

# Survey Computations- SUR 3641

## 1 Overview

This is an introductory course in surveying computations. The material delivered in this course improves students' skills for solving surveying and geometric problems. The material also reviews basic calculus and trigonometric concepts in preparation for future surveying course work.

- 3 Credits
- Fall Semester
- Format: blended (Adobe Connect\* live teaching with recording)
- <http://elearning.ufl.edu/>

**Course Prerequisites:** none

**Instructor:** Dr. Amr Abd-Elrahman (Phone: 813.757.2283, Email: [aamr@ufl.edu](mailto:aamr@ufl.edu))

- Please use gator link email ([aamr@ufl.edu](mailto:aamr@ufl.edu)) for fastest response.
- Adobe Connect virtual classroom\* – MWF period 5 (11:45a–12:35p) – Classes are recorded for Distance Students – Recording link will be posted within 24hrs of class offering.

**Textbook(s) and/or readings:**

Recommended Textbooks:

1. Wolf, Paul R., & Ghilani, Charles D. (2011). *Elementary Surveying* (14<sup>th</sup> edition.). Pearson Prentice hall. ISBN: 978-0132554343

Note: *Elementary Surveying* is the same book used for the Geomatics SUR3103 course.

2. Anderson, James M., & Mikhail, Edward M. (1998). *Surveying: Theory and Practice* (7<sup>th</sup> edition). McGraw Hill. ISBN: 0-07-015914-9

Additional Material:

- Handouts and links to websites covering mathematical content topics will be given throughout the semester.

## 2 Learning Outcomes

At the conclusion of this course, the student will be able to:

- comprehend the role of surveying computations in a surveying process
- perform basic calculus and trigonometric operations
- utilize algebra and trigonometric operations to solve coordinate geometry computations problems
- solve area partitioning with constraints problems
- implement basic calculus operations such as full and partial derivatives in survey computations
- perform basic matrix algebra computations in surveying

\*Adobe Connect is a software program used to conduct virtual meetings. Link will be sent to the class earlier in the semester. See “**Using Adobe Connect Software**” section in this syllabus.

## 3 Course Logistics

The lectures in this course will be delivered using the Adobe Connect virtual classroom software. (Please see '[Using Adobe Connect Software](#)' section.) Students can log on to the system from any computer by clicking on the Adobe Connect link posted in the course website (Canvas). All lectures are recorded. Lecture recording links will be posted after the class. Students registered in the distance sections are recommended to watch the recordings and take notes promptly after the class.

Learning modules consisting of a lecture, readings, supporting material, and a quiz are provided online for each topic. Learning modules build on previous modules so you should complete the learning modules in the order presented.

### Technology Requirements:

- A computer or mobile device with high-speed internet connection.
- A headset and/or microphone and speakers; a web cam is suggested.
- Latest version of web browser. Canvas supports only the two most recent versions of any given browser. [What browser am I using?](#)
- Adobe Connect: <http://ufifas.adobeconnect.com/> (See the "[Using Adobe Connect Software](#)" section below)

### Using Adobe Connect Software

Office hour meetings (per request) will be conducted using Adobe Connect web conferencing software. The software is accessed by clicking a link posted by the instructor through e-Learning. The instructor will schedule the sessions and post the link to you earlier in the semester. You should click on the link each time you need to join the office hour sessions.

The following link explains how to participate in Adobe Connect meetings/sessions. Adobe Connect only requires an internet connection, a web browser, and Adobe Flash Player version 10.1 or higher. Adobe Connect supports nearly any operating system including Windows, Macintosh, Linux and Solaris, as well as the most widely used browsers including Internet Explorer, Firefox, Safari, and Chrome. A microphone is also needed to communicate with the instructors and the students attending the session.

## 3.1 Assignments & Deliverables

### Homework Assignments

Homework solutions can be prepared in EXCEL or as handwritten documents. Handwritten homeworks need to be scanned and accompanied by supporting Excel sheet (if any). All homework should be turned in electronically through the canvas website. Homework file name should be: Course Prefix & Number - HW# - Student Last Name-First Name. For example, for an Albert Gator EXCEL submission for SUR3641 Survey Computations, Homework Assignment 1, the file name will be:

SUR3641-HW1-Gator-Albert.xls

Files not named appropriately will not be graded. Every effort should be made to submit a SINGLE file for the assignment. In the case of scanned submission, an additional deliverable can be a supporting Excel sheet that will be checked only to trace errors in the main submission (word or pdf) file.

---

All assignments need to include the following on the first sheet:

- a. Student Name: Albert Gator
- b. Date: August, 2015
- c. Homework #: 1
- d. Class: SUR3641

Page setup for assignments is the responsibility of the students. All assignments turned in electronically (both scanned and/or EXCEL documents) need to be printable on 8.5" X 11" paper. Thus, when the file is opened, the print button can be pressed without any modifications to the page setup. Students should use one sheet in EXCEL (not multiple) and continue problem solving down the rows in the Excel sheet. If there are cells that fall outside the page breaks, then it is possible they could get excluded during the grading process. Again, the student is responsible for making sure their work is appropriately formatted.

Please start working on your homework assignments immediately after their release. Please pay attention to the homework in-class discussions normally offered by the time the assignment is released. It is important to solve the homeworks promptly and in the order they are released since the knowledge and skills learnt in one homework may be needed in subsequent ones.

