 8362. Take 12 or more credit(s) from the following:
• DES 8113 - Teaching and Assessment (2.0 cr)
• DES 8114 - Design Studio (4.0 cr)
• DES 8115 - Grant Writing (2.0 cr)
• GDES 4131W - History of Graphic Design [WI] (4.0 cr)
• GDES 4330 - Surface Fabric Design Workshop (4.0 cr)
• GDES 4345 - Advanced Typography (4.0 cr)
• GDES 5193 - Directed Study in Graphic Design (1.0 - 4.0 cr)
• GDES 5311 - Illustration (3.0 cr)
• GDES 5341 - Interactive Design (3.0 cr)
• GDES 5342 - Advanced Web Design (3.0 cr)
• GDES 5371 - Data Visualization Studio (3.0 cr)
• GDES 5372 - Data Visualization for Interactive Platforms (3.0 cr)
• GDES 5383 - Digital Illustration and Animation (3.0 cr)
• GDES 5386 - Fundamentals of Game Design (3.0 cr)
• GDES 8192 - Readings in Graphic Design (1.0 - 3.0 cr)
• GDES 8193 - Directed Study (1.0 - 3.0 cr)
• GDES 8361 - Color, Design, and Human Perception (3.0 cr)
• GDES 8362 - The Nature of Representation in Visual Communication (3.0 cr)

Housing Studies
Housing studies is a multidisciplinary track that draws from a variety of theoretical perspectives. Students are trained in a variety of research methodologies. Coursework and research experiences combine to further understanding of the innovative approaches to the development of housing and related programs. With expertise in housing studies and research methods, graduates build careers in higher education, state and federal agencies, nonprofit community organizations, and government.

Theory and Philosophy Coursework
Students are required to take a total of 6 credits in this category, including HSG 8467. Students select one additional course in theory and philosophy with the approval of the advisor and committee.

HSG 8467 - Theoretical Perspectives in Housing Studies (3.0 cr)

Evaluation and Analysis Coursework
Students take a minimum of 9 credits in this category, including a minimum of 3 credits in statistics.

DES 8102 - Quantitative Research Methods (3.0 cr)
DES 8103 - Qualitative and Mixed Methods Research (3.0 cr)

Statistics
Take 3 or more credit(s) from the following:
• EPSY 5261 - Introductory Statistical Methods (3.0 cr)
• EPSY 5262 - Intermediate Statistical Methods (3.0 cr)
• EPSY 8252 - Statistical Methods in Education II (3.0 cr)

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Information current as of August 31, 2018
Housing Studies Concentration Coursework

EPSY 8266 - Statistical Analysis Using Structural Equation Methods (3.0 cr)
EPSY 8267 - Applied Multivariate Analysis (3.0 cr)

HSG 5463, HSG 5467, and HSG 8463 are required. Take 12 or more credit(s) from the following:
- DES 8113 - Teaching and Assessment (2.0 cr)
- DES 8115 - Grant Writing (2.0 cr)
- HSG 4461 - Housing Development and Management (4.0 cr)
- HSG 4465 - Housing in a Global Perspective (3.0 cr)
- HSG 5170 - Topics in Housing Studies (1.0 - 4.0 cr)
- HSG 5193 - Directed Study in Housing Studies (1.0 - 4.0 cr)
- HSG 5462 - Housing and Community Development (3.0 cr)
- HSG 5463 - Housing Policy (3.0 cr)
- HSG 5467 - Housing and the Social Environment (4.0 cr)
- HSG 5481 - Promoting Independence in Housing and Community (3.0 cr)
- HSG 8170 - Topics in Housing Studies (1.0 - 3.0 cr)
- HSG 8180 - Professional Seminar (1.0 - 2.0 cr)
- HSG 8192 - Readings in Housing Studies (1.0 - 3.0 cr)
- HSG 8193 - Directed Study (1.0 - 3.0 cr)
- HSG 8463 - Housing: Race and Class (3.0 cr)

Interior Design

Graduate study in the interior design track emphasizes the theory, research, and specialized practice components of design as applied to people's health, safety, and welfare in the interior environment, including design education, sustainability, social/cultural issues, aspects of professional practice, and facilities research (educational, office, criminal justice, and residential). Students are prepared for teaching and research positions as well as design specializations within the profession.

Theory and Philosophy Coursework

Students take DES 8112 and choose either DES 8164 or DES 8166 for a total of 6 credits in this category.
- DES 8112 - Design Theory (3.0 cr)
- Take 3 or more credit(s) from the following:
  - DES 8164 - Innovation Theory and Analysis (3.0 cr)
  - DES 8166 - Material Culture and Design (3.0 cr)

Evaluation and Analysis Coursework

Students take a minimum of 9 credits in this category, including a minimum of 3 credits in statistics.
- DES 8102 - Quantitative Research Methods (3.0 cr)
- DES 8103 - Qualitative and Mixed Methods Research (3.0 cr)

Statistics

Take 3 or more credit(s) from the following:
- EPSY 5261 - Introductory Statistical Methods (3.0 cr)
- EPSY 5262 - Intermediate Statistical Methods (3.0 cr)
- EPSY 8252 - Statistical Methods in Education II (3.0 cr)
- EPSY 8266 - Statistical Analysis Using Structural Equation Methods (3.0 cr)
- EPSY 8267 - Applied Multivariate Analysis (3.0 cr)

Interior Design Concentration Coursework

Take 12 or more credit(s) from the following:
- DES 5165 - Design and Globalization (3.0 cr)
- DES 5186 - Evidence-Based Design (3.0 cr)
- DES 5185 - Human Factors in Design (3.0 cr)
- DES 8113 - Teaching and Assessment (2.0 cr)
- DES 8115 - Grant Writing (2.0 cr)
- GDES 8361 - Color, Design, and Human Perception (3.0 cr)
- IDES 8192 - Readings in Interior Design (1.0 - 3.0 cr)
- IDES 8193 - Directed Study (1.0 - 3.0 cr)
Twin Cities Campus

Ecological Restoration in Landscape Architecture Minor
Landscape Architecture
College of Design

Link to a list of faculty for this program.

- Program Type: Graduate free-standing minor
- Requirements for this program are current for Fall 2018
- Length of program in credits (Masters): 10
- This program does not require summer semesters for timely completion.

Along with the program-specific requirements listed below, please read the General Information section of the catalog website for requirements that apply to all major fields.

Restoration, conservation, and ecological design projects have become an increasingly important component of the practice of landscape architecture and natural resource management. It is critical for students interested in the design and management of natural lands, water management landscapes, landscape reclamation, and other restoration project types to gain exposure to the issues associated with ecological restoration projects. This minor focuses on the applied practice of restoration with an emphasis on restoration management and design and the skills needed to lead successful projects.

Program Delivery
This program is available:
- via classroom (the majority of instruction is face-to-face)

Prerequisites for Admission
For an online application or for more information about graduate education admissions, see the General Information section of the catalog website.

Program Requirements
Use of 4xxx courses towards program requirements is not permitted.

Program Sub-plans
Students are required to complete one of the following sub-plans. Students may not complete the program with more than one sub-plan.

Masters
Master's Minor Requirements
ESPM 5071 - Ecological Restoration (4.0 cr)
LA 5204 - Metropolitan Landscape Ecology (3.0 cr)
LA 5576 - Ecological Restoration Project Planning and Management (3.0 cr)
Heritage studies and public history (HSPH) are the publicly engaged and community-accountable practices of historical scholarship, whether it is based in archival research, archaeology, material culture studies, architecture, preservation, or landscape studies. Although such a commitment to public interpretation, education, and preservation is part of all these disciplines, it is of tremendous benefit to heritage professionals to understand the connections and common issues in all of these perspectives, because the heritage field is increasingly characterized by such interdisciplinary integration.

The goal of this graduate program is to provide heritage and public history professionals this broader view, increasing their resource base and network of expertise. The program takes advantage of the deep scholarly expertise in these fields at the University of Minnesota, as well as the Minnesota Historical Society's extensive resources and expertise, to offer unparalleled training in the theory and methods of heritage and public history studies at the graduate level. The program will combine rigorous scholarly training with hands-on professional development, preparing graduates for positions in major public history and heritage institutions in Minnesota and elsewhere. The program will also train future generations of scholars and practitioners in the field to develop new, innovative, and entrepreneurial forms of historical interpretation in service of the public good.

Students are expected to acquire both general and specialized sets of perspectives and skills. Some required courses are designed to instill breadth and cohort connections; others are designed to build expertise in specific arenas of the heritage field, represented by the program tracks. Students will engage in experiential learning through embedded (credited) internships, and the design and execution of a community-engaged project.

Prerequisites for Admission
The preferred undergraduate GPA for admittance to the program is 3.00.

Special Application Requirements:
Prospective applicants are encouraged to consult the degree programs section of the School of Architecture website for additional information: http://arch.design.umn.edu.

