

# Geomatics - SUR 3103C (Spring 2024)

## 1 Overview

This 3-credit course primarily covers plane surveying techniques, including measurement of angles, distances, and elevation differences. Also covered are the related techniques of data reduction for these fundamental measurements, the Global Positioning System, Topographic mapping, Earth-based coordinate systems, Boundary surveys, and Horizontal curves.

- **3 Credits**
- **Spring 2023**
- **Format: online**
- <http://elearning.ufl.edu/>

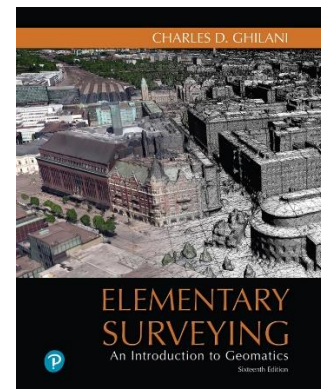
**Course Prerequisites: none**

**Instructor:** Ali Gonzalez-Perez (Phone: 813-757-2183; Email: [aliglezpe@ufl.edu](mailto:aliglezpe@ufl.edu), Office: 1200 North Park Road, Plant City, FL, 33563)

- Please use Gatorlink email ([aliglezpe@ufl.edu](mailto:aliglezpe@ufl.edu)) for the fastest response.
- Avoid using the Canvas site “inbox” for email/messages due to occasional delays in delivery.
- Office hours: Wednesday 10:30 am-11:30 am on Zoom ([Link](#)), or by appointment. Also available by phone or email.

### Required Text:

Ghilani, C. D. and P. R. Wolf. **Elementary surveying – An introduction to geomatics**. 16th ed. Upper Saddle River: Pearson Education, 2017. ISBN-13: **9780134604657**



## 2 Learning Outcomes

At the conclusion of this course, students must demonstrate knowledge and ability in the following:

- Significant figures
- Accuracy and precision; systematic and random errors
- Measurement of accurate horizontal distances and horizontal and vertical angles
- Computation of horizontal coordinates by traverse adjustment
- Making vertical measurements by differential leveling
- Computation of elevations by level loop adjustment

- Bearing and azimuth calculation
- Computation of the area of a parcel of land
- Production of a large-scale topographic map

Students should have gained general (introductory) knowledge in:

- Coordinate systems and Datums
- The Global Positioning System
- Boundary Surveys
- The US public land survey
- Horizontal circular curves

### 3 Course Logistics

This course consists of lecture videos that will be provided each week, and quizzes, homework assignments, and labs complement the lecture material. All course materials will be provided through the UF E-Learning Canvas site (<https://elearning.ufl.edu/>) on the course page. Office hours are available as needed via phone or Zoom ([Link](#)).

#### **Survey Mentor and Equipment Requirement**

Due to the distance format of this course, **each student is required to have access to a local survey mentor and survey equipment** (please have your mentor complete the UF Geomatics Mentor Form right away. The form is available in the associated assignment in Canvas. Scan and submit the form via the Canvas assignment page). The survey mentor should be able to assist with labs, provide equipment, and demonstrate how to use survey equipment. A licensed surveyor is required. Students working in a survey office may use someone within the office. Also, students can inquire with local survey businesses or city, county, state, or federal entities for a survey mentor. These entities may include water management districts, the Army Corps of Engineers, or city/county government services (survey departments). **Please contact the instructor immediately if a survey mentor cannot be found.**

#### **Homework/Assignments**

All homework and other assignments, as well as “office” components of the labs, are required to be completed individually. Office work includes calculations, computer drafting, and similar activities not performed in the field.

#### **Quizzes and Final Exam**

All quizzes/exams will be administered via Honorlock, which requires a webcam. A practice quiz will be provided to ensure students have the correct setup. Students will be required to perform calculations for the quiz/exam. Quizzes and exams must be taken during their assigned times. Please see the schedule for quiz/exam dates. There is no provision for making up a missed quiz or the final exam. If you have a conflict, please notify the instructor prior to the quiz/exam. Leniency in rescheduling a quiz is dependent upon advanced notification and reason.

All quizzes and the final exam are closed notes and book. A calculator may be used, but not a programmable surveying calculator.

Quizzes will cover the subject material of the lectures, reading assignments, lab exercises, and homework problems. Some quizzes may contain more/less information based on the lectures covered. The following list serves as a general guide:

Quiz 1 (lectures 1-6), Quiz 2 (lectures 7-11), Quiz 3 (lectures 12-18), Quiz 4 (lectures 19-25)  
See the schedule for dates. Final Exam: cumulative (all lectures).

