

Syllabus

Introduction to Surveying

Course Information

Semester & Year: Fall 2021

Course ID & Section #: FNR-52-E1861

Instructor's name: Valerie Elder

Location: AT 127

Lecture: Mon, Wed 10:05AM-11:10AM

Lab: Mon, Wed 11:40AM- 2:50PM *Meet outside of AT 107A- "FNR tool room"

Course units: 4

Instructor Contact Information

Office location: AT 134 or *Online: ZOOM*

Office hours: 9-10 M-TH or by appointment

Email address: valerie-elder@redwoods.edu.

Catalog Description

An introduction to the various techniques for planning and conducting land surveys. Lab exercises progress from compass and pacing through the use of Total Stations. Basic mapping exercises are conducted using field data. Discussions cover the theory of surveying, associated math principles, and the various methods of legal property description.

Course Student Learning Outcomes

1. Solve basic land surveying problems both in and out of class using critical thinking to arrive at the appropriate answers.
2. Read and use various kinds of maps and boundary descriptions and be able to calculate the appropriate parameters for specific surveying problems.
3. Lab Specific Outcome: Use common surveying equipment to gather appropriate field data.
4. Lab Specific Outcome: Analyze field data and generate appropriate maps and reports.

Note: This Fall there will be some "virtual" options in addition to In-Person outdoors labs to help mitigate challenges of COVID-19. Do not attend class if you are sick or have been exposed to someone who is sick. I offer many options for make-up work. This class requires field-trips, the college does not provide transportation and carpooling is not encouraged due to COVID-19. Labs will vary by week so you must pay attention to Canvas announcements for each week.

* See **STUDENT COVID-19 QUICK FACTS Flyer in Canvas for COVID protocols***

Materials

A calculator with trig functions is essential.

Required Texts

Surveying 6th Edition by McCormack et al. (ISBN 978-470-49661-9)

Prerequisites/co-requisites/ recommended preparation

Students will be required to have access to adequate computer and internet access and familiarity with basic computer skills. Examples of this include:

- *navigate a class in Canvas*
- *receive, respond and regularly check) messages sent to your CR email account*
- *download and upload files in Canvas assignments*
- *use a phone or digital camera (or webcam) to upload "selfies" to your online lab notebook*
- *use a word processor program (such as Microsoft Word or Google Docs)*
- *use a webcam or a phone to record and upload videos in Canvas*
- *use Zoom, email and canvas discussion boards to communicate with peers and instructor*

Accessibility

College of the Redwoods is committed to making reasonable accommodations for qualified students with disabilities. If you have a disability or believe you might benefit from disability-related services and accommodations, please contact your instructor or [Disability Services and Programs for Students \(DSPS\)](#). Students may make requests for alternative media by contacting DSPS based on their campus location:

- Eureka: 707-476-4280, student services building, 1st floor
- Del Norte: 707-465-2324, main building near library
- Klamath-Trinity: 530-625-4821 Ext 103

If you are taking online classes DSPS will email approved accommodations for distance education classes to your instructor. In the case of face-to-face instruction, please present your written accommodation request to your instructor at least one week before the needed accommodation so that necessary arrangements can be made. Last minute arrangements or post-test adjustments usually cannot be accommodated.

Student Support

Good information and clear communication about your needs will help you be successful. Please let your instructor know about any specific challenges or technology limitations that might affect your participation in class. College of the Redwoods wants every student to be successful.

Evaluation & Grading Policy

A: 94-100, A-: 90-<94, B+: 87-<90, B: 84-<87, B-: 80-<84, C+: 77-<80, C: 70-<77, D: 60-<70, F: <60

See Canvas for rubrics.

Drop Policy

You may be dropped from the class if you miss 3 or more weeks of class participation, discussion, assignments or labs prior to the end of week 10.

Grades

This semester your grades are coming from Module quizzes (20%), Problem Sets (20%), Lab assignments (35%), a semester project (15%), and a Final Exam (10%). The Module Quizzes will have limited

availability which means you must complete them before the deadline to get any credit for it. Lab assignments (e.g. maps, data) are due by midnight Sunday each week. Late assignments will be penalized. The semester project is due at the end -- more details about this in the assignment itself and Canvas.