Assignment feedback will be communicated through the canvas course website. Comments will be provided mainly using the grading portal of each assignment. Some comments may be returned using the canvas email system. This could happen if quick individual notes need to be delivered to the students while grading is undergoing. Students are encouraged to review and digest the comments promptly to avoid recurring errors.

### **Quizzes & Exams**

Quizzes (4-5 through the semester) will administered online through the course e-learning (canvas) web page. Although the quizzes assess the material covered recently in the lectures, cumulative skills may be needed.

Two midterm exams will be offered live (proctored – hardcopy) for students affiliated with UF centers in GNV, Plant City, Fort Lauderdale and Apopka. Online version exams will be offered to distance students who are not affiliated with these centers. The first midterm exam will be offered approximately in week 10 and the second midterm in the last week of the class.

Common quiz and midterm exam reflections/comments will be discussed in the class. Comprehensive quiz and midterm exam reviews will be conducted on an individual basis using special Adobe Connect sessions when requested.

### **Participation**

Virtual (online) discussion topics will be created in the course website (Canvas). You are strongly encouraged to read, post and interact in these discussions. Please contribute positively to the discussions by providing useful/tested technical tips as well as innovative and critical thoughts. You are also encouraged to introduce new discussion items and enrich course resources with online material. A five point participation grade will be issued based on the quantity and quality of your participation in the course online discussion.

### 3.2 Grades & Grading Scale

<i>Grading Item</i>	<i>Percentage</i>
Homework Assignments	35%
Participation/Quizzes	15%
Midterm 1	25%
Midterm 2	25%

Please note that we are using the + and - grading scale encouraged by UF. For more information about the new grading system, please visit <http://www.isis.ufl.edu/minusgrades.html>

#### Grade Scale

Letter Grade	A	A-	B+	B	B-	C+	C	C-	D+	D	D-	E
Corresponding Course Score	95-100	90-94	85-89	80-84	75-79	70-74	65-69	60-64	55-59	50-54	45-49	0-44
Grade Points	4	3.67	3.33	3	2.67	2.33	2	1.67	1.33	1	0.67	0

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

## 4 Course Content

### Learning Modules<sup>#</sup>

Module	Week of	Lecture Topic – Reading	HW/Exam
1. Introduction to Surveying Computations	Aug. 22	Surveying computations history, need and type. R: “Elementary Surveying” Ch 1 pp. 1-12	
	Aug. 29	Introduction to computations using MS Excel R: Web material	Assign. 1
2. Trigonometry and Geometry Concepts for Surveying Computations	*Sept. 05	Review of trigonometric functions and relationships R: Surveying Theory and Practice: Appendix A pp. 1053-1063	
	Sept. 12	Review of line and circle geometric properties R: “Surveying Theory and Practice” App. A pp. 1063-1077	Assign. 2
3. Coordinate Geometry Computations	Sept. 19	Coordinate geometry operations R: “Elementary Surveying” Ch 10 pp. 238-242; pp. 252-253	
	Sept. 26	Positioning using intersection by angle and distance R: “Elementary Surveying” Ch 11 pp. 268-273	Assign. 3
	*Oct. 03	Line circle and two circles intersection computations R: “Elementary Surveying” Ch 11 pp. 275-278	
4. Tract Area Calculation and Partitioning	Oct. 10	Positioning using angles resection R: “Elementary Surveying” Ch 11 pp. 280	Assign. 4
	Oct. 17	Area computations for geometric figures and traverse R: “Surveying Theory and Practice” Ch 8 pp. 429-434	Midterm 1
	Oct. 24	Tract partitioning based on area criteria R: Ch 8 “Surveying Theory and Practice” pp. 440-446	Assign. 5
5. Review of Calculus for Survey Computations	Oct 31	Derivatives and partial derivatives R: Web material	
	*Nov. 07	Introduction to matrix algebra R: “Surveying Theory and Practice” App B pp.1090-1101	
	Nov. 14	Matrix algebra .cont. - Linear Equation Systems - Matrix differentiation R: “Surveying Theory and Practice” App B pp.1101-1102 &1107	Assign. 6
6. Applications of Calculus in Survey Computations	*Nov. 21	Two dimensional conformal coordinate transformation R: “Elementary Surveying” Ch 11 pp. 283-287	Midterm 2
	Nov. 28	Linearization of nonlinear equations and Taylor Expansion R: “Surveying Theory and Practice” App B pp. 1108 &Handouts	Assign. 7
	Dec. 05	Taylor Expansion...cont.	

\* Week includes holiday(s)

## 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

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

Late submissions are subject to 25% penalty for every week after the due date. For example, submissions within the first week after the due date will get a 25% discount and submissions within the second week after due date will be subject to 50% discount, etc.

Examples for the reasons justifying missing class activities can be found in <https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>. Please contact me if you have any unusual circumstances as soon as possible to arrange for make-up plans.

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 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).

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 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>.

---

### 5.3 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 loss of participation points and/or referral to the Dean of Students' Office. <http://teach.ufl.edu/docs/NetiquetteGuideforOnlineCourses.pdf>

### 5.4 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>.

### 5.5 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.

### 5.6 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 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>
  - SFRC Academic Hub <https://ufl.instructure.com/courses/303721>

## 6.1 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.

## 6.2 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:

- Students in online courses: <http://www.distance.ufl.edu/student-complaint-process>
- Students in face-to-face courses:  
[https://www.dso.ufl.edu/documents/UF\\_Complaints\\_policy.pdf](https://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf)