SURV 60 – Introduction to Plane Surveying
COURSE SYLLABUS (ver.1d, 8/17/2024) - FALL 2024
Sec.1305

Instructor: Reg Parks
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(*cell calls/ texting for emergencies only or with permission)
Lect: Tues 9:00 AM - 12:00 PM, ONLINE
Lab: Tues 2:00 PM - 5:00 PM, L196
Office Hrs: Tues 5:00-6:00 PM, Lindley196 or 238
or by appt.

Program and Instructor Web Pages:
Reg Parks SRJC Web Page
CESGT Program Web Page
Civil Engineering Certificate Web Page
Geospatial /GIS Certificate Web Page
Land Surveying Certificate Web Page

WELCOME TO SURV 60 !!!

Lectures and Laboratory: This is a hybrid online/in-person course. Lectures will comprise approximately three (3) of the six (6) weekly course hours with the remainder devoted to field laboratory activities. The distribution may vary occasionally depending on student progress and specific class projects. Some portions of class time will be devoted to the use of computers and software applications, data management and problem solving process. Active synchronous Zoom lecture attendance via laptop or desktop is mandatory. In-person lab attendance is mandatory. This course will NOT use Canvas.

TBA: One lecture & lab may be an independent research & problem solving exercise.

Mandatory In-Class Final Exam Date: Tuesday, December 17, 7:00am – 9:45am.

Required Textbook and Required Supplies: (available online and in SRJC Bookstore)

- *Elementary Surveying – An Introduction to Geomatics*, Wolf/Ghilani, Prentice Hall, 16th Ed. 2022
- *SURV 60 Lab Syllabus*, a reference document only, downloadable PDF from SRJC file depot, links to be arranged first week of instruction (TBA) --- links will be sent or a password assigned
- *Surveying field book*, hardbound only, NO spiral or loose leaf. only two acceptable options:
  Elan Standard Engineer's 64 - 4x4 spacing or
  Sokkia #8152-60.4x4 spacing
- *HP 35s or HP 33s Programmable Scientific Calculator*: REQUIRED; these HP calculators are programmable and allowed under the LS & CE state and federal licensing exam policy.
- *Surveying Solutions for the HP35s Calculator* by Ted Kerber, 5th Printing, 12/2021, Published by Software by D'Zign, Tollhouse CA…Distributed by CalculatorSource and SRJC Bookstoore
- Engineer's scale, mechanical pencil, eraser and straight edge. No ink allowed in field books!

Recommended Books and Recommended Supplies:

- Three-ringed binder for syllabus, class notes and assignments (note taking during lecture is strongly encouraged/recommended)
- **TI-30X IIs** or TI36X Pro, additional inexpensive calculator to use while programming, validating, and learning the HP 35s or HP33s data entry logic.

SRJC Land Surveying Technology Certificate Program & Career Technical Education (CTE)

The CESGT Program is a rigorous career education and training program leading to potential employment in one's respective professional discipline. Fall introductory courses develop fundamental office and field skills required for entry to spring courses.

SURV60 is a gateway course in a series of courses that prepare the student for a career as a land surveying technician/professional and should be taken very seriously. These courses are designed to develop entry or mid-level career skills and are designed in conjunction with guidance each semester

from regional professionals who collaborating in program and curriculum development. SRJC recognizes its responsibilities to all CTE students and to the professional community into which they will graduate. Students enrolled in the SRJC Land Surveying Technology Program must complete all coursework with a grade of C or higher to advance and to qualify for a Certificate. Students should begin immediately by establishing their certificate candidacy in their student portal or “cubby” under "District Announcements" use the "Degree Audit Available" link. For more information, please consult the Program Coordinator (see links above).

SURVEY 60 COURSE CONTENT:

Student Learning Outcomes:

Upon completion of this course, student will be able to:

1. Describe the concepts of Plane Surveying, including the Public Land Survey System
2. Properly set up and operate plane surveying equipment
3. Interpret and record data and field notes
4. Analyze and compute survey and engineering findings

Objectives:

Upon successful completion of this course, the student will be able to:

1. Define the different types of land surveying and their uses.
2. Summarize the proper procedures and use of surveying equipment used in this course.
3. Prepare proper surveying notes and information.
4. Perform surveying computations involving angles, directions, distances, areas, volumes, and vertical and horizontal positions.
5. Calculate horizontal measurements by manual and electronic methods.
6. Determine the elevation difference between points using multiple survey leveling methods.
7. Lay out, measure, analyze and adjust level runs, field traverses and topographic side shots.
8. Compute direction of a line from field data and record data using magnetic and geodetic information.
9. Compute the relative position of points by traversing.
10. Calculate basic curve data and layout basic horizontal curves.
11. Prepare a simple maps and diagrams from surveying data and information.

