

## ***Built Heritage Documentation II***

*DCP 6715*

**Academic Term:** Spring 2023

**Class Periods:** Tuesday, Period 6-8 (12:50 PM – 3:50 PM)

**Classroom Location:** RNK 215

**ZOOM:** [Link](#) | **ZOOM Meeting ID:** 963 7734 2571 | **Passcode:** 636245

### ***Instructor***

**Sujin Kim, Ph.D.,**

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Office Hours: Tuesdays 9:30 AM – 12:30 PM & by appointment, ARCH 140 / ZOOM

### ***Course Description***

This class includes a technical training workshop and research seminar. The course trains future built environment specialists in digital technologies that can help record and study existing built environments, including historical ones, and cultural resources. For those who pursue careers in DCP disciplines and heritage fields, this course helps boost and showcase their professional skill sets. Small projects will be part of the training and require two site visits and fieldwork.

### ***Course Objectives***

- Train in digital documentation skills
- Explore digital twin applications (literature and case studies)

### ***Skills to Learn***

- Digital photography for buildings
- 3D photogrammetry
- 3D terrestrial laser scanning (lidar)
- GIS database development
- 360 virtual tour development

### **Course Pre-Requisites / Co-Requisites**

There are no pre-requisites or co-requisites for this course. The completion of *Built Heritage Documentation I* (DCP 6714) is not required.

### **Required Travel, Textbooks, Devices, and Software**

- Course material will be on e-learning/Canvas, including readings, lecture slides, assignments, announcements, and grades (<https://elearning.ufl.edu/>).
- The course will include field training workshops.
- A computer and a digital camera (any between a phone camera and DSLR) are required.
- Students can access software through educational licenses, trials, and those available in the computer lab. More instructions will be provided in class.

### **Materials and Supply Fees**

Material and supply fees (M&S) are assessed for certain courses to offset the cost of materials or supply items consumed during instruction. A list of approved courses and fee information is available from the academic departments or the Schedule of Courses (UF-3.0374 Regulations of the University of Florida; Florida Statutes 1009.24). You can find more information at <https://registrar.ufl.edu/soc/>.

The total M&S for this class is \$0.

### **Course Presentation and Requirements**

Course contents are presented in PowerPoint presentations, class discussions, guest speakers, and training workshops, among others. Course requirements include full participation in class discussions and training and the completion of assignments and presentations on time.

## **Course Policies**

### **Evaluation of Grades**

#### **Grading Policy**

Assignment	Total Points	Percentage of Final Grade
Assignments	100	50%
Presentations	100	30%
Participation	100	20%
		100%

Percent	Grade	Grade Points
93.0 - 100.0	A	4.00
90.0 - 92.9	A-	3.67
88.0 - 89.9	B+	3.33
83.0 - 87.9	B	3.00
80.0 - 82.9	B-	2.67
78.0 - 79.9	C+	2.33
73.0 - 77.9	C	2.00
70.0 - 72.9	C-	1.67
68.0 - 69.9	D+	1.33
58.0 - 67.9	D	1.00
55.0 - 57.9	D-	0.67
0 - 54.9	E	0.00

More information on UF grading policy may be found at:

<http://gradcatalog.ufl.edu/content.php?catoid=10&navoid=2020#grades>  
<https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

### ***Attendance Policy, Class Expectations, and Make-Up Policy***

Attendance in class and on field trips is mandatory. Role will (typically) be taken each class. Students will need to provide written excuse for missing class. More than three unexcused absences will result in the final grade being dropped one letter. You are expected to come to class on time, prepared, and ready to participate.

Requirements for class attendance and make-up assignments are consistent with university policies. Excused absences must be consistent with university policies in the Graduate Catalog (<http://gradcatalog.ufl.edu/content.php?catoid=10&navoid=2020#attendance>) and require appropriate documentation. Additional information can be found here:  
<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>

### ***Work Product***

Instructor will keep copies of all participants' work products.

### ***Classroom Climate***

Equitable participation in this class requires the use of inclusive language, methods, and materials. Students are expected to use inclusive language in written and oral work, and to respect diversity in viewpoints expressed by others. Students are also encouraged to identify language, methods, and materials used in this course that do not contribute to an inclusive classroom climate.