The final exam is scheduled for **May 1<sup>st</sup>, 2024, between noon and 11:30 p.m.**

### Labs

Labs should be completed under the supervision of the survey mentor, who must fill out the provided form and have access to the appropriate equipment (see Agreement and Guidelines documents). An appropriate parcel site for field labs is also required **and will be approved by the instructor through a canvas assignment**. Approximately one lab should be completed weekly, as scheduled, to correspond to the lecture videos. Labs may be completed at any time during the assigned week, and lab field notes/deliverables and reports should be submitted by the associated deadlines.

### Technology Requirements:

- **A computer or mobile device with a high-speed internet connection.**
- **A webcam, headset and/or microphone, and speakers.**
- **Latest version of web browser. Canvas supports only the two most recent versions of any given browser. [What browser am I using?](#)**
- **Installation of proctoring software may be required and will be provided if so.**

**Synchronous online sessions may be recorded. By sharing your video, screen, or audio during any synchronous online class sessions, you are consenting to be recorded for the benefit of students who cannot attend live as well as for class review during the current semester. If you have special circumstances or concerns about privacy, it is your responsibility to discuss it with your instructor.**

## 3.1 Assignments & Deliverables

Graded Item	Description	Points
Mentor Form	Signed by licensed surveyor agreeing to mentor you	20
Parcel Plan	Approval of parcel layout	10
Honorlock Practice Quiz	Practice quiz to test Honorlock setup and requirements	10
Quizzes	4 at 30 points each	120
Homework		50
Trigonometry Review		15
Station Descriptions	Lab 1	10
General Lab work	9 labs at 25 points each	225
Lab reports	12 at 5 points each	60
Topographic Mapping		60
Field Book Note keeping	Scans of field book required as appropriate	20
Final Exam	cumulative	150
	<b>Total Possible Points</b>	<b>750</b>

## 3.2 Grades & Grading Scale

**Final grades may be curved but will be roughly based on the listed grading scale. Plus, or minus grades will be assigned as appropriate.**

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

### Grading Scale (%)

A 90-100  
B 80-89.99  
C 70-79.99  
D 60-69.99  
E < 60

## 4 Course Content

### Learning Modules

Learning modules will contain the following content plus supplementary materials.

#### **SUR3103C – Lecture syllabus and reading assignments**

- Lec 1: Course introduction. Written field notes. Read: Chap 1 (all), Chap 2, sec 6 11.
- Lec 2: Units and significant figures. Chap 2, sec 1 5.
- Lec 3: Theory of errors in observations. Chap 3: Read sec. 1-8, Browse sec. 9-21.
- Lec 4: Distance measurement - taping. Read: Chap 6, sec. 1-13.
- Lec 5: Intro to Leveling. Read: Chap 4 (all).
- Lec 6: Leveling procedures and computations. Read: Chap 5 (all).
- Lec 7: Taping corrections. Read: Chap 6, sec. 14-16.
- Lec 8: Electronic distance measurement. Read: Chap 6, sec. 17-25.
- Lec 9: Angles, Azimuths, and Bearings. Read: Chap 7, sec. 1-9.
- Lec 10: Compass readings. Total Stations. Read: Chap 7, sec. 10-16; Read Chap 8, sec. 1-6.
- Lec 11: Horizontal and vertical angle measurement. Read: Chap 8: sec. 7-22.
- Lec 12: Traversing. Read: Chap 9 (all).
- Lec 13: Traverse computations. Read: Chap 10, sec. 1-6.
- Lec 14-15: Traverse adjustment. Read: Chap 10: sec. 7-17.
- Lec 16: Area: coordinate and DMD methods. Read: Chap 12 (all).
- Lec 17-18: The Global Positioning System (GPS) Intro and Principles. Read: Chap 13 (all).
- Lec 19: GPS operations. Read: Chap 14, sec. 1-2; Browse: Chap 14 sec. 3-7. Browse Chap 15.
- Lec 20: Data collectors. Read Chap 2, sec. 12-15.
- Lec 21: Mapping surveys. Read Chap 17, sec. 1-10, 12-13.
- Lec 22: Interpreting and drawing contours (Review 17.5-17.8, 17.9.2).
- Lec 23: Mapping and AutoCAD intro. Read Chap 18 (all).
- Lec 24: Control surveys and Geodetic datums. Read: Chap 19 sec. 1 12, Browse sec. 13-14.
- Lec 25: State plane coordinates. Read: Chap 20 sec. 1-5, 8-8.1, 9-11; Browse rest of chapter.
- Lec 26: Boundary surveys. Read: Chap 21 (all).
- Lec 27: United States Public Land Survey System. Read: Chap 22 (all).
- Lec 28: United States Public Land Survey System (continued).
- Lec 29: Horizontal curves. Read: Chap 24: sec 1-4.