Admissions deadlines & enrollment policies

Fall 2021 Dates

- *Classes begin: 8/21/21*
- *Last day to add a class: 8/27/21*
- *Last day to drop without a W and receive a refund: 9/03/21*
- *Labor Day Holiday (all campuses closed): 09/06/21*
- *Census date: 9/07/21 or 20% into class duration*
- *Last day to petition to graduate or apply for certificate: 10/28/21*
- *Last day for student-initiated W (no refund): 10/29/21*
- *Last day for faculty-initiated W (no refund): 10/29/21*
- *Veteran's Day (all campuses closed): 11/11/21*
- *Fall Break (no classes): 11/22/21 – 11/26/21*
- *Thanksgiving Holiday (all campuses closed): 11/24/21 – 11/26/21*
- *Final examinations: 12/11/21 – 12/17/21*
- *Last day to petition to file P/NP option: 12/17/21*
- *Semester ends: 12/17/21*
- *Grades available for transcript release: approximately 01/07/22*

Academic dishonesty

In the academic community, the high value placed on truth implies a corresponding intolerance of scholastic dishonesty. In cases involving academic dishonesty, determination of the grade and of the student's status in the course is left primarily to the discretion of the faculty member. In such cases, where the instructor determines that a student has demonstrated academic dishonesty, the student may receive a failing grade for the assignment and/or exam and may be reported to the Chief Student Services Officer or designee. The Student Code of Conduct ([AP 5500](#)) is available on the College of the Redwoods website. Additional information about the rights and responsibilities of students, Board policies, and administrative procedures is located in the [College Catalog](#) and on the [College of the Redwoods website](#).

Disruptive behavior

Student behavior or speech that disrupts the instructional setting will not be tolerated. Disruptive conduct may include, but is not limited to: unwarranted interruptions; failure to adhere to instructor's directions; vulgar or obscene language; slurs or other forms of intimidation; and physically or verbally abusive behavior. In such cases where the instructor determines that a student has disrupted the educational process, a disruptive student may be temporarily removed from class. In addition, the student may be reported to the Chief Student Services Officer or designee. The Student Code of Conduct ([AP 5500](#)) is available on the College of the Redwoods website. Additional information about the rights



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Inclusive Language in the Classroom

College of the Redwoods aspires to create a learning environment in which all people feel comfortable in contributing their perspectives to classroom discussions. It therefore encourages instructors and students to use language that is inclusive and respectful.

Setting Your Preferred Name in Canvas

Students have the ability to have an alternate first name and pronouns to appear in Canvas. Contact [Admissions & Records](#) to request a change to your preferred first name and pronoun. Your Preferred Name will only be listed in Canvas. This does not change your legal name in our records. See the [Student Information Update form](#).

Canvas Information

If using Canvas, include navigation instructions, tech support information, what Canvas is used for, and your expectation for how regularly students should check Canvas for your class.

Log into Canvas at <https://redwoods.instructure.com>

Password is your 8 digit birth date

For tech help, email its@redwoods.edu or call 707-476-4160

Canvas Help for students: <https://webapps.redwoods.edu/tutorial/>

Canvas online orientation workshop: [Canvas Student Orientation Course \(instructure.com\)](#)

Community College Student Health and Wellness

Resources, tools, and trainings regarding health, mental health, wellness, basic needs and more designed for California community college students, faculty and staff are available on the California Community Colleges [Health & Wellness website](#).

[Wellness Central](#) is a free online health and wellness resource that is available 24/7 in your space at your pace.

Students seeking to request a counseling appointment for academic advising or general counseling can email counseling@redwoods.edu.

Emergency procedures / Everbridge

College of the Redwoods has implemented an emergency alert system called Everbridge. In the event of an emergency on campus you will receive an alert through your personal email and/or phones.

Registration is not necessary in order to receive emergency alerts. Check to make sure your contact information is up-to-date by logging into WebAdvisor <https://webadvisor.redwoods.edu> and selecting 'Students' then 'Academic Profile' then 'Current Information Update.'



Please contact Public Safety at 707-476-4112 or security@redwoods.edu if you have any questions. For more information see the [Redwoods Public Safety Page](#).

In an emergency that requires an evacuation of the building anywhere in the District:

- Be aware of all marked exits from your area and building
- Once outside, move to the nearest evacuation point outside your building
- Keep streets and walkways clear for emergency vehicles and personnel

Do not leave campus, unless it has been deemed safe by the campus authorities.

Eureka Campus Emergency Procedures

Please review the [campus emergency map](#) for evacuation sites, including the closest site to this classroom (posted by the exit of each room). For more information on Public Safety go to the [Redwoods Public Safety Page](#). It is the responsibility of College of the Redwoods to protect life and property from the effects of emergencies within its own jurisdiction.

In the event of an emergency:

1. Evaluate the impact the emergency has on your activity/operation and take appropriate action.
2. Dial 911, to notify local agency support such as law enforcement or fire services.
3. Notify Public Safety 707-476-4111 and inform them of the situation, with as much relevant information as possible.
4. Public Safety shall relay threat information, warnings, and alerts through the Everbridge emergency alert system, Public address system, and when possible, updates on the college website, to ensure the school community is notified.
5. Follow established procedures for the specific emergency as outlined in the College of the Redwoods Emergency Procedure Booklet, (evacuation to a safe zone, shelter in place, lockdown, assist others if possible, cooperate with First Responders, etc.).
6. If safe to do so, notify key administrators, departments, and personnel.
7. Do not leave campus, unless it is necessary to preserve life and/or has been deemed safe by the person in command.

