Master of Design in Sustainable Environments

The Master of Design in Sustainable Environments (MDesSE) at Iowa State University is a post-professional degree that focuses on sustainable design strategies, systems and materials for environmental and product design. The program addresses ways to envision, make and remake landscapes, communities, buildings, objects and images that conserve resources, ameliorate ecological problems and promote social, political and economic justice.

This three-semester, 35-credit graduate course of study offers opportunities to work on a variety of faculty-directed projects that may include funded research, community-based design work and theoretical investigations. The program addresses sustainable design at multiple scales, engaging both systems and artifacts.

Through this degree program, students will:

• gain awareness of individual professional roles and responsibilities for practices, technologies and methods of design for sustainability, 
• learn to collaborate in a team-based, interdisciplinary design process, and 
• acquire new knowledge, tools and strategies for sustainable design practices in the development of opportunities and markets for engineers, artists and designers.

The interdisciplinary MDesSE is geared toward students who hold professional degrees in art, architecture, landscape architecture, interior design, graphic design, industrial design, planning and/or engineering. Students enrolling in this master's program must be proficient in English.

How to Apply
The Master of Design in Sustainable Environments graduate program is accepting applications for consideration for fall 2013 admission. For more information, contact:

Mark Chidister
Acting Director
(515) 294-7427
markchid@iastate.edu

Curriculum Outline for Full-time Students

<table>
<thead>
<tr>
<th>Fall</th>
<th>Spring</th>
<th>Summer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foundations of Sustainable Design (Cr. 3)</td>
<td>Human Dimensions of Sustainable Design (Cr. 3)</td>
<td>Sustainable Design Studio II (Cr. 5)</td>
</tr>
<tr>
<td>Sustainable Design Colloquium I (Cr. 3)</td>
<td>Sustainable Design Colloquium II (Cr. 1)</td>
<td>Electives (Cr. 3)</td>
</tr>
<tr>
<td>Electives (Cr. 9)</td>
<td>Sustainable Design Studio I (Cr. 5)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Electives (Cr. 3)</td>
<td></td>
</tr>
</tbody>
</table>

Electives
Fifteen (15) graduate credits total are required, with six (6) credits determined by student and adviser; nine (9) credits chosen from each of three focus areas:

• social equity 
• environmental stewardship 
• economic viability

Courses approved for these categories are determined by program faculty and updated on a regular basis. Part-time graduate students will work with the program director to develop a degree study plan.
Course Descriptions

Core Courses

Foundations of Sustainable Design (Cr. 3)
This seminar introduces the broad frameworks and tools for implementing sustainability among a variety of industries and enterprises and investigates the role and opportunity for design strategies in these initiatives. The first half of the term is devoted to a critical reading of frameworks such as natural systems behavior; the Natural Step (medical model that looks upstream to sources of health crises) natural capitalism; industrial ecology; biomicriny; the CERES Principles; the Hannover Principles and LEED. The second half concerns the tools or methods for determining where we are, how we are doing and how to make decisions. These tools include, for example, ecological footprint; ecological rucksack; ecoefficiency; ecocertification; ecolife-cycle assessment; life-cycle costing; environmental management and auditing schemes.

Human Dimensions of Sustainable Design (Cr. 3)
This course is grounded in case studies of designers' nested interactions with clients, consumers, communities, cultures and biospheres. Through a critical review of case studies in sustainable design and the development of their own case study, students demonstrate how design decisions operate across scales, markets, social conditions, geographic domains, academic disciplines and zones of professional responsibility.

Sustainable Design Colloquium I (Cr. 3)
This course folds a graduate seminar into a public lecture series on the discourses and practices of sustainable design and research. Through the lens of specific designers and projects, the seminar investigates responses to the shifting responsibilities, roles, technologies and methods for studying and advancing the art and science of designing sustainable environments. Invited speakers are drawn from a range of Iowa State faculty as well as beyond. Guest lecture is preceded and followed by class meetings that read and review the professional context, disciplinary language and issues.

Sustainable Design Colloquium II (Cr. 1)
The second colloquium is devoted to the development of opportunities and markets for artists and designers in this program. A graduate student-led seminar is designed to foster the knowledge and skills to support entrepreneurship, professional networks and leadership in sustainable design practices.

Sustainable Design Studio I (Cr. 5)
Addressing sustainable design at multiple scales of manufactured and natural systems and artifacts, this studio engages multidisciplinary graduate students in a team-oriented, project-based learning environment. Faculty-directed projects will include theoretical investigations and applications of an interdisciplinary design process.