International applicants must submit score(s) from one of the following tests:
• TOEFL

Key to test abbreviations (TOEFL).

For an online application or for more information about graduate education admissions, see the General Information section of the
Program Requirements

Plan B: Plan B requires 31 major credits and 6 credits outside the major. The final exam is written and oral. A capstone project is required.

Capstone Project: The Plan B option is available only to students pursuing the archaeological heritage track. The Plan B project is identified and planned in consultation with the adviser and the Archaeology Department at the Minnesota Historical Society.

Plan C: Plan C requires 31 major credits and 6 credits outside the major. There is no final exam. A capstone project is required.

Capstone Project: This course will operate as a workshop, drawing together a cohort of students, working individually or as part of a team, to craft independent heritage studies and public history research projects under the supervision of a faculty instructor. Projects may be based in archival research, public exhibitions, archaeology, material culture studies and preservation, architecture and preservation, or landscape studies. Consistent with the values of the program, projects shall have multidisciplinary perspectives, broadly consider aspects of diversity, and will be accountable to some stakeholder(s) identified by the students.

This program may not be completed with a minor.

Use of 4xxx courses toward program requirements is permitted under certain conditions with adviser approval.

Core Coursework (13 credits)
All students must complete the following core courses. Take HSPH 8005 every fall and spring for 2 years for a total of 4 credits.
- HSPH 8001 - Who Owns the Past? Common Concerns and Big Questions in Heritage and Public History (3.0 cr)
- HSPH 8002 - Core Practices in Heritage Studies and Public History (3.0 cr)
- HSPH 8003 - Race and Indigeneity in Heritage Representation (3.0 cr)
- HSPH 8005 - Leadership and Future of Historical Organizations (1.0 cr)

Outside Coursework (6 credits)
All students must complete at least 6 credits outside the major, chosen in consultation with the adviser or director of graduate studies.

Program Sub-plans
Students are required to complete one of the following sub-plans. Students may not complete the program with more than one sub-plan.

Archaeological Heritage
This sub-plan is limited to students completing the program under Plan B or Plan C.

Archaeological Heritage Track (18 credits)
The archaeological heritage track offers both the Plan B and Plan C options. Students are expected to identify their chosen option, in consultation with the advisor or director of graduate studies, by end of their second year in the program.

Required Archaeological Heritage Track Coursework (6 credits)
Take the following courses for a total of 6 credits:
- HSPH 8004 - Capstone in Heritage Studies and Public History (3.0 cr)
- ANTH 5448 - Applied Heritage Management (3.0 cr)

Electives (6 credits)
Students must complete at least 6 additional elective credits, selected in consultation with the advisor or director of graduate studies.

Plan Options

Plan B Requirements
Take 6 credits of HSPH 8101. At least 3 of the 6 credits must be applied to the Plan B project, with the remaining 3 assigned in consultation with the advisor or director of graduate studies.
- HSPH 8101 - Internship (3.0 cr)

-OR-

Plan C Requirements
Take HSPH 8101 twice, to complete two separate internships, for a total of 6 credits.
- HSPH 8101 - Internship (3.0 cr)

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Information current as of August 31, 2018
Twin Cities Campus
Heritage Studies and Public History Minor
School of Architecture
College of Design

Link to a list of faculty for this program.

Contact Information:
College of Design
School of Architecture
101 Rapson Hall
89 Church Street SE
Minneapolis, MN 55455-0811
Email: donofrio@umn.edu

- Program Type: Graduate minor related to major
- Requirements for this program are current for Fall 2018
- Length of program in credits (Masters): 9
- Length of program in credits (Doctorate): 12
- This program does not require summer semesters for timely completion.

Along with the program-specific requirements listed below, please read the General Information section of the catalog website for requirements that apply to all major fields.

Heritage Studies and Public History (HSPH) are the publicly engaged and community-accountable practices of historical scholarship, whether based in archival research, archaeology, material culture studies, architecture, preservation, or landscape studies. Although such a commitment to public interpretation, education, and preservation is part of all these disciplines, it is of tremendous benefit to heritage professionals to understand the connections and common issues in all of these perspectives, because the heritage field is increasingly characterized by such interdisciplinary integration. The masters level minor is intended for students who are in programs preparing them for work in the heritage field, such as anthropology, art history, architecture/historic preservation, urban and regional planning, history, American studies, and other allied fields. The doctoral minor is intended for students who plan to work in heritage/public history positions outside of academia, or to be academic scholars whose work includes community-engaged research. The HSPH program and grad minor take advantage of the deep scholarly expertise in these fields at the University of Minnesota, as well as the Minnesota Historical Societys extensive resources and expertise, to offer unparalleled training in the theory and methods of heritage and public history studies at the graduate level.

Program Delivery
This program is available:
- via classroom (the majority of instruction is face-to-face)

Prerequisites for Admission
For an online application or for more information about graduate education admissions, see the General Information section of the catalog website.

Program Requirements
Use of 4xxx courses towards program requirements is not permitted.

Core Coursework
All students pursuing the heritage studies and public history minor must complete the following core courses for a total of six credits.
HSPH 8001 - Who Owns the Past? Common Concerns and Big Questions in Heritage and Public History (3.0 cr)
HSPH 8003 - Race and Indigeneity in Heritage Representation (3.0 cr)

Program Sub-plans
Students are required to complete one of the following sub-plans. Students may not complete the program with more than one sub-plan.
Masters
Take additional HSPH-affiliated coursework, in consultation with the HSPH director of graduate studies, to complete the 9-credit minimum for the master's-level minor. Coursework must be from a discipline other than the major field.

Doctoral
Take additional HSPH-affiliated coursework, in consultation with the HSPH director of graduate studies, to complete the 12-credit minimum for the doctoral-level minor. Coursework must be from a discipline other than the major field.
**Twin Cities Campus**

**Housing Studies Postbaccalaureate Certificate**

*Design, Housing & Apparel*  
*College of Design*

Link to a list of faculty for this program.

**Contact Information:**  
Design Graduate Program, 240 McNeal Hall, 1985 Buford Avenue, St. Paul, MN 55108  
Email: dhagrad@umn.edu  
Website: [http://dha.cdes.umn.edu/programs/grad/prospective/admissions/housingstudiescertificateprogram.htm](http://dha.cdes.umn.edu/programs/grad/prospective/admissions/housingstudiescertificateprogram.htm)

- Program Type: Post-baccalaureate credit certificate/licensure/endorsement  
- Requirements for this program are current for Fall 2018  
- Length of program in credits: 15  
- This program does not require summer semesters for timely completion.  
- Degree: Housing Studies PBacc Cert

Along with the program-specific requirements listed below, please read the General Information section of the catalog website for requirements that apply to all major fields.

The housing studies certificate is designed for individuals interested, or currently working, in housing related professions to expand their knowledge in areas including housing and community development, housing policy, and the residential environments.

**Program Delivery**  
This program is available:  
*via classroom (the majority of instruction is face-to-face)*

**Prerequisites for Admission**  
The preferred undergraduate GPA for admittance to the program is 3.00.

International applicants must submit score(s) from one of the following tests:  
- TOEFL  
  - Internet Based - Total Score: 79  
  - Internet Based - Writing Score: 21  
  - Internet Based - Reading Score: 19  
  - Paper Based - Total Score: 550

Key to test abbreviations (TOEFL).

For an online application or for more information about graduate education admissions, see the General Information section of the catalog website.

**Program Requirements**  
Use of 4xxx courses toward program requirements is permitted under certain conditions with adviser approval.

A minimum GPA of 2.80 is required for students to remain in good standing.

At least 1 semesters must be completed before filing a Degree Program Form.

Some elective courses require prerequisites that may be waived with instructor permission according to University policy.

**Required Course**  
- **HSG 5471** - Housing Studies Certificate Seminar (2.0 cr)

**Elective Courses**  
Take 13 or more credit(s) from the following:  
- **DES 8113** - Teaching and Assessment (2.0 cr)  
- **DES 8115** - Grant Writing (2.0 cr)
HSG 4461 - Housing Development and Management (4.0 cr)
HSG 4465 - Housing in a Global Perspective (3.0 cr)
HSG 5170 - Topics in Housing Studies (1.0 - 4.0 cr)
HSG 5193 - Directed Study in Housing Studies (1.0 - 4.0 cr)
HSG 5462 - Housing and Community Development (3.0 cr)
HSG 5463 - Housing Policy (3.0 cr)
HSG 5467 - Housing and the Social Environment (4.0 cr)
HSG 5481 - Promoting Independence in Housing and Community (3.0 cr)
HSG 8170 - Topics in Housing Studies (1.0 - 3.0 cr)
HSG 8180 - Professional Seminar (1.0 - 2.0 cr)
HSG 8192 - Readings in Housing Studies (1.0 - 3.0 cr)
HSG 8193 - Directed Study (1.0 - 3.0 cr)
HSG 8463 - Housing: Race and Class (3.0 cr)
HSG 8467 - Theoretical Perspectives in Housing Studies (3.0 cr)
Twin Cities Campus
Human Factors and Ergonomics M.S.
DHA Human Factors and Ergonomics
College of Design

Link to a list of faculty for this program.

