

*Master's of Integrated Sustainable Development
Handbook*



UF | UNIVERSITY of
FLORIDA

Sustainability and the Built Environment
College of Design, Construction and Planning

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A Message from the Director

Sustainability and the Built Environment (SBE) Program
College of Design, Construction and Planning (DCP)

Joining the Master's in Integrated Sustainable Development (MISD) may be the most important decision you made towards your future career. Sustainability and resiliency knowledge and skills are in need as the industry, countries, and NGOs are focusing on climate change. Abundant sustainability-related positions are available in the United States and across the world.

We are proud to offer this opportunity to our students, alumni, and anyone else who is interested in furthering their career and/or align it with the field of sustainability and resiliency and gain insight into the global sustainability industry.

Take a moment to read this Master's Degree handbook which has been drafted to support your success and timely graduation. Therefore, use this handbook as a quick-reference guide. Feel free to contact Mr. Pat Dejong, SBE Graduate Admissions Officer or me if you have questions.

With clear goals, you are about to see forward momentum in your career trajectory. Graduate and become a proud DCP/UF alumni, come back, and share your insights with students, and make an impact!

Go Gators!

B. Armaghani

Bahar Armaghani, LEED Fellow
Director, Sustainability and the Built Environment
College of Design, Construction and Planning
University of Florida

Introduction

The Master's in Integrated Sustainable Development (MISD) students are required to read this handbook and its supporting documentation. *The student is responsible for meeting all master's degree program requirements and satisfying all deadlines, which are published in the Graduate School's academic calendar.*

This document sets the procedures and policies to be followed by both prospective and admitted students seeking the MISD, within SBE in the College of DCP. *This handbook is a supplement to the Graduate Catalog of the University of Florida's Graduate School and should be read in conjunction with that document.* These documents and other general information are available as follow:

Resources:

- The **Graduate Catalog** is available at <https://catalog.ufl.edu/graduate/>.
- The **Graduate School website** is available at <http://graduateschool.ufl.edu/>.
- The **Sustainability and the Built Environment program website** available at <https://dcp.ufl.edu/sbe/what/graduate/>

Contacts:

- The Sustainability and the Built Environment program, **Director, Bahar Armaghani**. Her email address is barmagh@ufl.edu.
- The MISD's **Graduate Admissions Assistant Director** is Mr. Pat Dejong. His email address is patricde@ufl.edu.

Completion of a master's degree involves two main components:

1. Complete the coursework.
 - The MISD requires 30 credit hours including:
 - Three required courses plus a six-credit hour studio, DCP 6221, (15 credit hours)
 - Elective courses (15 credit hours). The available electives are in Architecture, Construction Management, Engineering, and Urban and Regional Planning. **Select from a minimum of two disciplines.**
2. Complete a final exam.
 - MISD is a non-thesis degree. The final exam consists of completing a studio course, DCP 6221.
 - Final exams must be completed in a student's final semester.
 - Non-thesis requirement, involving a research report, professional presentation (e.g., PowerPoint), and a video on a timely and significant topic focused on resiliency and sustainability in the built environment.

Application for Admission into the MISD

Common Application Procedures:

1. Apply to the MISD (non-thesis) using the online application found at <https://admissions.ufl.edu>.
 - a. Do not select a concentration. There are no active concentrations inside of the MISD.
 - b. Make sure to comply with the deadlines, which are available at <https://dcp.ufl.edu/sbe>.
 - c. The following materials are required:
 - i. Transcripts from all colleges and universities attended,
 - ii. A current résumé or *curriculum vitae*,
 - iii. Three letters of recommendation (academics preferred; professionals accepted),
 - iv. A statement of purpose:
 1. Length should be one to two pages, single space
 2. Font should be twelve-point, Arial, Times New Roman, or Calibri,
 3. Should clearly state why the student desires to study at the SBE/DCP, and
 4. Should clearly state the objective of earning the master's degree.
2. Note that a B grade average (3.0 on a 4.0 scale) or better is expected.
3. Note that admissions are competitive. Merely meeting the minimum requirements does not guarantee admission.
4. Note the application fee is \$30 (plus a convenience fee when paying by credit card).
 - a. The fee is not waivable.
 - b. The fee is non-refundable.
 - c. Applicants should ensure they meet admissions criteria before applying.
5. Applications will be reviewed by a graduate faculty committee, and the applicants will be notified of their acceptance.
6. Upon starting the program, each student will have a supervisory committee that consists of a chair and a co-chair. The chair will have a graduate faculty appointment in one of the academic units contained in the College of Design, Construction, and Planning. The co-chair will have a graduate faculty appointment from an academic unit related to the project topic.

