

SUR5365 - Digital Mapping – Fall 2019

1. OVERVIEW

This course covers theoretical concepts and practical aspects for mapping and analyzing digital spatial data. It is comprised of lectures and computer labs and uses various software packages to visualize, integrate, and analyze spatial data. It presents also various online resources to obtain free geodata and to present data in online maps.

- Fall semester, 3 credits
- 100% online, synchronous and asynchronous component
- <http://elearning.ufl.edu/>

Course Prerequisites: No formal course pre-requisites. Prior experience with ArcGIS Pro software, Microsoft Excel, and scripting/programming in any programming language (e.g. Python, R, Java) is an advantage. Basic analytic geometry, trigonometry, analysis, and statistics is recommended.

Instructor: Dr. Hartwig Henry Hochmair, Ft. Lauderdale Research & Education Center (FLREC), Davie West Bldg; phone: (954) 577-6317; e-mail: hhhochmair@ufl.edu

- Please use the Canvas message/Inbox feature for fastest response
- Virtual office hours by appointment

Teaching Assistant: Adam Benjamin, Ft. Lauderdale Research & Education Center, Davie West Bldg. phone: (954) 577-6378; e-mail: abenjamin1@ufl.edu

Lectures:

Fridays: 11:45 am - 2:45 pm (per. 5-7), via Zoom; links to recordings are provided on the course website

Recommended reading materials:

- No course book is required
- References to books, book chapters, and online resources will be given during the lecture
- Short instructional videos closely related the lecture content can be found at the [Geomatics @ FLREC YouTube channel](#)

Software requirements:

- ArcGIS Pro 2.4 and Microsoft Excel will be used for many topics taught in this course. If unfamiliar with ArcGIS Pro, it is recommended to run through practice tutorials beforehand. ArcGIS Pro download and installation instructions are provided on the course website under the Week 1 module.
- Additional free software packages used (e.g. HTML editors) will be introduced in the different course modules.

2. LEARNING OUTCOMES

The course objectives are to provide students with (1) the theoretical foundation of map projections, coordinate systems, and coordinate transformations, (2) practical skills to apply these foundations in GIS mapping and handling/reading of digital topographic maps, (3) procedures involved in visualizing spatial data in interactive online maps, including the use of open source libraries, scripting languages and Application Programming Interfaces (APIs), and (4) basics of point cloud processing and visualization of lidar data sets.

At the completion of the course, the student should be able to:

- Identify and apply appropriate map projections to visualize spatial information
- Download and handle digital topographic maps and access their base layers, e.g. digital elevation models
- Generate online maps (e.g. with ArcGIS online, use of open source libraries) and visualize data with freely available mapping software (e.g. Google Earth)
- Perform software-based analysis on lidar (light detection and ranging) data

3. COURSE LOGISTICS

- Throughout the semester, the students will be given approximately 7 home assignments and 6 quizzes as well as three online discussions. For each assignment/quiz/discussion a due date and time is given, which is usually the beginning of the next class (11:45am Friday).
- Assignments are graded based on timeliness, correctness of computations and interpretation of numerical results, creativity and technical versatility; quizzes are graded based on correctness of multiple choice questions, and discussion items are graded based on creativity, completeness, and technical correctness.
- There is a 1 week turnaround for assignment and discussion grading. Quizzes are autograded instantaneously in Canvas.
- This course is a distance education course taught as live lectures using the virtual classroom software Zoom. Lecture materials can be downloaded from weekly modules on the Canvas website.

The Canvas system should be used as the platform for written communication between students and the instructor. Questions and suggestions to the whole class can also be posted under the Discussions tab. Any short-term changes concerning lectures or other course components will be announced through Canvas. Feel free to call the instructors with any questions.

Technology Requirements:

- A computer or mobile device with high-speed internet connection
- ArcGIS Pro runs only on Microsoft operating systems. If students use a Mac computer or other operating systems, they are encouraged to ArcGIS Pro in UF Apps (<https://info.apps.ufl.edu/>).
- A headset and/or microphone and speakers to participate in live sessions
- For Zoom: A supported web browser on a supported operating system (Windows, Mac OS, Linux); and minimum bandwidth. More details can be found [here](#).

Using Zoom:

Live lectures and office hour meetings (per individual student requests) will be conducted with the Zoom conferencing software. Sessions can be joined by clicking a link posted by the instructor on Canvas.

Grades:

<i>Item</i>	<i>Percentage</i>
Timeliness and completeness of assignments	60%
Online quizzes	23%
Online introduction	2%
Online discussions	15%
Total	100%

Grading scale:

<i>Grade</i>	<i>Percentage</i>	<i>Grade</i>	<i>Percentage</i>
A	92.0-100.0	C+	78.0-79.9
A-	90.0-91.9	C	72.0-77.9
B+	88.0-89.9	C-	70.0-71.9
B	82.0-87.9	D	60.0-69.9
B-	80.0-81.9	E	0-59.9

For information on current UF policies for assigning grade points, see <https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

4. COURSE CONTENT

Week	Topic
Week 1, Aug 23	Introduction Coordinate systems and geodetic datums
Week 2, Aug 30	Map projections: Introduction Cylindrical projections
Week 3, Sep 6	Conic projections
Week 4, Sep 13	Azimuthal projections Topographic maps: introduction
Week 5, Sep 20	Topographic maps (cont.): coordinates and elevations
Week 6, Sep 27	Web GIS, ArcGIS Online
Week 7, Oct 4	Homecoming - No classes
Week 8, Oct 11	Introduction to HTML
Week 9, Oct 18	Introduction to JavaScript
Week 10, Oct 25	Web mapping: Protocols and standards
Week 11, Nov 1	Web mapping (cont.): JavaScript libraries
Week 12, Nov 8	LiDAR principles, data collection and analysis FUSION software and ESRI plugins
Week 13, Nov 15	LiDAR in Global Mapper Terrain analysis techniques and visualization
Week 14, Nov 22	Google Earth: Visualization and data handling
Week 15, Nov 29	Thanksgiving - No classes
Week 16, Dec 6	Reading Day - No classes

5. POLICIES AND REQUIREMENTS

This syllabus represents current plans and objectives for this course. As the semester progresses, changes may need to be made to accommodate timing, logistics, or to enhance learning. Such changes, communicated clearly, are not unusual and should be expected.