Contact Information:
Human Factors and Ergonomics Graduate Program, c/o DHA, 240 McNeal Hall, 1985 Buford Avenue, St. Paul, MN 55108.
Email: HFEgrad@umn.edu
Website: http://humanfactors.design.umn.edu/

- Program Type: Master's
- Requirements for this program are current for Fall 2018
- Length of program in credits: 30
- This program does not require summer semesters for timely completion.
- Degree: Master of Science

Along with the program-specific requirements listed below, please read the General Information section of the catalog website for requirements that apply to all major fields.

Human factors and ergonomics (HFE) is the study of how to make technological systems safe, effective, and easy and enjoyable to use. The graduate program offers interdisciplinary coursework that addresses human performance and how it can be enhanced through design of tools, systems, working environments, processes, and organizations. HFE has applications ranging from clothing and living spaces to business processes, the design of health care processes and technology, computer interfaces, and aircraft cockpits.

Program Delivery
This program is available:
• via classroom (the majority of instruction is face-to-face)

Prerequisites for Admission
The preferred undergraduate GPA for admittance to the program is 3.00.

Applicants must submit their test score(s) from the following:
• GRE

International applicants must submit score(s) from one of the following tests:
• TOEFL
  - Internet Based - Total Score: 96
  - Internet Based - Listening Score: 24
  - Internet Based - Writing Score: 24
  - Internet Based - Reading Score: 24
  - Internet Based - Speaking Score: 24

The preferred English language test is Test of English as Foreign Language

Key to test abbreviations (GRE, TOEFL).

For an online application or for more information about graduate education admissions, see the General Information section of the catalog website.

Program Requirements
Plan A: Plan A requires 20 major credits, 0 credits outside the major, and 10 thesis credits. The final exam is oral.

Plan C: Plan C requires 30 major credits and 0 credits outside the major. There is no final exam.

This program may be completed with a minor.

Use of 4xxx courses toward program requirements is permitted under certain conditions with adviser approval.
A minimum GPA of 3.00 is required for students to remain in good standing.

At least 2 semesters must be completed before filing a Degree Program Form.

**Required Courses (8 credits)**

All students are required to complete the following:

**Research Methods Core (8 credits)**

- PSY 8814 - Analysis of Psychological Data (4.0 cr)
- PSY 8815 - Analysis of Psychological Data (4.0 cr)

**Research Ethics**

In addition to the following course, students have online options to complete the research ethics requirement. See program Research Ethics page for more information: [http://humanfactors.design.umn.edu/research_ethics.html](http://humanfactors.design.umn.edu/research_ethics.html)

Take 0 or more credit(s) from the following:

- DES 8181 - Research Ethics (1.0 cr)

**Plans**

**Plan A**

**Plan A Coursework**

Take courses from each component as follows: Human Factors Fundamentals (3 credits), Cognitive Human Factors (3 credits), and Physical Human Factors (3 credits). To complete the 20-credit minimum, select coursework from approved electives.

**Human Factors Fundamentals (3 credits)**

Take 3 or more credit(s) from the following:

- DES 5185 - Human Factors in Design (3.0 cr)
- HUMF 5001 - Foundations of Human Factors/Ergonomics (3.0 cr)
- HUMF 5211 - Human Factors and Work Analysis (4.0 cr)
- HUMF 5874 - Service Design: Designing complex systems to improve service delivery (4.0 cr)

**Cognitive Human Factors (3 credits)**

Take 3 or more credit(s) from the following:

- CGSC 8000 - Seminar: Philosophy of the Cognitive Sciences (3.0 cr)
- EPSY 8114 - Seminar: Cognition and Learning (3.0 cr)
- IDSC 8721 - Behavioral Decision Theory (3.0 cr)
- PSY 5014 - Psychology of Human Learning and Memory (3.0 cr)
- PSY 5015 - Cognition, Computation, and Brain (3.0 cr)
- PSY 5031W - Perception [WI] (3.0 cr)
- PSY 5037 - Psychology of Hearing (3.0 cr)
- PSY 5062 - Cognitive Neuropsychology (3.0 cr)
- PSY 5064 - Brain and Emotion (3.0 cr)
- PSY 8041 - Proseminar in Perception (3.0 cr)
- PSY 8042 - Proseminar in Cognition, Brain, and Behavior (3.0 cr)
- PSY 8201 - Social Cognition (3.0 cr)

**Physical Human Factors (3 credits)**

Take 3 or more credit(s) from the following:

- KIN 4133 - Perceptual-Motor Control and Learning (3.0 cr)
- KIN 4136 - Embodied Cognition (3.0 cr)
- KIN 5235 - Advanced Biomechanics II: Kinetics (3.0 cr)
- KIN 5505 - Human-Centered Design - Principles and Applications (3.0 cr)
- KIN 5643 - Applied Motion Capture and Movement Analysis Technology (3.0 cr)
- KIN 8211 - Seminar: Perception and Action (3.0 cr)
- RSC 5135 - Advanced Biomechanics I: Kinematics (3.0 cr)
- RSC 8135 - Human Kinematics (3.0 cr)

**Approved Electives**

Select courses from the following approved electives to complete the 20-credit minimum:

Take 0 or more credit(s) from the following:

**User Interface Design**

- CSCI 5115 - User Interface Design, Implementation and Evaluation (3.0 cr)
- CSCI 8115 - Human-Computer Interaction and User Interface Technology (3.0 cr)
- NURS 7118 - Human Factors and Human-Computer Interaction in Health Informatics (3.0 cr)
- WRIT 4501 - Usability and Human Factors in Technical Communication (3.0 cr)
- WRIT 8520 - Seminar in Scientific and Technical Communication (3.0 cr)

**Statistics**

Psy 8960: Select Multivariate Statistics for Social Scientists section only.

Take 0 or more credit(s) from the following:
• PSY 8960 - Graduate Seminar in Psychology (1.0 - 4.0 cr)
• PUBH 7406 - Advanced Regression and Design (4.0 cr)
• STAT 5021 - Statistical Analysis (4.0 cr)

**Designing Experiments**
Take 0 or more credit(s) from the following:
• STAT 5303 - Designing Experiments (4.0 cr)

**Research Methods**
Take 0 or more credit(s) from the following:
• ANTH 4035 - Ethnographic Research Methods (3.0 cr)
• KIN 5981 - Research Methodology in Kinesiology and Sport Management (3.0 cr)
• PUBH 6341 - Epidemiologic Methods I (3.0 cr)
• PUBH 6342 - Epidemiologic Methods II (3.0 cr)
• PUBH 6343 - Epidemiologic Methods III (4.0 cr)

**Human Factors**
Take 0 or more credit(s) from the following:
• CSCI 5125 - Collaborative and Social Computing (3.0 cr)
• CSCI 5609 - Visualization (3.0 cr)
• CSCI 5619 - Virtual Reality and 3D Interaction (3.0 cr)
• CSCI 8117 - Understanding the Social Web (3.0 cr)
• DES 5165 - Design and Globalization (3.0 cr)
• DES 8151 - Product Development: Theory and Practice (3.0 cr)
• GDES 8361 - Color, Design, and Human Perception (3.0 cr)
• HUMF 8001 - Special Topics: Human Factors/Ergonomics (2.0 - 3.0 cr)
• HUMF 8002 - Proseminar in Human Factors/Ergonomics (1.0 cr)
• PSY 5501 - Vocational and Occupational Health Psychology (3.0 cr)
• PSY 5708 - Organizational Psychology (3.0 cr)
• PSY 5862 - Psychological Measurement: Theory and Methods (3.0 cr)
• PUBH 6120 - Injury Prevention in the Workplace, Community, and Home (2.0 cr)
• PUBH 6140 - Occupational and Environmental Epidemiology (2.0 cr)
• PUBH 6470 - SAS Procedures and Data Analysis (3.0 cr)
• SOC 8412 - Social Network Analysis: Theory and Methods (3.0 cr)
• CGSC 8410 - Perspectives in Learning, Perception, and Cognition (2.0 cr)
• IDSC 8722 - Heuristic Decision Making (2.0 cr)
• MKTG 8813 - Consumer Judgment and Decision Making I (2.0 cr)
• PUBH 6806 - Principles of Public Health Research (2.0 cr)

**Thesis Credits**
Take at least 10 master's thesis credits.
• HUMF 8777 - Thesis Credits: Master's (1.0 - 18.0 cr)

-OR-

**Plan C**

**Plan C Coursework**
Take courses from each component as follows: Human Factors Fundamentals (3 credits), Cognitive Human Factors (3 credits), Physical Human Factors (3 credits), and 50% Project-based (2 3-credit courses for 6 credits). To complete the 30-credit minimum, select coursework from approved electives.