COURSE EXPECTATIONS:

SURVEY 60 is the prerequisite to and the first in a series of four land surveying courses. Together, they are designed to provide the fundamentals of basic land surveying concepts and field surveying methods. In this course, students will explore basic fundamentals within the context of preparing students for spring coursework. A serious student attitude is strongly encouraged and a team learning approach underpins the course culture. A team learning approach is one where along with the instructor, the student takes an equal (or better) measure of responsibility for their learning experience through their participation, performance and professional attitude.

The SURV60 course schedule is somewhat dynamic due to weather conditions, equipment issues and other factors. Changes may occur. Some assignment and lab scheduling directives and changes will be given verbally in class. Please pay attention, ask questions early, take notes, and remain prepared.

*BASIC and ROUTINE COURSE COMMUNICATIONS: primary communications and basic Q&A between student and instructor shall be via my SRJC email. *My cell phone is listed for emergency communications only or if given express situational permission.*

Class Preparation:

Students are expected to arrive on time for each class session, to read as assigned, complete assignments on time, to be prepared in advance for every class session, and to remain for the entire time. It is strongly recommended that students write down any questions about the material while reading and studying and bring them to class for clarification at the beginning of lecture or lab.

Students are expected to have successfully completed high school math (Algebra, Geometry and Trigonometry or equivalent) with a grade of C or better. Students are expected to be comfortable with microcomputer operations, Microsoft (MS) Windows Operating System (OS). *MS Windows file management*, MS Windows File Explorer, web browsers (MS Internet Explorer/Edge, Google Chrome, or Firefox), Adobe Acrobat Pro/Reader or Sumatra PDF (free downloads), Windows Notepad and MS Office Suite (Word, Excel, PowerPoint). Tutorials are available on the SRJC campus and on You Tube.

Access to a computer and to a stable internet connection are key to passing this course. This includes a minimum 5 Mbps UPLOAD speed(when using the Virtual Lab), a functioning webcam that has both video and audio capabilities, and the ability to print and scan 8-1/2 x 11 inch sheets of paper (at the instructor's discretion, clear and legible digital photos may be an acceptable alternative to scanning)..

Any student who feels that they have not met or cannot meet the requirements and expectations for this course should contact the instructor before the second class meeting. There are classes available that will help you prepare for this program.

Attendance:

- Attendance is required for both lab and lecture sessions. A lack of attendance will affect one's grade for this course.
- It is good practice to notify your instructor **by email** if you are going to be tardy or absent. An excused absence may be granted by contacting instructor sufficiently **prior** to the beginning of class.
- Students are responsible for all material covered in lecture and lab as well as course readings and assignments. ***Students are responsible for correctly obtaining any missed lecture or laboratory course information from their fellow classmates.*** Taking notes is strongly recommended.
- Class participation can and will affect one's final grade as will one's class conduct.
- There will be no make-ups for missed class activities (quizzes, exams, in-class demonstrations, etc.). Rarely, certain late assignments may be accepted but will be discounted starting at 20% off of total point value depending on how many classes have passed since the due date. Such instances will be solely at the instructor's discretion.
- According to school policy, if a student misses over 10% of official course hours, they can be dropped from that course.

Assignments:

- Required readings, handouts, weekly assignments and other information will be listed on a course planner, on instruction sheets, or provided as verbal instructions in class.
- All assignments are to be completed per the instructions provided and are generally due at the beginning of class in a SRJC FILE Depot drop-off folder (link to be provided). To ensure submittal timeliness, the drop-off folder will be swept at the beginning of class.
- Unless otherwise directed by your instructor, all assignments shall be submitted as a.) word-processed and submitted in standard 8½" x 11" format as a PDF, b.) in legibly hand-lettered and diagrammed field books or c.) on instructor provided worksheets.
- Students will include their name, course number, assignment parameters and due date on the first page. ***(No name / no date / no params = no score!!)***
- Written reports or term papers shall be word processed, single-spaced paragraphs, and formatted per instructions provided.
- Essay type exercises or questions will follow the standard five (5) paragraph essay or scientific writing format. Links to examples of writing styles provided below:

Scientific Writing Format:
http://writing.colostate.edu/guides/processes/science/pop2a.cfm
http://abacus.bates.edu/~ganderso/biology/resources/writing/HTWgeneral.html

Essay Writing Format:
http://www.englishdiscourse.org/5.paragraph.essay.format.html
http://www.custom-essays.org/essay_types/Five_5_Paragraph_Essay.html

- Completed assignments per specifications are the student's responsibility. Failure to observe these specifications will result in papers being returned with lower scores or without credit!
- This is a CTE/CE course, if a student believes that the instructor has failed to provide instructions or some details regarding an assignment or procedure; IT IS THE STUDENT'S RESPONSIBILITY TO INQUIRE IN SUFFICIENT TIME TO COMPLETE THE ASSIGNMENT…just like one would in any professional workplace.
- The average student should expect to complete a minimum of 1-2 hours of reading and/or homework for every hour of class (e.g., 3-6 hours per week for a 3 unit course).
- Again, it is strongly recommended that students write down questions about the reading materials or homework and bring them to class for clarification. Questions will be invited for a brief period at the beginning of class.