Late submissions and make-up requests:

It is the responsibility of the student to access on-line lectures, readings, quizzes, and exams and to maintain satisfactory progress in the course.

- A 10% penalty per day will be applied to late assignments. A late submission on the due date results also in a 10% deduction.

- Assignments will not be accepted if handed in more than seven days after the due date.
- Quizzes cannot be taken past the deadline.
- Online discussions cannot be completed past the deadline.
- Exceptions to the late policy are only allowed per university policy.

Computer or other hardware failures, except failure of the UF canvas system, will not excuse students for missing assignments. Any late submissions due to technical issues MUST be accompanied by the ticket number received from the Helpdesk when the problem was reported to them. The ticket number will document the time and date of the problem. You MUST e-mail your instructor within 24 hours of the technical difficulty if you wish to request consideration.

For computer, software compatibility, or access problems call the HELP DESK phone number—352-392-HELP = 352-392-4357 (option 2).

Semester Evaluation Process:

Student assessment of instruction is an important part of efforts to improve teaching and learning.

At approximately the mid-point of the semester, the School of Forest Resources & Conservation will request anonymous feedback on student satisfaction on various aspects of this course. These surveys will be sent out through Canvas and are not required, but encouraged. This is not the UF Faculty Evaluation!

At the end of the semester, students are expected to provide UF with feedback on the quality of instruction in this course using a standard set of university and college criteria (UF Faculty Evaluations). These evaluations are conducted online at <https://evaluations.ufl.edu>. Evaluations are typically open for students to complete during the last two or three weeks of the semester; students will be notified of the specific times when they are open. Summary results of these assessments are available to students at <https://evaluations.ufl.edu/results>.

Netiquette: Communication Courtesy Semester Evaluation Process:

All members of the class are expected to follow rules of common courtesy in all email messages, threaded discussions and chats, as laid out in the [UF Netiquette Guide](#) for Online Courses. Failure to do so may result in loss of participation points and/or referral to the Dean of Students' Office.

Academic Honesty Policy:

As a student at the University of Florida, you have committed yourself to uphold the Honor Code, which includes the following pledge: "*We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity.*"

You are expected to exhibit behavior consistent with this commitment to the UF academic community, and on all work submitted for credit 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.*"

It is assumed that you will complete all work independently in each course unless the instructor provides explicit permission for you to collaborate on course tasks (e.g. assignments, papers, quizzes, exams). Furthermore, as part of your obligation to uphold the Honor Code, you should report any condition that facilitates academic misconduct or appropriate personnel. It is your individual responsibility to know and comply with all university policies and procedures regarding academic integrity and the Student Honor Code. Violations of the Honor Code at the University of Florida will not be tolerated.

Violations will be reported to the Dean of Students Office for consideration of disciplinary action. For more information

regarding the Student Honor Code, please see: <http://www.dso.ufl.edu/sccr/process/student-conduct-honor-code>

University Policy on Accommodating Students with Disabilities:

Students requesting accommodation for disabilities must first register with the Dean of Students Office (<http://www.dso.ufl.edu/drc/>). The Dean of Students Office will provide documentation to the student who must then provide this documentation to the instructor when requesting accommodation. You must submit this documentation prior to submitting assignments or taking the quizzes or exams. Accommodations are not retroactive, therefore, students should contact the office as soon as possible in the term for which they are seeking accommodations.

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.

6. GETTING HELP

For issues with technical difficulties for canvas in Canvas, please post your question to the Technical Help Discussion in your course, or contact the UF Help Desk at:

- Learning-support@ufl.edu | (352) 392-HELP - select option 2 | <http://elearning.ufl.edu>
- Library Help Desk support <http://cms.uflib.ufl.edu/ask>
- SFRC Academic Hub <https://ufl.instructure.com/courses/303721>

For any other questions related to the course, please do not hesitate to contact the instructor or teaching assistant. Each home assignment will be accompanied by a discussion board on Canvas where students can discuss questions on given assignment tasks with each other.

Student Life, Wellness, and Counseling Help:

- Counseling and Wellness resources <http://www.counseling.ufl.edu/cwc/>
- U Matter, We Care <http://www.umatter.ufl.edu/>
- Career Resource Center <http://www.crc.ufl.edu/>
- Other resources are available at <http://www.distance.ufl.edu/getting-help> for online students

Student Complaint Process:

The School of Forest Resources & Conservation cares about your experience and we will make every effort to address course concerns. We request that all of our online students complete a course satisfaction survey each semester, which is a time for you to voice your thoughts on how your course is being delivered.

If you have a more urgent concern, your first point of contact should be the SFRC Academic Coordinator or the Graduate/Undergraduate Coordinator for the program offering the course. You may also submit a complaint directly to UF administration at <https://distance.ufl.edu/student-complaint-process/>