### ***Netiquette Communication Courtesy***

All members of the class are expected to follow rules of common courtesy in all email messages, threaded discussions, and chats. More information can be found at:  
<http://teach.ufl.edu/wp-content/uploads/2012/08/NetiquetteGuideforOnlineCourses.pdf>

### ***Class Demeanor***

Students are expected to arrive to class on time and behave in a manner that is respectful to the instructor and to fellow students. Please avoid the use of cell phones and restrict eating to outside of the classroom. Opinions held by other students should be respected in discussion, and conversations that do not contribute to the discussion should be held at minimum, if at all.

## **UF Policies**

### **University Honesty Policy**

UF students are bound by The Honor Pledge which states, “We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: “On my honor, I have neither given nor received unauthorized aid in doing this assignment.” The Honor Code (<https://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/>) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class.

### **Students Requiring Accommodations**

Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the disability Resource Center by visiting <https://disability.ufl.edu/students/get-started/>. It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.

### **Student Privacy**

There are federal laws protecting your privacy with regards to grades earned in courses and on individual assignments. For more information, please see: <http://registrar.ufl.edu/catalog0910/policies/regulationferpa.html>

### **Software Use**

All faculty, staff, and students of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate. We, the members of the University of Florida community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.

### **Course Evaluation**

Students are expected to provide feedback on the quality of instruction in this course by completing online evaluations at <https://gatorevals.aa.ufl.edu/>. Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at <https://gatorevals.aa.ufl.edu/>.

## Campus Resources

### Health and Wellness

**In response to Covid-19**, all course participants should consult the UF Health site for current policies and requirements that are in place, at this link. <https://coronavirus.ufhealth.org>

**Schedule a Covid-19 test through ONE.UF:**

<https://coronavirus.ufhealth.org/screen-test-protect-2/frequently-asked-questions/covid-19-exposure-and-symptoms-who-do-i-call-if/>

**U Matter, We Care:**

If you or a friend is in distress, please contact [umatter@ufl.edu](mailto:umatter@ufl.edu) or 352 392-1575 so that a team member can reach out to the student.

**Counseling and Wellness Center:** <http://www.counseling.ufl.edu/cwc>, and 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

**Sexual Assault Recovery Services (SARS)** Student Health Care Center, 392-1161.

**University Police Department** at 392-1111 (or 9-1-1 for emergencies), or <http://www.police.ufl.edu/>.

### Academic Resources

**E-learning technical support**, 352-392-4357 (select option 2) or e-mail to Learning-support@ufl.edu. <https://lss.at.ufl.edu/help.shtml>.

**Career Resource Center**, Reitz Union, 392-1601. Career assistance and counseling. <https://www.crc.ufl.edu/>.

**Library Support**, <http://cms.uflib.ufl.edu/ask>. Various ways to receive assistance with respect to using the libraries or finding resources.

**Teaching Center**, Broward Hall, 392-2010 or 392-6420. General study skills and tutoring. <https://teachingcenter.ufl.edu/>.

**Writing Studio, 302 Tigert Hall**, 846-1138. Help brainstorming, formatting, and writing papers. <https://writing.ufl.edu/writing-studio/>.

**Student Complaints Campus:**

[https://www.dso.ufl.edu/documents/UF\\_Complaints\\_policy.pdf](https://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf).

**On-Line Students Complaints:** <http://www.distance.ufl.edu/student-complaint-process>.

## **Course Schedule and Assignments**

### **Schedule Note and Disclaimer**

The syllabus and the details of the course schedule are subject to change as the need arises. All changes will be notified during class times and through email and eLearning announcements.

### **Week 1 (January 10<sup>th</sup>) – Course Introduction + Building Photography 1**

- 1) Overview of the course structure and training approaches
- 2) Introduction to techniques and tools to learn
- 3) Examples of airborne LiDAR and terrestrial laser scanning (TT POS)
- 4) **Research:** How “digital twins” (DT) are used for simulations and other applications in the built environment fields (e.g., smart city, design, sustainability, and construction) and heritage practice, beyond virtual representation (e.g., game, metaverse, etc.): literature review (e.g., journal paper) and case study
- 5) Fieldwork information
- 6) Photography basics for building documentation

Exercise – Photographic survey of a campus/neighborhood building(s)

### **Week 2 (January 17<sup>th</sup>) – Building Photography 2 + Virtual Tour Development 1: Field Training**

- 1) Training in devices and techniques: DSLR (incl. HDR), 360-degree camera, and UAV (drone)
- 2) Meeting [at the project site](#)

### **Week 3 (January 24<sup>th</sup>) – Building Photography 3 + Virtual Tour Development 2: Software**

- 1) Training in photo editing and virtual tour software
- 2) Meeting in the [computer lab](#)

### **Week 4 (January 31<sup>st</sup>) – DT Research Update 1 + Terrestrial Laser Scanning 1: Virtual Training**

- 1) Brief update on digital twin research
- 2) Overview of terrestrial laser scanning & partial point cloud example
- 3) Analysis of XYZ planes’ overlaps between different scan positions (virtual survey planning)

Assignment – Watch the laser scanning fieldwork tutorial video.

