SURV 53 - Route Surveying & Design
Section 5520
Spring 2020 Course Syllabus

Lect: Friday 6:00-9:00 PM, Kunde 151
Lab: Sat 8:00-11:00 AM, Kunde 151

Instructor: Neil King
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Office Phone: TBA
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Office Hrs: Fri 5:00 to 5:50 PM By Appt
Sat 11:10 to 11:55 By Appt

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Office Hrs:Fri 5:00 to 5:50 PM By Appt
Sat 11:10 to 11:55 By Appt

Textbook and Required Supplies:

- *Surveying with Construction Applications*, Barry Kavanagh, Prentice Hall, 7th Edition
- *SURV 53 Lab Syllabus* download the pdf file from the N:\ drive or from the SRJC file depot where you must log in with your SRJC username & password. The link is:

  https://filedepot.santarosa.edu/index.php/f/114314

- Three ringed binder to contain class notes, handouts and assignments
- Scientific-Engineering calculator: only HP 33s, HP 35s, TI-30xIIS calculators will be supported by the instructor. Software by D'Zign pre-programmed HP35s strongly recommend. The two HPs and the TI listed are all allowed on the state and federal exams. HP's are programmable for field calc's and exams. The TI calculators do not have programming capabilities.)
- Surveyor's 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
- Engineer's Scale, Mechanical Pencil, Eraser and straight edge for fieldwork. No ink or ballpoint pens!

Course Content

Student Learning Outcomes

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

1. Describe the route location process
2. Properly set up and operate data collection equipment and software
3. Lay out civil engineering designs
4. Design photogrammetric and LiDAR control for use in topographic mapping
5. Perform complex computations used in civil engineering construction & route surveying projects.

Goals & Objectives:

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

1. Develop a route location for a transportation project.
2. Summarize the proper use of the total station and data collector software and hardware.
3. Perform a field survey for control, topographic and construction surveys.
4. Prepare maps, plats and drawings from field data.
5. Prepare a photogrammetric surveying layout.
6. Perform complex computations related to photogrammetric surveys, right of way acquisition surveys, roadway alignments, earthwork volumes, slope staking, and global positioning surveys.
7. Design and lay out roadways using civil and surveying CAD software/hardware and surveying equipment.

8. Perform a field survey to slope stake a roadway.
9. Compute earthwork and other construction volumes.
10. Prepare route surveying documentation for different types of projects.

Class Preparation:

Students are expected to arrive on time for class, to be prepared in advance for every class and to remain for the entire session. It is strongly recommended that students write down any questions about the material while reading and studying and bring them to class for clarification.

Students are expected to have successfully completed SURV60, CEST51 (or equivalent) and APTECH 191 or equivalent math prep with a grade of C or better. Students are expected to be familiar with microcomputer operations, Microsoft (MS) Windows and MS Windows folder / file management, MS Windows Explorer, MS Internet Explorer, Adobe Acrobat Reader (free download), MS Notepad MS Excel spreadsheet software and Autodesk Civil 3D..

Home access to a computer and to the internet is key to passing this course. If students require additional time beyond the allocated lab time to complete their assignments, there will be scheduled open lab hours posted outside of the Jeff Kunde Hall computer labs. Eventually, students with home computers or laptops will be able to work, at home, outside of class hours. All students should be proficient in correctly transferring class data to and from their own USB or ZIP drives. Students are strongly recommended to purchase a USB drive of at least 16-32GB capacity by the second class meeting.

Possession **and** working knowledge of a hand calculator is a REQUIREMENT for this class and will be necessary for all exams, quizzes and problem sets. Incorrect results secondary to miss-keyed or incorrectly used calculators are INCORRECT. In order to receive the most credit for work performed, please attempt, at all times, to SHOW YOUR WORK.

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 hours and can affect your grade in this course. Class begins on the hour and ends at ten (10) minutes before the hour. You are responsible for your attendance.
- An excused absence may be granted by contacting your respective instructor sufficiently **prior** to the beginning of class. It is good practice to notify your instructor **by email** in advance if you are going to be tardy or absent.
- Students are responsible for all material delivered in lecture and lab as well as the readings and assignments.
- Students are responsible for correctly obtaining any missed lecture or laboratory course information from their fellow classmates. *Please do not expect your instructor to provide personal email services for absenteeism or failure to retrieve one's files from the network drive.*
- Your class participation can and will affect your final grade as will your class conduct.
- There will be no make-ups for missed class activities (quizzes, exams, demonstrations, etc).
- According to school policy, if a student misses over 10% of any course, they can be summarily dropped from the course.

- SURV53 Friday evening lectures (content and theory) and Saturday AM labs (computations and field exercises will be held in Kunde 151. Students will generally go out into the field on Saturdays. Please dress appropriately for land surveying fieldwork (no shorts, sandals, slippers or flip-flops). Observe all safety rules and use appropriate safety equipment (safety vests, cones, etc).

- There will be a field and an office component to SURV53 labs throughout the semester. The schedule and/or assignments may change during the semester to accommodate successful class learning and weather conditions.
- There may be an opportunity to perform some surveying work off campus. If this is the case, you will be given sufficient notice for scheduling purposes.