Student Support Services

The following online resources are available to support your success as a student:

- [CR-Online](#) (Comprehensive information for online students)
- [Library Articles & Databases](#)
- [Canvas help and tutorials](#)
- [Online Student Handbook](#)

[Counseling](#) offers assistance to students in need of professional counseling services such as crisis counseling.

Learning Resource Center includes the following resources for students

- [Academic Support Center](#) for instructional support, tutoring, learning resources, and proctored exams. Includes the Math Lab & Drop-in Writing Center
- [Library Services](#) to promote information literacy and provide organized information resources.
- [Multicultural & Diversity Center](#)

Special programs are also available for eligible students include

- [Extended Opportunity Programs & Services \(EOPS\)](#) provides services to eligible income disadvantaged students including: textbook award, career academic and personal counseling, school supplies, transportation assistance, tutoring, laptop, calculator and textbook loans, priority registration, graduation cap and gown, workshops, and more!
- The TRiO Student Success Program provides eligible students with a variety of services including trips to 4-year universities, career assessments, and peer mentoring. Students can apply for the program in [Eureka](#) or in [Del Norte](#)
- The [Veteran's Resource Center](#) supports and facilitates academic success for Active Duty Military, Veterans and Dependents attending CR through relational advising, mentorship, transitional assistance, and coordination of military and Veteran-specific resources.
- Klamath-Trinity students can contact the CR KT Office for specific information about student support services at 530-625-4821

Other information:

Course Objective

You will be introduced to the basic concepts of surveying and mapping through a combination of classroom discussions and field exercises. The major concepts include the use of trigonometry, compass, levels, transits, tapes, and Total Stations. The dominant surveying and mapping systems will be introduced but we will not cover all the legal aspects of boundary surveys.

The general outline of study is:

Concepts:

1. The practical understanding of precision, accuracy, and bias that is inherent in both equipment and users.
2. The legal requirements of real property description and applications to surveying data.
3. The use of mathematics to convert real world field data into abstractions of maps and descriptions.
4. The evolution of surveying techniques and the relationship between old-school and modern methodologies.
5. The fundamental problems associated with depicting the earth's surface through map projections and coordinate systems.

Skills:

1. Use trigonometric functions on calculators and computers to solve surveying problems.
2. Carefully and appropriately use field equipment.
3. Draw basic field maps from data on distance and direction.
4. Understand and follow detailed directions.

Lecture Topics Should Include:

- History and background of surveying

- Surveying units, terms, and definitions
- Plane vs. geodetic surveys
- Topographic surveys
- Leveling
- Coordinate systems
- Using trigonometry and geometry to solve surveying problems (traverse calculations)
- Boundary descriptions including the Public Land Survey System
- Geographic Information Systems and Global Positioning System overview
- Deeds and records searches

Lab Activities should include:

- Sketch mapping with compass and pacing.
- Use of coordinate geometry to solve field survey questions.
- Conducting closed-traverse surveys with staff compass and steel tapes on both flat and sloped terrain.
- Differential and trigonometric leveling with various devices.
- Transit set up and use in closed traverses.
- Total Station set up and use in traversing.
- Using spreadsheets to process surveying data.
- Distance measurements with steel tapes on horizontal and sloped terrain.
- Understanding the design and use of the Public Lands Survey System.
- Understanding and solving common math problems and applications in surveying.
- Review of basic trigonometric functions as they apply to surveying
- Understanding frames of reference, scales, and the use of landmarks in mapping.
- Field note taking requirements and legal obligations.
- Reading and understanding property descriptions.

Class organization

Labs: Some of the labs this Fall will be *Virtual Labs* where you can use field data to complete lab assignments (e.g. make maps, analyze data, etc.). Most of the labs will meet in-person either on the CR campus forest or at a designated field site. Plan on being on campus outdoors on Mondays and Wednesdays from noon-3pm. The instructor will give you notice through Canvas for any Virtual labs which will occur through Zoom instead of in-person at the same times.

Lab turn-ins

Most labs will have multiple items to submit. Commonly you will need to submit a photo or scan of your field notebook and a photo/scan of the map you drew and any math analyses required for a particular lab. However different labs will have different products and some labs will take multiple days to complete so pay attention to the lab assignment for specifics.



***You will be required to (use course discussion boards and/or email, zoom, phone, google doc) to communicate with peers to complete the group project. Expect to need to be online/checking email/CANVAS several days during the week throughout the semester. ***

Field Equipment

We will have several outdoor field labs this Fall with safety protocols in place. These labs require appropriate clothing and closed-toe, traction footwear for conditions, field notebook, and miscellaneous items (sunscreen/bug repellent/ water, etc..) NOTE: You will not be allowed to participate in most outdoor labs if you do not wear appropriate attire (e.g. no flip flops or smooth-soled shoes). There may be off-campus field trips and you are responsible for your own transportation to the field sites.