**Human Factors Fundamentals (3 credits)**
Take 3 or more credit(s) from the following:
• DES 5185 - Human Factors in Design (3.0 cr)
• HUMF 5001 - Foundations of Human Factors/Ergonomics (3.0 cr)
• HUMF 5211 - Human Factors and Work Analysis (4.0 cr)
• HUMF 5874 - Service Design: Designing complex systems to improve service delivery (4.0 cr)

**Cognitive Human Factors (3 credits)**
Take 3 or more credit(s) from the following:
• CGSC 8000 - Seminar: Philosophy of the Cognitive Sciences (3.0 cr)
• EPSY 8114 - Seminar: Cognition and Learning (3.0 cr)
• IDSC 8721 - Behavioral Decision Theory (3.0 cr)
• PSY 5014 - Psychology of Human Learning and Memory (3.0 cr)
• PSY 5015 - Cognition, Computation, and Brain (3.0 cr)
• PSY 5031W - Perception [WI] (3.0 cr)
• PSY 5037 - Psychology of Hearing (3.0 cr)
• PSY 5062 - Cognitive Neuropsychology (3.0 cr)
• PSY 5064 - Brain and Emotion (3.0 cr)
• PSY 8041 - Proseminar in Perception (3.0 cr)
• PSY 8042 - Proseminar in Cognition, Brain, and Behavior (3.0 cr)
• PSY 8201 - Social Cognition (3.0 cr)
Physical Human Factors (3 credits)
Take 3 or more credit(s) from the following:
- KIN 4133 - Perceptual-Motor Control and Learning (3.0 cr)
- KIN 4136 - Embodied Cognition (3.0 cr)
- KIN 5235 - Advanced Biomechanics II: Kinetics (3.0 cr)
- KIN 5505 - Human-Centered Design - Principles and Applications (3.0 cr)
- KIN 5643 - Applied Motion Capture and Movement Analysis Technology (3.0 cr)
- KIN 8211 - Seminar: Perception and Action (3.0 cr)
- RSC 5135 - Advanced Biomechanics I: Kinematics (3.0 cr)
- RSC 8135 - Human Kinematics (3.0 cr)

50% Project-Based Coursework (6 credits)
Take 2 courses for at least 6 credits:
Take 6 or more credit(s) from the following:
- CSCI 5115 - User Interface Design, Implementation and Evaluation (3.0 cr)
- CSCI 5609 - Visualization (3.0 cr)
- CSCI 5619 - Virtual Reality and 3D Interaction (3.0 cr)
- DES 5185 - Human Factors in Design (3.0 cr)
- DES 8151 - Product Development: Theory and Practice (3.0 cr)
- HUMF 5874 - Service Design: Designing complex systems to improve service delivery (4.0 cr)
- WRIT 4501 - Usability and Human Factors in Technical Communication (3.0 cr)

Approved Electives
Select courses from the following approved electives to complete the 30-credit minimum:
Take 0 or more credit(s) from the following:
User Interface Design
Take 0 or more credit(s) from the following:
- CSCI 5115 - User Interface Design, Implementation and Evaluation (3.0 cr)
- CSCI 8115 - Human-Computer Interaction and User Interface Technology (3.0 cr)
- NURS 7118 - Human Factors and Human-Computer Interaction in Health Informatics (3.0 cr)
- WRIT 4501 - Usability and Human Factors in Technical Communication (3.0 cr)
- WRIT 8520 - Seminar in Scientific and Technical Communication (3.0 cr)

Statistics
Psy 8960: Select Multivariate Statistics for Social Scientists section only.
Take 0 or more credit(s) from the following:
- PSY 8960 - Graduate Seminar in Psychology (1.0 - 4.0 cr)
- PUBH 7406 - Advanced Regression and Design (4.0 cr)
- STAT 5021 - Statistical Analysis (4.0 cr)

Designing Experiments
Take 0 or more credit(s) from the following:
- STAT 5303 - Designing Experiments (4.0 cr)

Research Methods
Take 0 or more credit(s) from the following:
- ANTH 4035 - Ethnographic Research Methods (3.0 cr)
- KIN 5981 - Research Methodology in Kinesiology and Sport Management (3.0 cr)
- PUBH 6341 - Epidemiologic Methods I (3.0 cr)
- PUBH 6342 - Epidemiologic Methods II (3.0 cr)
- PUBH 6343 - Epidemiologic Methods III (4.0 cr)

Human Factors
Take 0 or more credit(s) from the following:
- CSCI 5125 - Collaborative and Social Computing (3.0 cr)
- CSCI 5609 - Visualization (3.0 cr)
- CSCI 5619 - Virtual Reality and 3D Interaction (3.0 cr)
- CSCI 8117 - Understanding the Social Web (3.0 cr)
- DES 5165 - Design and Globalization (3.0 cr)
- DES 8151 - Product Development: Theory and Practice (3.0 cr)
- GDES 8361 - Color, Design, and Human Perception (3.0 cr)
- HUMF 8001 - Special Topics: Human Factors/Ergonomics (2.0 - 3.0 cr)
- HUMF 8002 - Proseminar in Human Factors/Ergonomics (1.0 cr)
- PSY 5501 - Vocational and Occupational Health Psychology (3.0 cr)
- PSY 5708 - Organizational Psychology (3.0 cr)
- PSY 5862 - Psychological Measurement: Theory and Methods (3.0 cr)
- PUBH 6120 - Injury Prevention in the Workplace, Community, and Home (2.0 cr)
- PUBH 6140 - Occupational and Environmental Epidemiology (2.0 cr)
- PUBH 6470 - SAS Procedures and Data Analysis (3.0 cr)
- SOC 8412 - Social Network Analysis: Theory and Methods (3.0 cr)
- CGSC 8410 - Perspectives in Learning, Perception, and Cognition (2.0 cr)

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Information current as of August 31, 2018
• IDSC 8722 - Heuristic Decision Making (2.0 cr)
• MKTG 8813 - Consumer Judgment and Decision Making I (2.0 cr)
• PUBH 6806 - Principles of Public Health Research (2.0 cr)
Human Factors and Ergonomics Minor

Contact Information:
Human Factors and Ergonomics Graduate Program, c/o DHA, 240 McNeal Hall, 1985 Buford Avenue, St. Paul, MN 55108.
Email: HFEgrad@umn.edu
Website: http://humanfactors.design.umn.edu/

- Program Type: Graduate minor related to major
- Requirements for this program are current for Fall 2018
- Length of program in credits (Masters): 9
- Length of program in credits (Doctorate): 12
- This program does not require summer semesters for timely completion.

Along with the program-specific requirements listed below, please read the General Information section of the catalog website for requirements that apply to all major fields.

Human factors and ergonomics (HFE) is the study of how to make technological systems safe, effective, and easy and enjoyable to use. The graduate program offers interdisciplinary coursework that addresses human performance and how it can be enhanced through design of tools, systems, working environments, processes, and organizations. HFE has applications ranging from clothing and living spaces to business processes, the design of health care processes and technology, computer interfaces, and aircraft cockpits. The minor is available to master's and doctoral students.

Program Delivery
This program is available:
• via classroom (the majority of instruction is face-to-face)

Prerequisites for Admission
The preferred undergraduate GPA for admittance to the program is 3.00.

For an online application or for more information about graduate education admissions, see the General Information section of the catalog website.

Program Requirements
Use of 4xxx courses toward program requirements is permitted under certain conditions with adviser approval.

Any University of Minnesota graduate student in good standing is eligible to apply. Students discuss appropriate coursework with their advisers and the Director of Graduate Studies for Human Factors and Ergonomics. A GPA of 3.0 is required for good standing in the minor.

Master's students are required to take 9 credits to fulfill the minor.
Doctoral students are required to take 12 credits to fulfill the minor.

Program Sub-plans
Students are required to complete one of the following sub-plans.
Students may not complete the program with more than one sub-plan.

Masters
Students select a minimum of 9 credits in consultation with their advisor and the director of graduate studies for the human factors and ergonomics graduate program.
Doctoral
Students select a minimum of 12 credits in consultation with their advisor and the director of graduate studies for the human factors and ergonomics graduate program.
Twin Cities Campus

Human Factors and Ergonomics Ph.D.
DHA Human Factors and Ergonomics
College of Design

Link to a list of faculty for this program.