Project and Field Exercises:

- Attendance is mandatory. ***NO MAKE-UP LABS WILL BE GIVEN!***
- All projects and field exercises (labs) are to be completed as per instructions provided (handouts)
- and are due at the assigned date and time. It is recommended that students prepare in advance, bring questions to lecture/lab, and be prepared to hit the ground running.
- Labs will be held as specified by the instructor. There may be adjustments due to weather or administrative issues. Those will be announced. There may be field or office components associated with each lab. Sometimes there will be both.
- Your completed lab field notes will be due all or in part, at the end of the lab unless otherwise specified by your instructor.
- Field books and computation sheets will be turned in together. Late field lab assignments will not be accepted.
- Field lab exercises are designed so that EACH student is expected to SEQUENTIALLY and INDIVIDUALLY perform their own complete closed or open traverse. Teams observed taking parallel observations where several students observe one station and then move ahead repeating parallel observations and thusly completing only one loop overall, will be asked to box and bag their equipment and leave the field. The group members will receive no credit for that day's exercise.
- Field labs are 3 hours in length, it is strongly recommended that after efficiently gearing up, upon reaching and preparing the survey site (set hubs, flagging, control mons), the remaining time be allocated equally among all group members to perform their individual traverse. Upon exhausting that time allocation, each student shall stop and yield the instrument to the next student WHETHER THEY HAVE COMPLETED THEIR FIELD WORK OR NOT.
- Land surveying equipment is expensive and delicate. It is for the use of all SRJC land surveying and engineering students and therefore should be treated respectfully. Students will be instructed in the proper handling and use of the equipment. Please take notes. Students failing to follow procedure or seen mishandling the equipment will be given ONLY one (1) warning. A second observed occurrence will result in a student or students being excused from the lab with no opportunity to make it up. Repeat occurrences could result in a student or students being suspended or dropped from the course.
- Please show your lab group members the courtesy of letting them know when you will be absent or tardy for lab activities.

Course File Distribution/Exchange:
All online file exchange will be conducted via Zoom sessions and/or via the SRJC File Depot. Canvas will NOT be used.

Certain course files for distribution will be available on the SRJC File Depot (links to be provided during class or on assignment sheets) and will remain available for a limited time (generally 2-weeks) after posting before deletion to conserve space. Be certain to download files right away.

Electronic Assignment Submittal and Format:
Assignment submittals will be uploaded, via provided links, to the SRJC File Depot per written assignment instructions or verbal instructions provided in class. Please pay attention.

Electronic assignments are due in PDF format in the SRJC File Depot folder at the beginning of class on the due date and time for that assignment. Written assignments are to be neatly word processed.

A FILENAMING HANDOUT or CONVENTION WILL BE ASSIGNED BY THE INSTRUCTOR. IT SHOULD BE FOLLOWED TO THE LETTER.

No handwritten assignments will be accepted. Exception -- textbook chapter problem sets may be submitted as ordered, LEGIBLE PDF scans (ONE PHONE SCANNED FILE, NOT PHOTOS) of NEATLY handwritten 8.5" x 11" sheets of ruled graph paper. They must also be numbered, with all work shown and with interim and final answers boxed for clarity. Ruled graph paper must be used for assignments that include graphing problems, where a graph or diagram is an answer.

Format, organization and legibility counts. If the instructor cannot follow, read or understand an assignment, it cannot be graded and will be returned with no score. Only assignments submitted on time will be given priority for timely grading returns.

Examinations:

- ***TYPICALLY, NO MAKE-UP EXAMS WILL BE GIVEN!***
- *On rare occasion **prior*** instructor approval is necessary to reschedule an exam date.
- Exams will be given on specific areas covered throughout the semester. Sufficient notice will be given prior to the scheduled exam. Whenever possible, a brief review for an exam will be conducted or review materials provided.
- The final exam is required. Failure to take this exam will result in a grade of **F** for the course per SRJC policy..

Scientific Calculators:

Students should have a scientific calculator and know how to use it (the range of recommended models will be discussed). For CESGT certificate students, your instructor requires the HP33s, the HP 35s backed up by either the TI-30XIIs or the TI36 Pro as these are calculators that will be allowed on certifying, licensure and board examinations. The instructor will NOT be responsible for training students in the use or programming of scientific calculators. Some of this may be covered in APTECH 191 or in special on-campus programming clinics.

Possession **and** working knowledge of an HP33s or HP35s is a REQUIREMENT for this class and will be necessary for all examinations and quizzes. Incorrect results secondary to miss-keyed or incorrectly used calculators are INCORRECT. Again, in order to receive the most credit for work performed, please attempt, at all times, to clearly SHOW YOUR WORK.