Sustainable Design Studio II (Cr. 5)
The second studio provides a community-based context for an interdisciplinary design team to work on a variety of faculty-directed projects, including funded basic and applied research. This studio addresses sustainable design at multiple scales, engaging both systems and artifacts.

Elective Courses

Social Equity
ARCH 529 Spatial Dialectics in the American Midwest. (3-0) Cr. 3.
ARTID 551 Design Humanities. (3-0) Cr. 3.
C DEV 503 Community Development I: Principles and Strategies of Community Change. (3-0) Cr. 3.
C DEV 505 Community Development II: Organizing for Community Change. (3-0) Cr. 3.
CRP 529 International Planning. (3-0) Cr. 3.
ENGL 355 Literature and the Environment. (Cross-listed with ENV S). (3-0) Cr. 3.
ENGL 543 Environmental Literature. (3-0) Cr. 3.
PHIL 430 Value Theory. (3-0) Cr. 3.
PHIL 535 Contemporary Political Philosophy. (Cross-listed with POL S.) (3-0) Cr. 3.
PHIL 596 Ecology and Society (Cross-listed with EEOB.) (3-0) Cr. 3.
SOC 527 Seminar in Social Inequality. (3-0) Cr. 3.
SOC 534 Race, Class and Gender Inequality. (3-0) Cr. 3.
SOC 549 Sociology of the Environment. (3-0) Cr. 3.

Environmental Stewardship
AE 511 Bioproducts and Bioprocesses. (Cross-listed with BSE, BRT, CE). (3-0) Cr. 3.
ARCH 558 Sustainability and Green Architecture. (3-0) Cr. 3. F
BIOL 381 Environmental Systems. (Cross-listed with ENV S, ENSCI, MICRO). (2-4) Cr. 4.
BIOL 472 Community Ecology. (2-2) Cr. 3.
C DEV 502 Community and Natural Resource Management. (3-0) Cr. 3.
CRP 525 Growth Management. Dual-listed with 425 (3-0) Cr. 3.
CRP 545 Transportation Policy Planning. (3-0) Cr. 3.
CRP 591 Environmental Law and Planning. (Cross-listed with LA.) (3-0) Cr. 3.
ENSCI 522 Water Pollution Control Processes. (Cross-listed with CE). (2-2) Cr. 3.
ENSCI 523 Physical-Chemical Treatment Process. (Cross-listed with CE). (2-2) Cr. 3.
ENSCI 527 Solid Waste Management. (Cross-listed with CE). (3-0) Cr. 3.
ENSCI 529 Hazardous Waste Management. (Cross-listed with CE). (3-0) Cr. 3.
ENSCI 531 Design and Evaluation of Soil and Water Conservation Systems. (Cross-listed with AE). (2-3) Cr. 3.
ENSCI 574 Environmental Impact Assessment. (Cross-listed with CE). (3-0) Cr. 3.
ENSCI 535 Restoration Ecology (Cross-listed with EEOB, NREM). (2-3) Cr. 3.
LA 517 Urban and Peri-urban Watershed Assessment. (2-3) Cr. 3.
PHIL 483 Philosophy of Biology. (3-0) Cr. 3.
ME 433 Alternative Energy Conversion. (3-0) Cr. 3.
ME 444 Elements and Performance of Power Plants. (3-0) Cr. 3.
ME 540 Solar Energy Systems. (3-0) Cr. 3. Alt.
ME 484 Technology Globalization and Culture. Dual-listed with 584. (Cross-listed with WLC). (3-0) Cr. 3.
ME 540 Solar Energy Systems. (3-0) Cr. 3.
SOC/AGRON/ANTHR/SUSAG 509 Agroecosystem Analysis. (3-4) Cr. 3.

Economic Viability
C DEV 506 Community and Regional Economic Analysis I. (3-0) Cr. 3.
C DEV 508 Ecological Economics. (3-0) Cr. 3.
CRP 566 Values and Decision Making. (3-0) Cr. 3.
CRP 568 Planning and Development. (3-0) Cr. 3.
CRP 517 Urban Revitalization. Dual-listed with 417 (3-0) Cr. 3.
CRP 555 Community Economic Development. (3-0) Cr. 3. Alt.
ECON 385 Economic Development. (3-0) Cr. 3.
ECON 480/580 Intermediate Environmental and Resource Economics. (3-0) Cr. 3.
ECON 581 Advanced Environmental Economics. (3-0) Cr. 3.
FIN 415 Business Financing Decisions. (3-0) Cr. 3.
FIN 462 Corporate Risk Management and Insurance. (3-0) Cr. 3.
FIN 472 Real Estate Finance. (3-0) Cr. 3.