Contact Information:
Human Factors and Ergonomics Graduate Program, c/o DHA, 240 McNeal Hall, 1985 Buford Avenue, St. Paul, MN 55108.
Email: HFEgrad@umn.edu
Website: http://humanfactors.design.umn.edu/

- Program Type: Doctorate
- Requirements for this program are current for Fall 2018
- Length of program in credits: 66
- This program does not require summer semesters for timely completion.
- Degree: Doctor of Philosophy

Along with the program-specific requirements listed below, please read the General Information section of the catalog website for requirements that apply to all major fields.

Human factors and ergonomics (HFE) is the study of how to make technological systems safe, effective, and easy and enjoyable to use. The graduate program offers interdisciplinary coursework that addresses human performance and how it can be enhanced through design of tools, systems, working environments, processes, and organizations. HFE has applications ranging from clothing and living spaces to business processes, the design of healthcare processes and technology, computer interfaces, and aircraft cockpits.

Program Delivery
This program is available:
- via classroom (the majority of instruction is face-to-face)

Prerequisites for Admission
The preferred undergraduate GPA for admittance to the program is 3.00.

Applicants must submit their test score(s) from the following:
- GRE

International applicants must submit score(s) from one of the following tests:
- TOEFL
  - Internet Based - Total Score: 96
  - Internet Based - Listening Score: 24
  - Internet Based - Writing Score: 24
  - Internet Based - Reading Score: 24
  - Internet Based - Speaking Score: 24

The preferred English language test is Test of English as Foreign Language

Key to test abbreviations (GRE, TOEFL).

For an online application or for more information about graduate education admissions, see the General Information section of the catalog website.

Program Requirements
42 credits are required in the major.
24 thesis credits are required.

This program may be completed with a minor.

Use of 4xxx courses toward program requirements is permitted under certain conditions with adviser approval.
A minimum GPA of 3.0 is required for students to remain in good standing.

At least 2 semesters must be completed before filing a Degree Program Form.

Program Requirements

Research Methods Core (8 credits)
Take the following courses for a total of 8 credits:
- PSY 8814 - Analysis of Psychological Data (4.0 cr)
- PSY 8815 - Analysis of Psychological Data (4.0 cr)

Research Ethics (0-1 credits)
In addition to courses listed below, online options are available to complete the research ethics requirement. See program Research Ethics page for more information:  
http://humanfactors.design.umn.edu/research_ethics.html
Take 0 or more credit(s) from the following:
- DES 8181 - Research Ethics (1.0 cr)

Additional Research Methods Course (3-4 credits)
Take one additional course in research methods from the following:
Statistics
- PSY 8960 - Graduate Seminar in Psychology (1.0 - 4.0 cr)
- PUBH 7406 - Advanced Regression and Design (4.0 cr)
- STAT 5021 - Statistical Analysis (4.0 cr)

Designing Experiments
- PSY 5023 - Designing Experiments (4.0 cr)

Research Methods
- Take 0 or more credit(s) from the following:
  - ANTH 4035 - Ethnographic Research Methods (3.0 cr)
  - KIN 5981 - Research Methodology in Kinesiology and Sport Management (3.0 cr)
  - PUBH 6341 - Epidemiologic Methods I (3.0 cr)
  - PUBH 6342 - Epidemiologic Methods II (3.0 cr)
  - PUBH 6343 - Epidemiologic Methods III (4.0 cr)

Component Courses (9 Credits)
Take at least one 3-credit course from each of the following components for a total of 9 credits.

Human Factors Fundamentals
- Take at least 3 credits from the following:
  - DES 5185 - Human Factors in Design (3.0 cr)
  - HUMF 5001 - Foundations of Human Factors/Ergonomics (3.0 cr)
  - HUMF 5211 - Human Factors and Work Analysis (4.0 cr)
  - HUMF 5874 - Service Design: Designing complex systems to improve service delivery (4.0 cr)

Cognitive Human Factors
- Take at least 3 credits from the following:
  - CGSC 8000 - Seminar: Philosophy of the Cognitive Sciences (3.0 cr)
  - EPSY 8114 - Seminar: Cognition and Learning (3.0 cr)
  - IDSC 8721 - Behavioral Decision Theory (3.0 cr)
  - PSY 5014 - Psychology of Human Learning and Memory (3.0 cr)
  - PSY 5015 - Cognition, Computation, and Brain (3.0 cr)
  - PSY 5031W - Perception [WI] (3.0 cr)
  - PSY 5037 - Psychology of Hearing (3.0 cr)
  - PSY 5062 - Cognitive Neuropsychology (3.0 cr)
  - PSY 5064 - Brain and Emotion (3.0 cr)
  - PSY 8041 - Proseminar in Perception (3.0 cr)
  - PSY 8042 - Proseminar in Cognition, Brain, and Behavior (3.0 cr)
  - PSY 8201 - Social Cognition (3.0 cr)

Physical Human Factors
- Take at least 3 credits from the following:
  - KIN 4133 - Perceptual-Motor Control and Learning (3.0 cr)
  - KIN 4136 - Embodied Cognition (3.0 cr)
  - KIN 5235 - Advanced Biomechanics II: Kinetics (3.0 cr)
  - KIN 5505 - Human-Centered Design - Principles and Applications (3.0 cr)
  - KIN 5643 - Applied Motion Capture and Movement Analysis Technology (3.0 cr)
  - KIN 8211 - Seminar: Perception and Action (3.0 cr)
  - RSC 5135 - Advanced Biomechanics I: Kinematics (3.0 cr)
  - RSC 8135 - Human Kinematics (3.0 cr)

Electives
Take remaining credits from the following, in consultation with the advisor, to complete the 42 course credits required.

**User Interface Design**
- CSCI 5115 - User Interface Design, Implementation and Evaluation (3.0 cr)
- CSCI 8115 - Human-Computer Interaction and User Interface Technology (3.0 cr)
- NURS 7118 - Human Factors and Human-Computer Interaction in Health Informatics (3.0 cr)
- WRIT 4501 - Usability and Human Factors in Technical Communication (3.0 cr)
- WRIT 8520 - Seminar in Scientific and Technical Communication (3.0 cr)

**Human Factors**
- CSCI 5125 - Collaborative and Social Computing (3.0 cr)
- CSCI 5609 - Visualization (3.0 cr)
- CSCI 5619 - Virtual Reality and 3D Interaction (3.0 cr)
- CSCI 8117 - Understanding the Social Web (3.0 cr)
- DES 5165 - Design and Globalization (3.0 cr)
- DES 8151 - Product Development: Theory and Practice (3.0 cr)
- GDES 8361 - Color, Design, and Human Perception (3.0 cr)
- HUMF 8001 - Special Topics: Human Factors/Ergonomics (2.0 - 3.0 cr)
- HUMF 8002 - Proseminar in Human Factors/Ergonomics (1.0 cr)
- MKTG 8813 - Consumer Judgment and Decision Making I (2.0 cr)
- PSY 5501 - Vocational and Occupational Health Psychology (3.0 cr)
- PSY 5708 - Organizational Psychology (3.0 cr)
- PSY 5862 - Psychological Measurement: Theory and Methods (3.0 cr)
- PUBH 6120 - Injury Prevention in the Workplace, Community, and Home (2.0 cr)
- PUBH 6140 - Occupational and Environmental Epidemiology (2.0 cr)
- PUBH 6470 - SAS Procedures and Data Analysis (3.0 cr)
- SCC 8412 - Social Network Analysis: Theory and Methods (3.0 cr)
- CGSC 8410 - Perspectives in Learning, Perception, and Cognition (2.0 cr)
- IDSC 8722 - Heuristic Decision Making (2.0 cr)
- PUBH 6806 - Principles of Public Health Research (2.0 cr)

**Thesis Credits**
Take at least 24 doctoral thesis credits.

- HUMF 8888 - Thesis Credit: Doctoral (1.0 - 24.0 cr)
Twin Cities Campus
Landscape Architecture M.L.A.
Landscape Architecture
College of Design

Link to a list of faculty for this program.

Contact Information:
Department of Landscape Architecture, 144 Rapson Hall, 89 Church Street SE, Minneapolis, MN 55455 (612-625-6860)
Email: landesk@umn.edu
Website: http://landarch.design.umn.edu

- Program Type: Master's
- Requirements for this program are current for Fall 2018
- Length of program in credits: 58 to 89
- This program does not require summer semesters for timely completion.
- Degree: Master of Landscape Architecture

Along with the program-specific requirements listed below, please read the General Information section of the catalog website for requirements that apply to all major fields.

The master of landscape architecture (MLA) is a first-professional degree required for students who wish to become licensed professional landscape architects. The program is accredited by the national Landscape Architecture Accreditation Board (LAAB). The curriculum introduces students to the practice and discipline of landscape architecture, providing them with the artistic, technical, cognitive, and communication skills, in addition to the scientific and aesthetic knowledge, necessary to practice in the profession and in related environmental fields. Students are encouraged to select from electives offered to develop a special focus or to explore more areas in depth.