Grading:

VIP!!! In order to receive the most credit for all SURV 60 work performed, please attempt, at all times, to fully SHOW ALL YOUR WORK.

- Your grade will be based on the total number of weighted points you accumulate with respect to the total number of possible "top score" weighted points. Homework, lab/assignments and exams are weighted accordingly:

Work Distribution		Point Weighting	Percentage	Grade
Homework		~20%	90 - 100%	A
Quizzes & Exams		~40%	80 - 89%	B
Lab Exercises		~31%	70 - 79%	C
Student Participation		~09%	60 - 69%	D
			< 60%	F
Total:		**100%**		

- An incomplete grade **"I"** will only be given as prescribed by college rules and regulations. ***Prior*** approval of the instructor is required.

Student Web Reading (required):

It is the student's responsibility to consult the SRJC web-based information listed below -- please do so, they are considered parts of this syllabus:

SRJC Academic Schedules & Calendar to identify all important dates, deadlines and academic policies such as those relating to unexcused absences, adding and dropping classes. *Also, please observe the emergency evacuation signs in each of the classrooms & computer labs.*

Schedule of Classes: https://classes.santarosa.edu/
Academic Calendar: https://admissions.santarosa.edu/academic-calendar/

SRJC Academics Information: https://www.santarosa.edu/academics/
SRJC Affairs and Programs: https://studentlife.santarosa.edu/student-affairs-engagement-programs

SRJC Disability Resources: https://drd.santarosa.edu/
SRJC Rights and Responsibilities: https://rightsresponsibilities.santarosa.edu/
(Please take careful note of the section on Academic Integrity, cheating of any type will not be tolerated)

Academic Integrity:

Per SRJC Policy 3.11; Academic dishonesty is regarded as any act of deception, benign or malicious in nature, in the completion of any academic exercise. Examples of academic dishonesty include cheating, plagiarism, impersonation, misrepresentation of idea or fact for the purposes of defrauding, use of unauthorized aids or devices, falsifying attendance records, violation of testing protocol, or inappropriate course assignment collaboration.

Class Conduct & Courtesy:

During lectures: Students should be listening to the lectures and presentations. Note taking is strongly encouraged. Per SRJC district policy, absolutely no recording of lectures is permitted without express permission of the instructor. Students shall please refrain from having conversations, checking your email or web-browsing on either computers or smart phones. These behaviors are distracting to other

students and to the instructor. **No student is allowed to print or plot when in Lindley 196 or 186 without permission.**

The above distractions or any disruptive behavior during class **are grounds for being excused from class with a loss of that day's work**. Repeated events will result in disciplinary action via the Department Chair, Dean or Vice President of Academic Affairs.

During Open Laboratory / In-class Laboratory (in L196): In addition to field lab times. there will be in-person and virtual open lab time supervised by Mr. Todd Amos, SRJC Micro Computer Lab Specialist. While on campus in-person or virtually, Survey 60 students will comport themselves per the course syllabus guidelines; field and laboratory rules. You represent the CESGT Program to others. When in doubt, please ask.

When using the computer labs, kindly remember that other students may have different study habits and priorities than you do. Please speak softly when briefly conversing with other students. Take phone calls outside the room. For remote access open labs, please use breakout rooms when meeting or conversing with other students.

Cell Phones: Please turn cell phone ringtones off. NO calls during class/lab time.

ABSOLUTELY NO FOOD, DRINKS, OR EATING ALLOWED DURING CLASS or in L196 LAB!!!
(sealed water bottles may be kept under your desk)
and once again for the cheap seats.....
ABSOLUTELY NO FOOD, DRINKS, OR EATING ALLOWED DURING CLASS or in L196 LAB!!!
(sealed water bottles may be kept under your desk)

Passwords, Accounts and Access Codes: In certain CESGT courses, students will be provided with SRJC workstation user accounts and will be required to establish user accounts at other websites as well. It is the responsibility of the student to keep track of their user names, passwords and security codes. Lost or forgotten passwords are not an acceptable reason for missed or incomplete assignments.

Computer Labs. Computers, Equipment and Equipment Handling: (for CESGT equipment)
SURVEY 60 students may be assigned computer accounts in Lindley 196. If so, they will receive a presentation familiarizing them with the in-class computing, printing and plotting equipment as part of course content. Account passwords and authorization codes will be issued at that time. These presentations will not be repeated.

In comparison to many other campuses, SRJC has a brand new building and recently updated, cutting edge computer hardware, software and output facilities. In order to provide optimum laboratory access and usage experience; if applicable, all students are expected to be familiar with and follow the posted rules for the computer labs (Lindley 196, 186). Any student observed violating the rules may be excused from class (first offense). Repeat offenses will result in a student being suspended or dropped from the class. In some classes your personal computer profile will NOT follow you to another class or classroom. Students will be assigned a workstation which will be their workstation for the entire semester. You may not sit at another workstation during class without permission from the instructor. Students will be provided with computer access account numbers on the first day of class or lab.