**SUR 3103C – Lab activities**

- Lab 1 Introduction and Station Descriptions
- Lab 2 Distances – taping and pacing (general lab work)
- Lab 3 Leveling (general lab work)
- Lab 4 Distances – EDM (Total station) (general lab work)
- Lab 5 Angle measurement (general lab work)
- Lab 6 (make-up lab work)
- Lab 7 Traverse adjustment (general lab work)
- Lab 8 GPS exercise (general lab work)
- Lab 9 CAD exercise (general lab work)
- Lab 10 Planimetric mapping (general lab work)
- Lab 11 Contour mapping (general lab work)
- Lab 12 Map Drafting (Topographic Mapping)

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
1/8 UF First Day of Class Lectures 1 and 2	1/9	1/10	1/11 Lecture 1	1/12	1/13	1/14
1/15 Holiday - MLK	1/16 Lectures 3,4	1/17 Trig Review Due	1/18	1/19	1/20	1/21 Lab Prep Due
1/22 Lectures 5,6	1/23	1/24	1/25	1/26	1/27	1/28 Lab 1 Due
1/29 Lectures 7,8	1/30	1/31 HW - 1 Due	2/1	2/2	2/3	2/4 Lab 2 Due
2/5 Lectures 9,10	2/6	2/7 QUIZ 1 (Honor Lock)	2/8	2/9	2/10	2/11 Lab 3 Due
2/12 Lectures 11,12	2/13	2/14	2/15	2/16	2/17	2/18 Lab 4 Due
2/19 Lectures 13,14	2/20	2/21 HW - 2 Due	2/22	2/23	2/24	2/25
2/26 Lectures 15,16	2/27	2/28 QUIZ 2 (Honor Lock)	2/29	3/1	3/2	3/3 Lab 5&6 Due
3/4 Lectures 17,18	3/5	3/6	3/7	3/8	3/9	3/10 Spring Break
3/11	3/12	3/13	3/14	3/15	3/16	3/17 Spring Break
						Lab 7 Due
3/18 Lectures 19,20	3/19	3/20 HW - 3 Due	3/21	3/22	3/23	3/24 Lab 8 Due
3/25 Lectures 21,22	3/26	3/27 QUIZ 3 (Honor Lock)	3/28	3/29	3/30	3/31 Lab 9 Due
4/1 Lectures 23,24	4/2	4/3	4/4	4/5	4/6	4/7 Lab 10 Due
4/8 Lectures 25,26	4/9	4/10 HW - 4 Due	4/11	4/12	4/13	4/14 Lab 11 Due
4/15 Lectures 27,28	4/16	4/17 QUIZ 4 (Honor Lock)	4/18	4/19	4/20	4/21 Lab 12 Due
4/22 Lectures 29	4/23	4/24 HW - 5 Due	4/25 Reading Day	4/26	4/27	4/28
4/29	4/30	5/1 FINAL EXAM (Honor Lock)	5/2	5/3	5/4	5/5
Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday

Note that lectures are available for more than the full week and can be completed at the student's pace, but should be completed taking quiz, exam, and lab work dates into consideration. Lab field work may be completed during the previous week, with the deliverables and report due on the dates noted.

**Quizzes and the exam must be completed on the designated day.**

## 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.

### 5.1 Late Submissions & Make-up Requests

The student is responsible for accessing online lectures, readings, quizzes, and exams and maintaining satisfactory progress in the course.

Computer or other hardware failures, except failure of the UF e-Learning 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. 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).

Requirements for class attendance and make-up exams, assignments, and other work are consistent with university policies that can be found at:

<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>.

### 5.2 Communication Courtesy and Professionalism

**Just as in any professional environment, meaningful and constructive dialogue is expected in this class and requires a degree of mutual respect, willingness to listen, and tolerance of opposing points of view. Respect for individual differences and alternative viewpoints will be maintained in this class, at all times. All class members are expected to follow common courtesy, decency, and civility rules in all interactions. Failure to do so will not be tolerated and may result in losing participation points and/or referral to the Dean of Students Office.**

### 5.3 Semester Evaluation Process

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

**At approximately the semester's mid-point**, the School of Forest Resources & Conservation will request anonymous feedback on student satisfaction with 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 professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at <https://gatorevals.aq.ufl.edu/students/>. Students will be notified when the evaluation period opens and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <https://ufl.bluera.com/ufl/>.**

Summaries of course evaluation results are available to students at <https://gatorevals.aa.ufl.edu/public-results/>.