The MLA program (MLA I) is a three-year, 89-credit degree. Coursework exposes students to the broad field of landscape architecture as both a discipline and a profession. Classes are collaborative in nature and challenge students to delve into landscape issues that cut across multiple systems and scales. Because the core of the curriculum is six design studios, organized in a sequential framework, a commitment to three successive years in the program is essential.

Applicants with accredited professional baccalaureate degrees in landscape architecture or architecture may be considered for the advanced-standing MLA degree (MLA II). The MLA II requires at least 58 credits of design studio, research methods, and elective courses.

Program Delivery
This program is available:
• via classroom (the majority of instruction is face-to-face)

Prerequisites for Admission
The preferred undergraduate GPA for admittance to the program is 3.00.

Other requirements to be completed before admission:
MLA program applicants must have completed a baccalaureate degree.

Special Application Requirements:
Students are admitted for fall semester only. MLA program applicants must apply by January 15, for entry the following fall, to receive first consideration for admission, fellowships, and assistantships. In addition to the University's admission requirements, applicants must submit an electronic portfolio in 8.5 x 11 PDF format. GRE scores are not required; however, they can be helpful to applicants seeking national fellowships such as the Fulbright Scholarship. Please refer to the MLA website for detailed information regarding department specific application requirements and procedures, including a downloadable checklist, at http://landarch.design.umn.edu/prog/index.html.

International applicants must submit score(s) from one of the following tests:
• TOEFL
  - Internet Based - Total Score: 86
• IELTS
  - Total Score: 6.5
• MELAB
Program Requirements

Plan C: Plan C requires 52 to 83 major credits and 6 credits outside the major. There is no final exam. A capstone project is required.

Capstone Project: See department for more details.

This program may be completed with a minor.

Use of 4xxx courses towards program requirements is not permitted.

Core Coursework

All MLA students must take the following courses for a total of 36 credits:

- LA 5131 - Geospatial Data Analysis and Design (3.0 cr)
- LA 5202 - Landscape Analysis Workshop (1.0 cr)
- LA 8201 - Designing Landscapes for Dwelling and Settlement (6.0 cr)
- LA 8773 - Landscape Infrastructure and Systems III (3.0 cr)
- LA 8206 - Making Urban Landscape Space (6.0 cr)
- LA 8301 - Landscape Architecture: Research Issues and Methods (3.0 cr)
- LA 8554 - Project Programming (2.0 cr)
- LA 8774 - Landscape Infrastructure and Systems IV (3.0 cr)
- LA 8302 - Professional Practice (3.0 cr)
- LA 8555 - Advanced Landscape Planning and Design (6.0 cr)

Outside Coursework

All MLA students must take at least 6 credits outside landscape architecture, in consultation with their advisor.

MLA I and MLA II Program Options

MLA I Requirements

Additional Course Requirements

MLA I students must take the following courses for 32 credits:

- LA 5201 - Making Landscape Spaces and Types (6.0 cr)
- LA 5376 - Representation I (4.0 cr)
- LA 5413 - Introduction to Landscape Architectural History (3.0 cr)
- LA 5771 - Landscape Infrastructure and Systems I (3.0 cr)
- LA 5203 - Ecological Dimensions of Space Making (6.0 cr)
- LA 5204 - Metropolitan Landscape Ecology (3.0 cr)
- LA 5377 - Representation II (4.0 cr)
- LA 5772 - Landscape Infrastructure Systems II (3.0 cr)

MLA I students may participate in the Cities on the Water study abroad option, with the approval of their advisor and the director of graduate studies. Students choosing the study abroad option take 8 credits of LA 8207, 3 credits of LA 5405, and 4 additional credits in consultation with their advisor for a total of 15 credits. Students who do not choose the study abroad option take LA 8205 for 6 credits plus 9 credits of electives for a total of 15 credits.

- LA 8207 - Cities on Water International Workshop (6.0 cr)
- LA 5405 - Interdisciplinary Studies in Landscape Architecture (1.0 - 6.0 cr)
- LA 8205 - Urban Form Options: Landscape Architecture Studio (6.0 cr)

Landscape Architecture Electives

MLA I students not choosing to study abroad take at least 9 elective credits. Credits are selected in consultation with the advisor.

MLA II Requirements

MLA II students may participate in the Cities on the Water study abroad option, with the approval of their advisor and the director of graduate studies. Students choosing the study abroad option take 8 credits of LA 8207, 3 credits of LA 5405, and 4 additional credits in consultation with their advisor for a total of 15 credits; those not choosing to study abroad take 6 credits of LA 8205, 4 credits of LA 5377 and 6 credits of electives for a total of 16 credits.

- LA 8207 - Cities on Water International Workshop (6.0 cr)
LA 5405 - Interdisciplinary Studies in Landscape Architecture (1.0 - 6.0 cr)

or LA 8205 - Urban Form Options: Landscape Architecture Studio (6.0 cr)

LA 5377 - Representation II (4.0 cr)

**Landscape Architecture Electives**
- MLA II students not choosing to study abroad take at least 6 elective credits. Credits are selected in consultation with the advisor.
- LA 5xxx
- LA 8xxx

**Joint- or Dual-degree Coursework:**
- MLA/MS-Architecture
- Student may take a total of 24 credits in common among the academic programs.
Twin Cities Campus
Landscape Architecture M.S.

Contact Information:
Department of Landscape Architecture, 144 Rapson Hall, 89 Church Street SE, Minneapolis, MN 55455 (612-625-6860; fax: 612-625-0710)
Website: http://landarch.design.umn.edu

- Program Type: Master's
- Requirements for this program are current for Fall 2018
- Length of program in credits: 30
- This program does not require summer semesters for timely completion.
- Degree: Master of Science

Along with the program-specific requirements listed below, please read the General Information section of the catalog website for requirements that apply to all major fields.

The MS is for students with a clear focus in research related to landscape architecture. MS students build expertise related to the practice of landscape architecture as they learn how to conduct research. Students specialize within areas of faculty expertise, which may include art and landscape architecture, landscape ecology, landscape architectural history and theory, park and recreation design, rural and suburban landscape planning, transportation, planning of world heritage sites, and urban design.

Program Delivery
This program is available:
- via classroom (the majority of instruction is face-to-face)

Prerequisites for Admission
The preferred undergraduate GPA for admittance to the program is 3.00.

International applicants must submit score(s) from one of the following tests:
- TOEFL
  - Internet Based - Total Score: 79
  - Internet Based - Writing Score: 21
  - Internet Based - Reading Score: 19
  - Paper Based - Total Score: 550
- IELTS
  - Total Score: 6.8
- MELAB
  - Final score: 80

Key to test abbreviations (TOEFL, IELTS, MELAB).

For an online application or for more information about graduate education admissions, see the General Information section of the catalog website.

Program Requirements
Plan A: Plan A requires 6 major credits, 14 credits outside the major, and 10 thesis credits. The final exam is oral.

This program may be completed with a minor.

Use of 4xxx courses towards program requirements is not permitted.

A minimum GPA of 3.00 is required for students to remain in good standing.

At least 4 semesters must be completed before filing a Degree Program Form.
Coursework Requirements

Landscape Architecture Electives
Take 6 or more credit(s) from the following:
• LA 5xxx
• LA 8xxx

Interest Area Electives
Choose elective credits, in consultation with the advisor, from coursework outside landscape architecture.
Take 6 or more credit(s) from the following:
• xxxx 5xxx
• xxxx 6xxx
• xxxx 7xxx
• xxxx 8xxx

Remaining Electives
Choose remaining credits in consultation with the advisor.
Take 8 or more credit(s) from the following:
• xxxx 5xxx
• xxxx 6xxx
• xxxx 7xxx
• xxxx 8xxx

Thesis credits
Take 10 master's thesis credits.
LA 8777 - Thesis Credits: Master's (1.0 - 18.0 cr)
Twin Cities Campus

Landscape Architecture Minor

College of Design

Contact Information:
Department of Landscape Architecture, University of Minnesota, 144 Rapson Hall, 89 Church Street SE, Minneapolis, MN 55455 (612-625-6860; fax: 612-625-0710)
Email: gsland@umn.edu
Website: http://landarch.design.umn.edu

- Program Type: Graduate minor related to major
- Requirements for this program are current for Fall 2018
- Length of program in credits (Masters): 9
- Length of program in credits (Doctorate): 12
- This program does not require summer semesters for timely completion.

Along with the program-specific requirements listed below, please read the General Information section of the catalog website for requirements that apply to all major fields.

Students in landscape architecture develop professional design skills through courses that address the increasingly complex relationships between art, ecology, and community that influence and inform design on the land. Courses emphasize three principal areas of study: 1) landscape architecture as a means to add to the aesthetic richness of our culture and environment--helping us to better understand ourselves and our place in the world; 2) integration of biological, geophysical, and ecological processes into lasting, meaningful, and systemically rigorous landscape architecture that sustains and protects the health of people and the ecosystems on which they depend; and 3) design for urban and suburban places and people, with emphasis on gaining knowledge and experience through direct engagement with clients and the public in order to address the problems and opportunities of the metropolitan core of cities.