English Proficiency Exams

Applicants who are not citizens of a country where English is one of the official languages will need to submit English proficiency exam scores, unless they graduated with a degree from a university in a country where the official language is English.

- GRE is not required.
- Test of English as a Foreign Language (TOEFL) and International English Language Testing System (IELTS) scores are both acceptable exams.
- Students may substitute the University of Florida English Language Institute (ELI) exit exam in place of acceptable TOEFL or IELTS scores. To learn more about the ELI program, visit <https://eli.ufl.edu/>.

Master of Integrated Sustainable Development (MISD)

The MISD is a coursework degree for those looking to enter or advance their career in the sustainability industry. It requires eight courses, plus six credit hours for capstone/practicum to complete the degree. This produces a graduate who is very well rounded in their knowledge of sustainability. MISD is a terminal degree because the lack of research does not prepare students to further their education with a Doctor of Philosophy (PhD). Likewise, the lack of thesis does not prepare students well for law school (Juris Doctorate), due to the lower volume of writing.

Course Number	Course Title	Number of Credits	Term
Required Courses			
DCP 6230	Economics of Sustainability in the Built Env.	3	SP
BCN 6584C	Building Energy Modeling	3	FA
BCN 6585	Sustainable Construction	3	SP
DCP 6221	Integrated Sustainable Development Studio	6	SU
Sub Total		15	
Electives (select five out of the following courses from a minimum of two disciplines)			
ARC 6311C	Building Information Modeling (BIM)	3	SP
ARC 6883	Vernacular Architecture and Sustainability	3	FA
ARC 6621	Graduate Environmental Technology 2	3	FA
BCN 5905	AI and Machine Learning for Construction	3	FA
BCN 6583	Sustainable Housing	3	SP
CGN 5605	Public Works Planning	3	SP
CGN 5606	Public Works Management	3	FA
DCP 6931	Data Science for Interior-Environment Research & Des.	3	SP
EES 6007	Advanced Energy and Environment	3	FA
TTE 5006	Advanced Urban Transportation Planning	3	FA
LAA 6382	Ecological and Environmental Policy	3	FA, will be offered fall 2023
URP 6716	Transportation Policy & Planning	3	FA
URP 6711	Transportation and Land Use Coordination	3	SP
URP 6100	Planning Theory and History	3	SP/FA
URP 6421	Environmental Land use Planning and Mgmt.	3	FA
URP 6541	Economic Development Planning	3	FA

Master's in integrated Sustainable Development		
Semester 1 - Fall Term		CR.
BCN 6584C	Building Energy Modeling	3
	elective	3
	elective	3
	elective	3
	Total Credits =	12
Semester 2 - Spring Term		CR.
DCP 6230	Economics of Sustainability in the Built Env	3
BCN 6585	Sustainable Construction	3
	elective	3
	elective	3
	Total Credits =	12
Optional - Summer-C Term		CR.
DCP 6221	Practicum	6
	Total Credits =	6
		GRAND TOTAL = 30

MISD Course Information

Required Courses:

BCN 6585, Sustainable Construction

Credits: 3, Grading Scheme: Letter

This course addresses the application of the sustainable development paradigm to the built environment. Sustainable development includes reducing the impacts of human activities on natural ecosystems and understanding the role these ecosystems have in the economy and on human welfare. It involves understanding the lessons that human society can learn from natural systems and how these lessons can help provide a good quality of life for the planet's population.