## 5.4 Netiquette: Communication Courtesy

All members of the class are expected to follow rules of common courtesy in all email messages, threaded discussions, and chats. Failure to do so may result in losing participation points and/or referral to the Dean of Students Office. <http://teach.ufl.edu/docs/NetiquetteGuideforOnlineCourses.pdf>

Please include the course code (SUR 3103C) in the subject line of emails.

## 5.5 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. Your individual responsibility is 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>.

## 5.6 Inclusive Learning Environment

This course embraces the University of Florida's Non-Discrimination Policy, which reads,

***The University shall actively promote equal opportunity policies and practices conforming to laws against discrimination. The University is committed to non-discrimination with respect to race, creed, color, religion, age, disability, sex, sexual orientation, gender identity and expression, marital status, national origin, political opinions or affiliations, genetic information and veteran status as protected under the Vietnam Era Veterans' Readjustment Assistance Act.***

If you have questions or concerns about your rights and responsibilities for inclusive learning environment, please see the instructor or refer to the Office of Multicultural & Diversity Affairs website: <http://multicultural.ufl.edu>.



## 5.7 Services for Students with Disabilities:

**The Disability Resource Center coordinates the needed accommodations of students with disabilities. This includes registering disabilities, recommending academic accommodations within the classroom, accessing special adaptive computer equipment, providing interpretation services and mediating faculty-student disability related issues. Students requesting classroom accommodation must first register with the Dean of Students Office. The Dean of Students Office will provide documentation to the student, who must then provide this documentation to the Instructor when requesting accommodation. 0001 Reid Hall, 352-392-8565, [www.dso.ufl.edu/drc/](http://www.dso.ufl.edu/drc/).**

## 5.8 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.

Students are allowed to record video or audio of class lectures. However, the purposes for which these recordings may be used are strictly controlled. The only allowable purposes are (1) for personal educational use, (2) in connection with a complaint to the university, or (3) as evidence in, or in preparation for, a criminal or civil proceeding. All other purposes are prohibited. Specifically, students may not publish recorded lectures without the written consent of the instructor.

A “class lecture” is an educational presentation intended to inform or teach enrolled students about a particular subject, including any instructor-led discussions that form part of the presentation, and delivered by any instructor hired or appointed by the University, or by a guest instructor, as part of a University of Florida course. A class lecture does not include lab sessions, student presentations, clinical presentations such as patient history, academic exercises involving solely student participation, assessments (quizzes, tests, exams), field trips, private conversations between students in the class or between a student and the faculty or lecturer during a class session.

Publication without permission of the instructor is prohibited. To “publish” means to share, transmit, circulate, distribute, or provide access to a recording, regardless of format or medium, to another person (or persons), including but not limited to another student within the same class section. Additionally, a recording, or transcript of a recording, is considered published if it is posted on or uploaded to, in whole or in part, any media platform, including but not limited to social media, book, magazine, newspaper, leaflet, or third party note/tutoring services. A student who publishes a recording without written consent may be subject to a civil cause of action instituted by a person injured by the publication and/or discipline under UF Regulation 4.040 Student Honor Code and Student Conduct Code.

## 6 Campus Helping Resources

**For issues with technical difficulties for e-learning 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](mailto:Learning-support@ufl.edu) | (352) 392-HELP - select option 2 | <http://elearning.ufl.edu>

- Library Help Desk support <http://cms.uflib.ufl.edu/ask>
- SFFGS Academic Hub <https://ufl.instructure.com/courses/303721>

## 6.1 Student Life, Wellness, and Counseling Help

Students experiencing crises or personal problems that interfere with their general well-being are encouraged to utilize the university's counseling resources. The Counseling & Wellness Center provides confidential counseling services at no cost for currently enrolled students. Resources are available on campus for students having personal problems or lacking clear career or academic goals, which interfere with their academic performance.

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

## 6.2 Student Complaint Process

The School of Forest, Fisheries, & Geomatics Sciences cares about your experience and we will make every effort to address course concerns. We request that 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. You can also [submit feedback anytime](#).

If you have a more urgent concern, your first point of contact should be the Academic Coordinator or the Graduate/Undergraduate Coordinator for the program offering the course. You may also submit a complaint directly to UF administration:

- Students in online courses: <http://www.distance.ufl.edu/student-complaint-process>
- Students in face-to-face courses: <https://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code/>