Program Delivery
This program is available:
• via classroom (the majority of instruction is face-to-face)

Prerequisites for Admission
For an online application or for more information about graduate education admissions, see the General Information section of the catalog website.

Program Requirements
Use of 4xxx courses towards program requirements is not permitted.

Minor requirements are determined in consultation with the Landscape Architecture director of graduate studies.

Required Course
Take the following required course for 3 credits:
LA 5413 - Introduction to Landscape Architectural History (3.0 cr)

Program Sub-plans
Students are required to complete one of the following sub-plans. Students may not complete the program with more than one sub-plan.

Masters

Electives
Take at least 6 credits from the following:
LA 5003 - Climate Change Adaptation (3.0 cr)
LA 5204 - Metropolitan Landscape Ecology (3.0 cr)
LA 5514 - Making the Mississippi (3.0 cr)
LA 5755 - Infrastructure, Natural Systems and the Space of Inhabited Landscapes (3.0 cr)
LA 5771 - Landscape Infrastructure and Systems I (3.0 cr)
LA 8301 - Landscape Architecture: Research Issues and Methods (3.0 cr)

Doctoral
Electives
Take at least 9 credits from the following:
LA 5003 - Climate Change Adaptation (3.0 cr)
LA 5204 - Metropolitan Landscape Ecology (3.0 cr)
LA 5514 - Making the Mississippi (3.0 cr)
LA 5755 - Infrastructure, Natural Systems and the Space of Inhabited Landscapes (3.0 cr)
LA 5771 - Landscape Infrastructure and Systems I (3.0 cr)
LA 8301 - Landscape Architecture: Research Issues and Methods (3.0 cr)
Twin Cities Campus
Metropolitan Design Postbaccalaureate Certificate
Design, Housing & Apparel
College of Design

Link to a list of faculty for this program.

Contact Information:
College of Design, Metropolitan Design Program, 1 Rapson Hall, 89 Church Street SE, Minneapolis, MN 55455 (625-9000; fax: 626-0600)
Email: mdc@umn.edu
Website: http://www.designcenter.umn.edu

- Program Type: Post-baccalaureate credit certificate/licensure/endorsement
- Requirements for this program are current for Fall 2018
- Length of program in credits: 21
- This program does not require summer semesters for timely completion.
- Degree: Metropolitan Design PBacc Certificate

Along with the program-specific requirements listed below, please read the General Information section of the catalog website for requirements that apply to all major fields.

The metropolitan design certificate at the College of Design prepares students with the essential knowledge and understanding of the city within the complexities of the 21st-century metropolis. As suburban development is losing some of its past seductions, traditional cities are being transformed to accommodate the return to city living, an American counter-trend that requires the integrative approach of many fields of knowledge.

The certificate is open to graduate students in the College of Design and graduate students from other colleges with related urban planning programs are welcome to apply. The certificate is a two-semester, 21-credit course sequence within existing master's degrees at the College of Design. It is strongly recommended that the required urban design courses should be taken in sequence.

Interested students should enroll during the second semester (spring) of graduate studies. It is recommended that students make a decision to enroll in the certificate early so that the completion of courses can be made within the time required for completion of the professional degree.

Program Delivery
This program is available:
- via classroom (the majority of instruction is face-to-face)

Prerequisites for Admission
Other requirements to be completed before admission:
An application is required including a 2-page statement of interest in the program, university transcripts, and a portfolio of design work (no more 10 pages). Other students not from the College of Design should submit comparable graphic examples and two written papers.

International applicants must submit score(s) from one of the following tests:
- TOEFL
  - Internet Based - Total Score: 79
  - Internet Based - Writing Score: 21
  - Internet Based - Reading Score: 19
  - Paper Based - Total Score: 550
- IELTS
  - Total Score: 6.5
- MELAB
  - Final score: 80

Key to test abbreviations (TOEFL, IELTS, MELAB).

For an online application or for more information about graduate education admissions, see the General Information section of the catalog website.

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Information current as of August 31, 2018
Program Requirements
Use of 4xxx courses towards program requirements is not permitted.

Coursework
Required Courses
ARCH 5711 - Theory and Principles of Urban Design (3.0 cr)
ARCH 5721 - Case Studies in Urban Design (3.0 cr)
ARCH 8255 - Graduate Architectural Design V (6.0 cr)

Electives
Take 9 or more credit(s) from the following:
• ARCH 5361 - 3-D Computer Architectural Modeling and Design (3.0 cr)
• ARCH 5441 - Minnesota: Architecture and Landscapes (3.0 cr)
• ARCH 5671 - Historic Preservation (3.0 cr)
• ARCH 5731 - Territorial City (3.0 cr)
• ARCH 8561 - Sustainable Design Theory and Practice (3.0 cr)
• HSG 5463 - Housing Policy (3.0 cr)
• HSG 5467 - Housing and the Social Environment (4.0 cr)
• HSG 8463 - Housing: Race and Class (3.0 cr)
• LA 5204 - Metropolitan Landscape Ecology (3.0 cr)
• LA 5405 - Interdisciplinary Studies in Landscape Architecture (1.0 - 6.0 cr)
• PA 5204 - Urban Spatial and Social Dynamics (3.0 cr)
• PA 5211 - Land Use Planning (3.0 cr)
• PA 5212 - Managing Urban Growth and Change (3.0 cr)
• PA 5231 - Transit Planning and Management (3.0 cr)
• PA 5261 - Housing Policy (3.0 cr)
• PA 5501 - Theories and Policies of Development (3.0 cr)
• PA 5511 - Community Economic Development (3.0 cr)
• PA 5721 - Energy Systems and Policy (3.0 cr)
• PA 5722 - Economics of Natural Resource and Environmental Policy (3.0 cr)
• PA 5723 - Water Policy (3.0 cr)
• PA 5802 - Global Economic Policy (3.0 cr)
• PA 8202 - Networks and Places: Transportation, Land Use, and Design (4.0 cr)
• PA 8203 - Neighborhood Revitalization Strategies and Theories (4.0 cr)
Twin Cities Campus
Museum Studies Minor
Design, Housing & Apparel
College of Design

Link to a list of faculty for this program.

Contact Information:
Museum Studies Graduate Minor, College of Design, 240 McNeal Hall, 1985 Buford Avenue, 612-626-1219
Email: lnelsonm@umn.edu
Website: http://www.design.umn.edu/prospective_students/programs/museumstudies.html

- Program Type: Graduate free-standing minor
- Requirements for this program are current for Fall 2018
- Length of program in credits (Masters): 7
- Length of program in credits (Doctorate): 12
- This program does not require summer semesters for timely completion.

Along with the program-specific requirements listed below, please read the General Information section of the catalog website for requirements that apply to all major fields.

The museum studies minor offers a structured graduate curriculum for master’s and doctoral students interested in museums. It provides students from a variety of disciplines with an introduction to the issues involved in museum practices (e.g., educational, curatorial, administrative, and conservation). The curriculum includes seminars and internships.

Program Delivery
This program is available:
• via classroom (the majority of instruction is face-to-face)

Prerequisites for Admission
Special Application Requirements:
As a minor-only program, all graduate students who have already been accepted into a University of Minnesota Graduate program are eligible for acceptance into the program.

For an online application or for more information about graduate education admissions, see the General Information section of the catalog website.

Program Requirements
Use of 4xxx courses towards program requirements is not permitted.

Core Course Requirements
All students pursuing the museum studies minor must take the following core coursework, including 1 internship credit (MST 5020).
Internships must be approved by the museum studies director of graduate studies.
MST 5011 - Museum History and Philosophy (3.0 cr)
MST 5012 - Museum Practices (3.0 cr)
MST 5020 - Internship (1.0 - 6.0 cr)

Program Sub-plans
Students are required to complete one of the following sub-plans.
Students may not complete the program with more than one sub-plan.

Master’s
Complete the 7-credit core curriculum described above.