All students are expected to treat any SRJC laboratory equipment with proper care. Damaged or malfunctioning equipment shall be promptly reported to the instructor by the operator. Students observed mistreating any CESGT lab equipment will receive a warning. Repeat offenders will be suspended or dropped. All loaner equipment shall be returned per the policy and directions of the loaner source. Non-return of said equipment will result in legal and academic penalties.

All CESGT students are to treat the SRJC classroom computer equipment with proper care. Any damaged or malfunctioning computer equipment shall be promptly reported by the operator to the instructor by the operator. Students observed mistreating any computer equipment will receive a warning. Repeat offenders will be suspended or dropped. Students excused from class activities for mistreating equipment will not be allowed to make up that day's work.

There are data volumes (folders) and documentation files for the various devices and software applications. This documentation can be found in the \PATHNAME*\Library folder and the various subfolders on the SRJC File Depot and if operational, student local and network drives. The majority of the support documentation is in PDF format. Students are expected to be familiar with the use of Adobe Acrobat Reader software. Please make certain that you allow yourself the necessary time to transfer the appropriate support documentation in advance of assignments and class exercises.

SURVEY 60 students may receive a presentation familiarizing them with the in-class computing, printing and plotting equipment as part of course content. Account passwords and authorization codes will be issued at that time. These presentations will not be repeated.

> * PATHNAME=the SRJC network drive pathname to be established in class for the file location or locations.

***Lindley STEM Center Computer Lab Network Drives** (if operational during room access)*

Drive C:	Local hard drive in the computer
Drive F:	(Private drive unique to each person, copy class materials TO this drive)
Drive N:	(Read-only to students. Full-access to faculty and staff. Copy distributed class materials FROM this drive ASAP)
Drive M:	(Full-access to everyone) will be deleted periodically. Please don't leave your important files on this drive.
Drive ?:	(**TBA**, letter varies per class, this is a student submittal/grading drive, more later…)

VIP NOTE: Student USB drives or external HDDs should be inserted **AFTER** workstation logon is complete. External HDDs and USB drives should be used for backup and transfer of materials to outside/personal computers.

Network File Distribution:

As previously discussed above, course file exchanges will primarily be conducted via the SRJC File Depot. Occasionally and optionally some file may be distributed via the classroom network drive (N:\ drive) when appropriate. Use of the network requires a student account and will be discussed at the first class meeting.

Syllabus Purpose and Disclaimers:

This syllabus constitutes an agreement. Continued participation (past day 1) in SURV60 means that you, the student, tacitly agree to the policies and procedures outlined in this document and any verbal course directives provided in class. If some aspect or aspects of the syllabus are unclear to a student, it is their responsibility to inquire regarding that matter before the second class meeting.

This syllabus and a corresponding course calendar are intended to provide guidance as to what will be expected during the semester and what will be followed. However, the instructor reserves the right to modify, supplement or make changes as necessary for general course needs as the semester progresses.

The CESGT workplace is evolving, Technology is evolving. Certification and licensure exams are evolving with them. The CESGT Program is in its 58th year. These programs and courses have proven to be valuable to students before and after entering the industry workforce and when taking examinations. With the updating and addition of newer materials and methods, there will undoubtedly be some hiccups and improvements that can be made on the fly or integrated into next year's class. It is my desire as your instructor, to address these issues in the best possible way for the benefit of the entire class and CESGT Program. Thank you for your cooperation and patience.

Instructor Commentary:
The stackable CESGT 1-year programs move along very quickly. The fall courses are introductory, gateway courses to the spring semester courses. The follow-on rigorous spring semester courses offer additional curriculum towards the Land Survey certificate / degree and build the foundation of all professional land surveying.

The bulk of land surveying is initially performed in your brain and subsequently implemented with technology as basic as a pencil and paper or as fancy as a calculator or computer. It cannot be emphasized how important it is to fully-apply yourselves at every lesson opportunity. The lectures, labs and examinations in these courses are not easy. They are designed and sequenced to orient and prepare students for the workplace, certification and licensure exams. They also reflect the serious professional obligations that newly certificated technicians and licensed professionals will undertake for the state or states in which they practice. Please make the absolute best use of your time. Thank you and WELCOME.

Respectfully,

Reg Parks

SRJC E&AT CESGT Program

Please report any typos, broken links or inconsistencies….thx, rp

TENTATIVE BRIEF TOPIC OUTLINE for FALL 2024

(based on Ghilani, 16th Edition, 2022)

The objective of this outline and the accompanying course calendar is to assist you in planning your schedule. Every effort will be made to stay on schedule. However, the instructor may find it necessary to make appropriate changes to meet the learning objectives for the entire class.