BCN 6584, Building Energy Modeling

Credits: 3, Grading Scheme: Letter

As energy is becoming more precious, it is crucial for building sector to proactively design and operate high performance buildings. To achieve higher standards in building design and operation, a solid foundation of energy engineering and sustainability principles is essential.

DCP 6230, Economics of Sustainability in the Built Environment. *This course is in the approval process. This course is under review by University Curriculum Committee/ Graduate Curriculum Committee*

Credits: 3 Grading Scheme: Letter

This course will present concepts, theories, data, and empirical findings critical for analyzing the economics of sustainability, and the practice of managing organizations, communities, cities, countries, and regions in a way that ensures our planet maintained. This course examines sustainability from the perspective of the intersection of business performance and performance in the built environment that encourages equity and without compromising people or place. Sustainability officers from companies and government as well as stakeholders from communities will serve as guest speakers in class throughout the semester. Topics we will explore include an overview of natural resource (green) accounting, the valuation of biodiversity and ecosystem services, urban sustainability, sustainable business practices, the interacting roles of business, government and NGOs, and the role of international finance institutions.

DCP 6221, Sustainable Studio (Integrated sustainable development). *This course is in the approval process. This course is under review by University Curriculum Committee/ Graduate Curriculum Committee*

Credits: 6, Grading Scheme: Letter

Integrated sustainable development is in fact, about integrating everything – connecting people, processes, data, and the built environment. The approaches are innovative and informed by making communities livable across scales and populations; consuming and managing large datasets; performing analytics; and measuring impacts that allow us to explore and understand patterns that create insights for green infrastructure planning and sustainable investments. This course highlights the use of scientific principles in creating innovative technology-based projects that achieve the mutual goals of improved quality of life, economic prosperity, and sustainable infrastructure. This course uses a design thinking approach to develop a strategy that integrates innovation, analytics, impact assessment, planning and policy into the solution.

Elective Courses

ARC 6311C, Building Information Modeling (BIM)

Credits: 3, Grading Scheme: Letter

Widespread adoption of 3D modeling enabled complex geometries and spatial relations to be tested, refined, and documented; gradually digital design moves beyond being a representational tool and is starting to have an impact on the design process and methodology. Iterative and non-linear design workflows are now much more flexible due to the evolving programs architects are adopting, with the concept of parametric simultaneously enabling precision with constraints while allowing for ambiguity and adaptability with outcome.

ARC 6883, Vernacular Architecture and Sustainability

Credits: 3, Grading Scheme: Letter

In this course, we will look at the location of vernacular architecture in the discourse of architectural sustainability. We will look at how vernacular architecture has been constructed, represented, and consumed in the environmental histories of architecture. We will examine how vernacular architecture constructed as a pedagogic object of climate responsiveness and as a set of relationships between human beings and their environment.

ARC 6621, Graduate Environmental Technology 2

Credits: 3, Grading Scheme: Letter

ARC 6621 investigates acoustical, thermal, and luminous qualities within the built environment, with an emphasis on building envelope and system design. The main goal of the course is to advance students' knowledge of **computational modeling** in building technologies such as lighting and energy simulation. The course begins with a study of building acoustic, lighting, and thermal systems and then focuses on the evaluation of **building energy performance** in various climate zones. *Specific topics* include architectural acoustics, advanced lighting and daylighting strategies, visual and thermal comfort assessment, building primary (boilers, chillers, etc.) and secondary (comfort delivery) mechanical systems, and building energy performance. This course will use a mix of traditional lecture and **interactive and experiential education**, and will include laboratory sessions, guest lectures, in-class debates and discussions, site visits, and real-time building performance measurements and experiments.

BCN 6583, Sustainable Housing

Credits: 3, Grading Scheme: Letter

Sustainability emerges from the balance and intersection of "the 3 e's": environment, economics and social equity. Postindustrial residential planning and building practices of recent decades have often neglected to address even one of these e's, resulting in residential buildings and landscapes that will be – or currently are – unsustainable in even the near future. Recent efforts have produced processes, practices, and innovations to rectify this situation. Some of these residential practices try to incorporate at least one of these "e's" into the design-development-financing construction-occupancy process; some attempt to address more than one. The premise of this course is that "sustainable" includes but is more than building "green;" and that it needs to address the environmental, social and economic facets of housing, from the home interior to the residential infrastructure. This course examines approaches and exemplars that can advance the development and building of sustainable housing in this light.