Doctoral
Doctoral Electives
In addition to the core curriculum, take at least 5 credits from the following courses:

**Communication**
Take 0 or more credit(s) from the following:

- JOUR 5251 - Strategic Communication Theory (3.0 cr)

**or Leadership**
Take 0 or more credit(s) from the following:

- ACL 5221 - Creative Entrepreneurship and Resource Development (3.0 cr)
- OLPD 5048 - Cross-Cultural Perspectives on Leadership (3.0 cr)
- OLPD 8020 - Leadership: From Theory to Reflective Practice (3.0 cr)
- PA 5101 - Management and Governance of Nonprofit Organizations (3.0 cr)
- PA 5104 - Strategic Human Resource Management (3.0 cr)
- PA 5123 - Philanthropy in America: History, Practice, and Trends (3.0 cr)
- PA 5253 - Designing Planning and Participation Processes (3.0 cr)
- PA 5251 - Strategic Planning and Management (3.0 cr)

**or Education**
Take 0 or more credit(s) from the following:

- PSY 5014 - Psychology of Human Learning and Memory (3.0 cr)

**or Evaluation**
Take 0 or more credit(s) from the following:

- OLPD 5501 - Principles and Methods of Evaluation (3.0 cr)
- PA 5311 - Program Evaluation (3.0 cr)

**or Exhibition Design**
Take 0 or more credit(s) from the following:

- DES 5185 - Human Factors in Design (3.0 cr)
- DES 8164 - Innovation Theory and Analysis (3.0 cr)
- GDES 8361 - Color, Design, and Human Perception (3.0 cr)
- KIN 5505 - Human-Centered Design - Principles and Applications (3.0 cr)

**or Other Museum Studies Electives**
Internships (MST 5020) must be approved by the museum studies director of graduate studies. Directed study (MST 8993) must be guided by a member of the museum studies graduate faculty.
Take 0 or more credit(s) from the following:

- MST 5020 - Internship (1.0 - 6.0 cr)
- MST 8993 - Directed Study in Museum Studies (1.0 - 4.0 cr)

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Information current as of August 31, 2018
Twin Cities Campus
Product Design Minor
Design, Housing & Apparel
College of Design

Contact Information:
Director of Graduate Studies, Product Design Graduate Minor, 240 McNeal Hall, 1985 Buford Avenue, St. Paul, MN 55108
Email: dhagrad@umn.edu
Website: http://product.design.umn.edu

- Program Type: Graduate free-standing minor
- Requirements for this program are current for Fall 2018
- Length of program in credits (Masters): 11
- Length of program in credits (Doctorate): 12
- This program does not require summer semesters for timely completion.

Along with the program-specific requirements listed below, please read the General Information section of the catalog website for requirements that apply to all major fields.

Product design is the planning of an item intended to be manufactured and sold. These items exist both as discrete artifacts and as actors in larger social systems, such as branded environments, services, experiences, and social interactions. A graduate minor may be earned in product design when it logically relates to the graduate major field. The minor program is designed to suit the particular needs and interests of the student. The course of study is determined in consultation with the student's major advisor and the director of graduate studies for the minor.

Program Delivery
This program is available:
- via classroom (the majority of instruction is face-to-face)

Prerequisites for Admission
A graduate minor may be earned in product design when it logically relates to the graduate major field.

For an online application or for more information about graduate education admissions, see the General Information section of the catalog website.

Program Requirements
Use of 4xxx courses toward program requirements is permitted under certain conditions with adviser approval.

A minimum of two courses with the PDES designator must be taken to fulfill the minor requirements.

The course of study must be approved by the product design director of graduate studies.

Product Design Core Courses
Required Course (3 Credits)
PDES 5701 - Creativity, Idea Generation, and Innovation (3.0 cr)

Product Design Process (3 to 8 Credits)
Option 1
PDES 5711 - Toy Product Design (4.0 cr)

Option 2
DES 8151 - Product Development: Theory and Practice (3.0 cr)

Option 3
ME 8221 - New Product Design and Business Development I (4.0 cr)
ME 8222 - New Product Design and Business Development II (4.0 cr)

Option 4
BMEN 8401 - New Product Design and Business Development (4.0 cr)
BMEN 8402 - New Product Design and Business Development (4.0 cr)

Option 5

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Information current as of August 31, 2018
Take ENTR 6041 for 2 to 4 credits, in consultation with the Product Design director of graduate studies.

ENTR 6041 - Initiating New Product Design and Business Development (2.0 - 4.0 cr)
ENTR 6042 - Implementing New Product Design and Business Development (4.0 cr)

**Program Sub-plans**

Students are required to complete one of the following sub-plans.

Students may not complete the program with more than one sub-plan.

**Masters**

**Electives (0 to 4 Credits)**
Select remaining coursework, in consultation with the product design director of graduate studies, to meet the 11-credit minimum and the requirement for 2 PDES courses. Product design core courses not applied to the core requirement may be used as electives.

**Design Process**
- PDES 5711 - Toy Product Design (4.0 cr)
- or DES 8151 - Product Development: Theory and Practice (3.0 cr)
- or BMEN 8401 - New Product Design and Business Development (4.0 cr)
- BMEN 8402 - New Product Design and Business Development (4.0 cr)
- or ME 8221 - New Product Design and Business Development I (4.0 cr)
- ME 8222 - New Product Design and Business Development II (4.0 cr)
- or DES 8164 - Innovation Theory and Analysis (3.0 cr)

**Drawing and Visualization**
- PDES 5702 - Concept Sketching and Rendering (3.0 cr)
- or PDES 5704 - Computer-Aided Design Methods (3.0 cr)
- or GDES 8362 - The Nature of Representation in Visual Communication (3.0 cr)

**Prototyping, Manufacturing, and the Environment**
- PDES 5703 - Product Form and Model Making (4.0 cr)
- or ME 5221 - Computer-Assisted Product Realization (4.0 cr)
- or ME 5223 - Materials in Design (4.0 cr)
- or ME 5241 - Computer-Aided Engineering (4.0 cr)
- or ME 8243 - Topics in Design (4.0 cr)
- or ESPM 5603 - Environmental Life Cycle Analysis (3.0 cr)
- or ESPM 5605 - Recycling: Extending Raw Materials Supplies (3.0 cr)

**Human Factors**
- DES 5185 - Human Factors in Design (3.0 cr)
- or CSCI 5115 - User Interface Design, Implementation and Evaluation (3.0 cr)
- or GDES 5341 - Interactive Design (3.0 cr)
- or GDES 5386 - Fundamentals of Game Design (3.0 cr)
- or KIN 5505 - Human-Centered Design - Principles and Applications (3.0 cr)
- or HUMF 5001 - Foundations of Human Factors/Ergonomics (3.0 cr)

**Understanding the Consumer and the Market**
- PDES 5705 - History and Future of Product Design (3.0 cr)
- or ANTH 5121 - Business Anthropology (2.0 cr)
- or DES 8164 - Innovation Theory and Analysis (3.0 cr)
- or MKTG 6055 - Buyer Behavior (4.0 cr)
- or MKTG 6050 - Business Research Methods (2.0 cr)

**Doctoral**

**Electives (1 to 4 Credits)**
Select remaining coursework, in consultation with the product design director of graduate studies, to meet the 12-credit minimum and the requirement for 2 PDES courses. Product design core courses not applied to the core requirement may be used as electives.

**Design Process**
- PDES 5711 - Toy Product Design (4.0 cr)
- or DES 8151 - Product Development: Theory and Practice (3.0 cr)
- or BMEN 8401 - New Product Design and Business Development (4.0 cr)
- BMEN 8402 - New Product Design and Business Development (4.0 cr)
- or ME 8221 - New Product Design and Business Development I (4.0 cr)
- ME 8222 - New Product Design and Business Development II (4.0 cr)
- or DES 8164 - Innovation Theory and Analysis (3.0 cr)

**Drawing and Visualization**
- PDES 5702 - Concept Sketching and Rendering (3.0 cr)
- or PDES 5704 - Computer-Aided Design Methods (3.0 cr)
- or GDES 8362 - The Nature of Representation in Visual Communication (3.0 cr)

**Prototyping, Manufacturing, and the Environment**
PDES 5703 - Product Form and Model Making (4.0 cr)
or ME 5221 - Computer-Assisted Product Realization (4.0 cr)
or ME 5223 - Materials in Design (4.0 cr)
or ME 5241 - Computer-Aided Engineering (4.0 cr)
or ME 8243 - Topics in Design (4.0 cr)
or ESPM 5603 - Environmental Life Cycle Analysis (3.0 cr)
or ESPM 5605 - Recycling: Extending Raw Materials Supplies (3.0 cr)
or Human Factors
DES 5185 - Human Factors in Design (3.0 cr)
or CSCI 5115 - User Interface Design, Implementation and Evaluation (3.0 cr)
or GDES 5341 - Interactive Design (3.0 cr)
or GDES 5386 - Fundamentals of Game Design (3.0 cr)
or KIN 5505 - Human-Centered Design - Principles and Applications (3.0 cr)
or HUMF 5001 - Foundations of Human Factors/Ergonomics (3.0 cr)
or Understanding the Consumer and the Market
PDES 5705 - History and Future of Product Design (3.0 cr)
or ANTH 5121 - Business Anthropology (2.0 cr)
or DES 8164 - Innovation Theory and Analysis (3.0 cr)
or MKTG 6055 - Buyer Behavior (4.0 cr)
or MKTG 6050 - Business Research Methods (2.0 cr)