Students should be familiar with the weekly topic ***prior*** to the class lecture by reading the assigned chapter pages. **Please stay current in your reading.**

Instructor will assign homework problems for each topic listed below.

Section	Topic	Ch.	Description	Pages
1	1	1	Introduction	1-21
	2	2	Units, Significant Figures and Field Notes	22-43
	3	3	Theory of Errors in Observations	44-69
	4	6	Distance Measurement	129-163
2	5	4 5	Leveling – Theory, Methods and Equipment Leveling – Field Procedures and Computations	70-101 102-128
3	6	7	Angles, Azimuths and Bearings	164-184
	7	8	Total Station Instruments; Angle Observations	185-225
4	8	9 10	Traversing, Traverse Computations	226-238 239-269
	9	11 12	Coordinate Geometry in Surveying Calc'ns (partial) Area	270-300 301-322
5	10	24 25	Horizontal Curves, Vertical Curves	738-777 778-796

Students will be provided with a more detailed dynamic course calendar during/immediately after the first week of instruction. It may be updated verbally in class or reissued during the semester as the needs arise.

SURV60 Field Vest and Tape Measure Detail Sheet (Fall 2024)

Field vests are required personal equipment for land surveying and some GIS courses.
(Also be required for SURV53, 56, & 58 in the Spring Semester, and for GIS54 restarting in the Spring of 2024)

All,

So students MUST purchase **ANSI/ISEA Class** 2 safety vests by 8/15 to participate in CESGT field labs.

For this reason, I am providing a list of recommended products at various price levels. Selection and purchasing arrangements are ultimately left up to the student. ***Please pay attention to safety class, sizing and shipping details at the site of purchase. Use the sizing links!!!***

TopTier (~$90-125) ONLY IF you are definite about a land surveying career

SECO CATALOG; series 8063, 8068-8069 and 8265 series vests (fluorescent yellow recommended)

Seco 8063,68,69 Series Vest 		 The 8063 has a rear pouch, carries more	Seco Sizing Guide webpage

Middle Tier ($35-60) if not sure about your career plans but plan to finish the cert.

Site Pro, or Radians Brands

Site Pro Premium Class Two Vest has rear pouch (no sizing link found)		Radians SV55-2ZGD Type R Class Two Engineer safety Vest (use their sizing link, gets good reviews, light weigh mesh, use the magnifier)	

Lowest Tier ($10-25) if you are uncertain about land surveying and the certificate program, cheap, offshore, all over the internet might be good, HAS to be Class 2 and has to be yellow on orange or orange on yellow – no fussy red or show-offy Tool Brand stuff….

Tip: use the magnifier, look for reinforcing stitching at the tops and bottom of the zipper stitching – those are stress points over time and tend to separate. Look for sizing charts.

Instructor recommends fluorescent yellow over fluorescent orange but either is acceptable. In fall and spring surveying courses we WILL be surveying in and crossing streets on campus.

25’ TAPE Measure w/ Engineering Scale (tenths and hundredths of a foot)

NOTE: the # of rivets
This is our required measuring standard.

Sources (on Amazon, Zoro and others, watch out for scalping pricing):

Lufkin PHV1425DN: 25’ Engineering scaled tape measure (tenths and hundredths of a foot, has 4 rivets on end plate (good)) $11.99 Amazon Prime (also at Home Depot for ~$18)

Keeson 33’ PG181033WIDEV: 33’ Engineering Scale 5 rivets (best) on endplate and 33’ is precisely ½ of a Gunter’s chain…..only a bargain at 20 bucks don’t pay 30 or 40

Komelon 52425IE: 25’ Engineering scaled tape measure (tenths and hundredths of a foot, has 3 rivets (fair) on end plate (ok)) $11.99 Amazon Prime

There is a KOMELON 7125IE model that is sexy & cool looking rubber grip Engineering scaled tape measure however IT ONLY HAS 2 RIVETS ON THE END PLATE – (bad), will eventually loosen up and move and give sloppy/incorrect readings, looks cool but buy at your own risk) $13.10 AVOID!!!!!

ALSO look at HOME DEPOT and Lowe’s (check first)
Lufkin, Milwaukee, Crescent and others: 25’ Engineering Scale for 14-18 bucks……

Surveyor's Compass

Students will provide their own magnetic compass suitable for land surveying. The compass must have a hinged cover, mirror, siting notch, adjustable bezel for magnetic declination, adjusting tool and preferably a neck lanyard or cord for fastening to vest.