### **Week 5 (February 7<sup>th</sup>) – DT Research Update 2 + Terrestrial Laser Scanning 2: Field Training**

- 1) Brief update on digital twin research
- 2) Small group (2-3 members) field training in laser-scan data acquisition (3 hours)
- 2) Students choose a day of either week (5 or 6) and have no meeting on the other week
- 3) Meeting [at the project site](#)

### **Week 6 (February 14<sup>th</sup>) – DT Research Update 2 + Terrestrial Laser Scanning 2: Field Training**

**Week 7 (February 21<sup>st</sup>) – Terrestrial Laser Scanning 3: Data Processing**

- 1) Training in software and processing of the collected laser scan data
- 2) Meeting in the [computer lab](#)

**Week 8 (February 28<sup>th</sup>) – DT Research Presentation**

- 1) 15-20 minute presentation for each
- 2) Presentations should include citation and a bibliography (Chicago Manual of Style or APA)
- 3) Class discussion on gaps in the knowledge and potential applications to your study area

**Week 9 (March 7<sup>th</sup>) – Writing Week**

- 1) No class

DT research paper is due Week 12.

1000 – 2500-word body of paper, including:

- a) Literature review (author-date in-text citation, Chicago Manual of Style or APA)
- b) Conceptual proposal for research on or application (e.g., simulation) to your area of interest; please include technical methodology and/or proof of concept

Bibliography (no wordcount limit)

**Week 10 (March 14<sup>th</sup>) – Spring Break**

**Week 11 (March 21<sup>st</sup>) – Photogrammetry 1**

- 1) Photographic techniques for 3D photogrammetry
- 2) Training in the software to generate a 3D model

**Week 12 (March 28<sup>th</sup>) – Photogrammetry 2**

- 1) Show and tell about photogrammetry assignments
- 2) Training continues.

**Week 13 (April 4<sup>th</sup>) – Photogrammetry 3**

- 1) Show and tell about photogrammetry assignments
- 2) Training continues.

**Week 14 (April 11<sup>th</sup>) – Photogrammetry 4**

- 1) Show and tell about photogrammetry assignments
- 2) Training continues.

**Week 15 (April 18<sup>th</sup>) – GIS for Cultural Landscape Mapping**

- 1) GIS basics training
- 2) Project planning

**Week 16 (April 25<sup>th</sup>) – GIS for Cultural Landscape Mapping**

- 1) Show and tell about GIS assignments

## References and Resources

Cultural Heritage Imaging. "Photogrammetry."

<http://culturalheritageimaging.org/Technologies/Photogrammetry/>

Historic England. *3D Laser Scanning for Heritage: Advice and Guidance on the Use of Laser Scanning in Archaeology and Architecture*. 3rd edition. February 8, 2018.

<https://historicengland.org.uk/images-books/publications/3d-laser-scanning-heritage/>.

LeBlanc, François and Rand Eppich. "Documenting Our Past for the Future." *Conservation: The Getty Conservation Institute Newsletter*, Fall 2005.

[http://www.getty.edu/conservation/publications\\_resources/newsletters/20\\_3/feature.html](http://www.getty.edu/conservation/publications_resources/newsletters/20_3/feature.html).

Matthews, Neffra A. *Aerial and Close-Range Photogrammetric Technology: Providing Resource Documentation, Interpretation, and Preservation*. Technical Note 428. U.S. Department of the Interior, Bureau of Land Management, National Operations Center, Denver, Colorado.

Mudge, Mark et al. "Principles and Practices of Robust, Photography-based Digital Imaging Techniques for Museums." The 11th International Symposium on Virtual reality, Archaeology and Cultural Heritage VAST, 2010.

([http://culturalheritageimaging.org/What\\_We\\_Do/Publications/vast2010/vast2010\\_tutorial\\_final\\_print.pdf](http://culturalheritageimaging.org/What_We_Do/Publications/vast2010/vast2010_tutorial_final_print.pdf))