CGN 5606, Public Works Management

Credits: 3, Grading Scheme: Letter

The intent of this course is to teach the student the basic concepts of managing public works organizations, leadership qualities, and the art of communicating with different people within these organizations. The student will also learn about financial and legal aspects involved in public works. Furthermore, the student will learn to identify public works problems and how to determine possible solutions.

CGN 5605, Public Work Planning

Credits: 3, Grading Scheme: Letter

The course intends to teach students the basic concepts of best land use practices, best transportation practices, best environmental practices, and best housing practices in the planning of cities and urban environment. Furthermore, students will learn comprehensive land use in relation to sustainable land development for residential subdivisions, industrial parks, commercial/shopping centers and to apply these skills to the four assigned projects during the semester.

EES 6007, Advanced Energy and Environment

Credits: 3, Grading Scheme: Letter

Description: Energy basis for a system of humanity and nature, including principles of systems ecology, ecological economics, and public policy.

ENV 5306, Municipal Refuse Disposal

Credits: 3, Grading Scheme: Letter

Quantities and characteristics of municipal refuse and hazardous materials. Collection methods, transfer stations, equipment, and costs. Refuse disposal practices, regional planning, and equipment.

LAA 6382, Ecological and Environmental Policy

Credits: 3, Grading Scheme: Letter

This course will provide a survey of major environmental policy and law with particular reference to Florida case studies. It is a designated core course. Our society attempts to provide environmental protection through the articulation of public policy codified in the form of laws and regulations.

TTE 5006 Advanced Urban Transportation Planning

Credits: 3, Grading Scheme: Letter

Overview of the "four-step" urban transportation planning process, estimation of the travel demand models of trip generation, trip distribution, mode choice, and traffic assignment, and the forecasting of travel patterns using the travel-demand models, state-of-the-art approaches.

URP 6711, Transportation and Land Use Coordination

Credits: 3, Grading Scheme: Letter

This course addresses a variety of aspects of the connection between land use and transportation. The course is an in-depth evaluation of a wide range of transportation and land use at a variety of scales. This course builds on two courses in the curriculum in the Department of Urban and Regional Planning: URP6716- Transportation Policy and Planning and URP6131 – Land Use Planning Law. In the course, we consider how the patterns of land use and transportation shaped by three major sets of actors in the urban environment: individuals, businesses, and governments.

URP 6716, Transportation Policy & Planning

Credits: 3, Grading Scheme: Letter

This course deals with urban transportation planning and policy. The course is an overview of transportation planning issues largely in a metropolitan context.

URP 6905, Sustainable Urbanism in Europe

Credits: 3, Grading Scheme: Letter

In this rapidly globalizing world, students need to understand the changing needs and demands of the planning profession and people. Current and rapid changes in the structure and trends in the Globalization, Urbanization, Inequality, etc. have intended and unintended consequences on the development outcome and the planning process.

URP 6100, Planning Theory and History

Credits: 3, Grading Scheme: Letter

This course addresses the history and fundamental theory of planning. Understanding the history and theory of planning requires that we consider three separate but related elements. First, is the evolution of the city as a physical, social, and economic entity? Second, is the evolution of planning as a process, which takes us beyond the field of city planning. Cities have been planned and built by a wide variety of actors, including engineers, politicians, capitalists, architects, lawyers, doctors, radicals, conservatives, craftspeople, and workers. Third, planning has evolved in the United States and in Western Europe since the late 19th Century through a profession of people calling themselves city planners. They, too, have been very diverse, driven by many different motivations and seeing the profession in widely differing ways based upon, among other factors, the various theories of planning. These theories discussed within the context of the history of planning and their implications for planning practice. Because engaging with the public interest is integral to the planning profession and given the role planning has had in shaping urban and regional environments with direct consequences for quality of life, issues of social justice form an essential framework throughout this course.