Recommended models as of 2022. Strong recommendation: purchase a compass with dual bezel (bearing and azimuth graduations) or prioritize for a BEARING QUADRANT graduated bezel. If you purchase an azimuth graduated bezel you will need to be handy at accurately converting from azimuths to bearings in your head or on your calculator. Your choice…

BEARING QUADRANT GRADUATIONS

AZIMUTH GRADUATIONS

Recommendations:

a.) Suunto Compass Model MC-2 Pro Compass (most user friendly, best value IMHO)
https://www.google.com/search?q=Suunto+MC-2+Pro+Compass+best+pricing&rlz=1C1GCEA_enUS920US920&oq=Suunto+MC-2+Pro+Compass+best+pricing&aqs=chrome..69i57j33i160.4638j0j15&sourceid=chrome&ie=UTF-8

b.) Brunton Compass Model Tru Arc 15 (less user friendly, less easy to read)
https://www.google.com/search?q=Brunton+-+TruArc+15+-+Compass+best+price&rlz=1C1GCEA_enUS920US920&oq=Brunton+-+TruArc+15+-+Compass+best+price&aqs=chrome..69i57.3917j0j15&sourceid=chrome&ie=UTF-8

c.) Advantage Compass Model ADV8002 (on your own)
I conducted a brief search online for two well-known types and during the search, I found a questionable third type (very, very, inexpensive). It may serve the purpose for a student who is just taking SURV60 but I am not endorsing it for any reason as I have not used it and cannot vouch for the manufacturer. Buyer beware. Also, I noticed that the declination adjustment tool on the ADVANTAGE is CLIPPED to the compass not attached to the heavy-duty lanyard string like with the other two compasses.

SURV60 Field Book & Calculator Detail Sheet (Fall 2024)

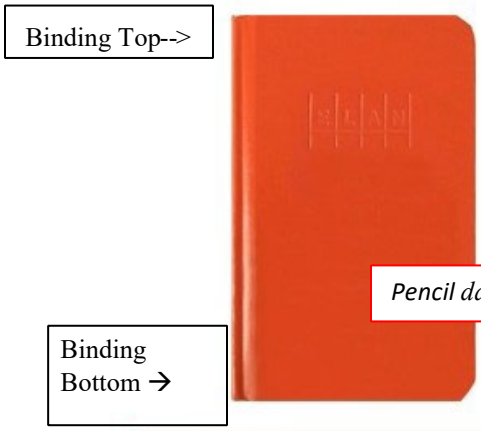
(originally prepared for APTECH191, GIS40 & SURV60)

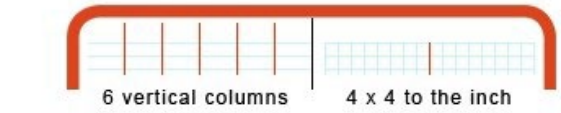
FIELD BOOKS:

Students are required to purchase a hard bound field book for field exercises. This is a tool that ALL field surveyors will use daily. Field notes are documentation that ALL field and office surveyors will need to be familiar with and know how to read and interpret. For SURVEY 60, there is ONLY one acceptable type of book of which there are TWO BRANDS. ***No other field book will be graded.***

Elan Field Book E64-4x4

Product Code: ES1636
Condition: New



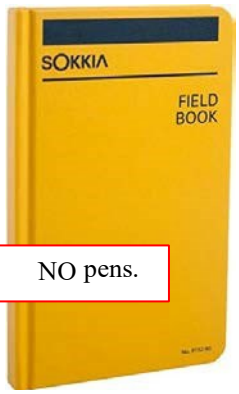


Binding Bottom →

Pencil data entry ONLY NO pens.

Sokkia Field Book

Product Code: 815260
Condition: New

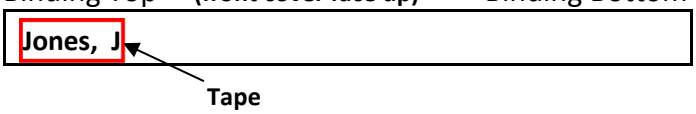


Do NOT purchase field books with "Rite in the Rain " paper.

6 vertical columns -- 4 x 4 to the inch

Starting at the TOP of the binding and printing downwards, SURV 60 students will use a black sharpie marker or thick black ballpoint to neatly print their "LAST NAME, FIRST INITIAL" as shown below. No name on binding or incorrectly printed or placed – field books will not be accepted!!!!!

Binding Top **(front cover face up)** Binding Bottom



<-- side view of field book binding,

Once the ink has dried, students will place a piece of transparent scotch tape evenly spaced along the binding centerline covering the printing.

Tape

HAND CALCULATORS:

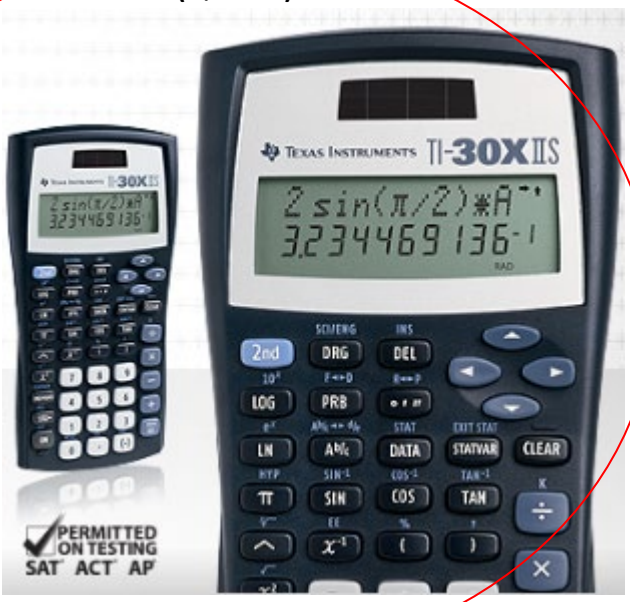
All CESGT students are required to have a hand calculator. Two makes and four models constitute the required choices for Civil and Survey Tech students. *All US survey and civil engineering licensure exams restrict calculator use to these and a two other Casio models.* Only the two HP models are programmable. Please refer to your syllabus for additional information.

Survey 60 students are required to purchase the HP calculator and programming manual circled below. Civil students are STRONGLY recommended to have the HP33s or **HP35s** programmable calculators. Both HPs will hold hand entered programs (see below) for faster execution of survey and engineering exam problems for your in-class AND your state licensing exams. GIS-only certificate only students may elect to purchase one of the two TI models.

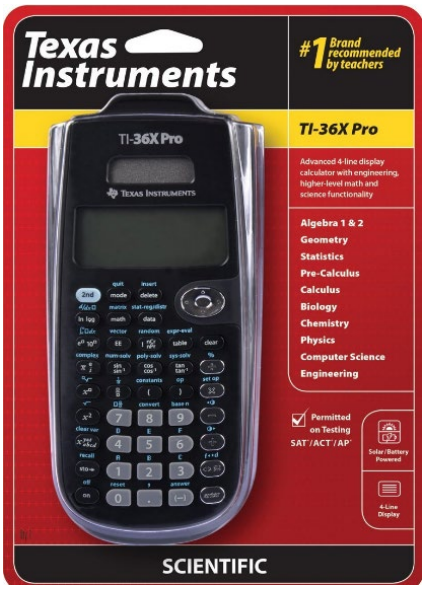
HP 33s (scarce, no longer in production)

HP 35s (preferred, still available pricing varies)

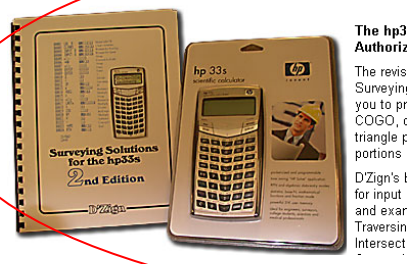
TI-30X IIS (~$11-12)



TI-36X Pro (~$17-18)



Software by D'Zign HP 33s Programming Manual



https://www.calculatorsource.com/dz-33s-survey.html

I continue to be

Software by D'Zign HP 35s Programming Manual

https://www.calculatorsource.com/dz-35s-survey.html

Ted Kerber Programming Manuals -- pricing varies, be diligent in your searches.

NOTE: SURV60 students are REQUIRED to purchase an HP35s or HP33s AND the corresponding above circled Kerber Programming Manual. Civil Tech and Civil Engineering transfer students are STRONGLY RECOMMENDED to purchase the HP35s AND the Ted Kerber Programming Manual. Please refer to NCEES Exam Calculator Policy

That said, the State Boards and NCEES have NOT disallowed the older discontinued HP33s and the recently discontinued HP35s (preferred) for NCEES and state-specific exams in Civil Engineering and Land Surveying. They remain the ONLY PROGRAMMABLE CALCULATORS on the approved list. ***For this reason, the CESGT Program will continue to require the HP35s (or the HP33s, if you can find one) for land surveying classes.*** ~~**The SRJC Bookstore sells the Ted Kerber D'Zign Surveying Solutions manuals for the HP35s only.**~~

I continue to be aware of the hike in the price of the HP calculators. Evidently, in 2022, HP restructured and sold off its calculator division to the Royal Company. Unfortunately, they are STILL gearing up to manufacture the HP35s. Therefore, the HP35s calculators remain scarce & somewhat expensive.

HERE ARE SOME SITES THAT WERE SELLING THE HP33s and HP35s:

Amazon Prime: sellers offer the HP35s calculator

CalculatorSource: sells the HP33s and HP35s calculators. They also sell the corresponding Ted Kerber D'Zign Surveying Solutions guides.

CAUTION!! There are other programming booklets but the CESGT Program only supports the Ted Kerber programming for the HP33s or 35s calculators. We believe it to be superior.

AceDepot: sells the HP33s but be sure to locate the Ted Kerber HP33s programming manual for that specific calculator BEFORE you purchase.

Various EBay sites are selling the HP33s and HP35s new or used. ***Students are encouraged to search for other sites and find their own best calculator deals…..***