URP 6421, Environmental land use planning and management

Credits: 3, Grading Scheme: Letter

This course surveys environmental land use planning and management practices across the breadth of the field through seven modules. Each module examines environmental concerns, associated land use planning and management goals and practices, and illustrative cases.

URP 6541, Economic Development Planning

Credits: 3, Grading Scheme: Letter

This course offers an overview of selected important topics in economic development planning at local, national, and international level. Urban planning and economic development often intersect in real world. Several economic development issues both at micro and macro level, such as employment, taxes, subsidy, human capital formation, investment, influence of technology, rapid globalization, innovative entrepreneurship, and overall growth, greatly affect the built environment through many different channels.

MISD Registration

- **First Term Registration.** First term registration for newly admitted students is done by the Graduate Admissions Officer.
- **Subsequent Term Registration.** Student will meet with the Graduate Admissions Officer prior to subsequent registration. The Graduate Admissions Officer will email students about registration for the upcoming semester with course options and important dates. Students will need to consult with the Graduate Admissions Officer for Capstone registration.
- **Drop/Add.** It is imperative that all course schedule adjustments are completed before the end of the Drop/Add period for any given semester. Reference the academic calendar found in the *Graduate Catalog* for the deadlines.

Course Descriptions

Reference the *Graduate Catalog* for course descriptions. <https://catalog.ufl.edu/graduate/>

General Information

Combination Master's Degrees

A combination degree program includes simultaneous study on an individualized basis that leads to two master's degrees in two different graduate programs. Such a program is initiated by the student but requires prior approval from each academic unit and the Graduate School. If the student is approved to pursue two master's degrees, up to nine credits of course work from one degree program may be applied toward the second master's degree, thereby allowing the two degrees to be completed in less time and more economically.

Unsatisfactory Progress

Any graduate student may be denied further registration if progress toward completing the program becomes unsatisfactory to the academic unit, college, or Dean of the Graduate School. Unsatisfactory scholarship is defined as failure to maintain a B average (3.00) in all work attempted. Graduate students need an overall grade point average (GPA) of 3.00 and a 3.00 GPA in their major (and in the minor if a minor is declared) at graduation. Students with less than a 3.00 GPA may not hold an assistantship.

Frequently Asked Questions

Is any assistance with employment offered by the SBE/DCP?

The SBE program assists students with finding internships and job interviews. The DCP also hosts career fairs in the Spring and Fall Semesters.

Will graduate students have their own space?

The DCP graduate common space is located at the 1st floor at the Architecture building. Students are not assigned desk space as it is a common area.

Is the GRE required if one already has an advanced degree, an FE or PE, or has GMAT scores?

MISD does not require the GRE.

Where can one find information on graduation ceremonies?

The University of Florida refers to the ceremonies honoring graduating students as Commencement, and information regarding it can be found on the Commencement website, <https://commencement.ufl.edu/>.

Does SBE/DCP accept transfer credits?

Up to six credits of relevant graduate-level coursework from another regionally accredited institution may be transferred, at the discretion of the Director of Graduate Studies, towards the MISD, if those credits were not used to satisfy requirements for a previously awarded degree and a grade of B or higher was earned in the course(s).

Can MISD credit be used towards a DCP PhD?

Up to 30 credits may be transferred to a doctoral degree in Design, Construction and Planning.

Is on-campus housing available?

UF does have graduate student housing. Reference the UF Housing and Residence Education website, <https://www.housing.ufl.edu/>, for information.

How long does it take to earn MISD?

Student can complete MISD in one year. Starting in the fall and graduate in the summer if the student is full time.

What does one do with a MISD degree?

The MISD graduates enter construction, energy, NGOs and other public and private sectors.

Where do students come from?

MISD students can come from across the world. Their academic backgrounds have ranged from Anthropology, sustainability, engineering, to Urban and Regional Planning.

How does one obtain a student ID card?

Students should stop by Gator 1 Central, located on the ground floor of the Reitz Union, when they arrive on campus to begin their first semester to obtain their Gator-1 card. Photo identification is required.

What Student organizations exist at DCP?

Reference the Students section of the DCP website, <https://dcp.ufl.edu/student-clubs>.



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