Assignments:

- All assignments are to be completed per in-class verbal and any written instructions and are due at the beginning of class on the assigned due date. No late assignments will be accepted.
- All assignments shall be submitted on 8½" x 11" paper, or the sheets provided, with your name, course number, assignment number and due date on the first page.
- Multiple sheets shall be submitted stapled together. *(No name / no date / no staple = no score!!)*.
- All written reports, essays, or term papers are to be typed and formatted per instructions provided.
- Assignments are your responsibility. Failure to observe these conditions will result in papers being returned without credit!

Projects and Field Exercises:

- Attendance is mandatory. ***NO MAKE-UP LABS WILL BE GIVEN!***
- All projects and field exercises (labs) are to be completed per instructions and due at the assigned date and time. Late assignments will not be accepted.

Tests and Exams:

- ***NO MAKE-UP EXAMS WILL BE GIVEN!***
- Exams will be given on specific areas covered throughout the semester. Sufficient notice will be given prior to the scheduled exam. Review for the exam will be conducted during the previous class lecture.
- The final exam for this course will be comprehensive and will be given on Saturday, May 16th, 2020, from 6:00 pm – 9:00 pm in Kunde 151. The final exam is mandatory. Per school policy, failure to take this exam will result in a grade of **"F"** for the course.

Required readings, handouts, weekly assignments and other information will generally be listed on the course calendar or on the white board at or near the beginning of each class meeting. The assignments will consist of a combination of worksheets, quizzes, mock exercises, discussion preparation, lab reports and written summaries.

Students should expect to complete a minimum of 1-2 hours of reading and/or homework for each class hour (e.g., 3 class hours per week translates into 3-6 outside hours per week).

There will be no make-ups for missed assignments, labs or exams. Rarely, certain late submittals 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 at the instructor's discretion. After a certain date, no late submittals will be accepted. That date will be announced by your instructor during class, ~1 week in advance.

Grading:

- Your grade is based on the total number of points you accumulate with respect to the total number of "top score" points accumulated. Homework, Lab/Assignment and Exams are weighted accordingly:

Total HOMEWORK points multiplied by 10%
Total LAB/ASSIGNMENT points multiplied by 45%
\+ Total TEST/EXAM points multiplied by 45%
Total Points Accumulated

- Your final grade is based on your Total Points Accumulated divided by the "Top Score" total points Accumulated and based on the following percentages:

90% to 100% ..... A
80% to 89% ..... B
70% to 79% C
60% to 69% ..... D
Below 59% ..... F

- 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.

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/home
SRJC Rights and Responsibilities: https://studentlife.santarosa.edu/rights-and-responsibilities

Class Conduct & Courtesy:

During lectures: Students should be listening to the presentation, note taking is strongly encouraged. Students shall please refrain from having conversations, checking your email or web-browsing. These behaviors are distracting to others and to the instructor. **No student is allowed to print or plot without permission during any lecture under any circumstances.** This includes when you are visiting in an open lab or have received permission to work quietly when any instructor may be lecturing.

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.

Extended classroom or lab dialog of any kind may be deferred or terminated at the discretion of the instructor.

During Laboratory: Kindly remember that other students may have different study habits and priorities than you do. Please speak softly when conversing with other students. Avoid long and/or social (unrelated to class matters) dialog in the computer lab. Take such conversations outside.

During open lab times or when other classes are in progress.

There will be open lab time in Kunde 111 and 151. A schedule will be posted on the doors to the labs. There may be lab seats available during other courses in progress. When desiring to occupy an empty station during a lecture, students should politely inquire with the instructor prior to just taking a seat. If a student shows up late and you are occupying their seat, you must vacate IMMEDIATELY. Survey 53 students will comport themselves per the course syllabus guidelines whenever using the computer labs. You represent the CESGT Program to others.

Cell Phones: Turn cell phone ringtones off and if you must receive a call please **go outside** during your phone conversation.

ABSOLUTELY NO EATING OR OPEN DRINKS ALLOWED IN CLASS or COMPUTER LABS!!!
and once again for the cheap seats.....

ABSOLUTELY NO FOOD OR OPEN DRINKS ALLOWED IN CLASS or COMPUTER LABS!!!

Passwords, Accounts and Access Codes: Students will be given SRJC computer user accounts and will be required to establish user accounts at other websites. 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 incomplete assignments.

Computers, Equipment and Equipment Handling:

In comparison to many other campuses, SRJC has recently updated, excellent computer hardware, software and output facilities. In order to provide optimum laboratory access and usage experience; all students are expected to be familiar with and follow the posted rules for the computer labs (Kunde 111 and 151). Any student observed violating the rules may be excused from class (first offense). Repeat offenses will result in a student being dropped from the class. In some classes your computer profile will NOT follow you to another station. Students will be assigned a workstation which will be their workstation for the entire semester. You may not sit at another workstation without permission from the instructor. Students will be provided with computer access account numbers on the first day of class. All students will complete a laboratory compliance agreement during the first class meeting.

All students are to treat the course equipment with proper care. Any damaged or malfunctioning computer or survey equipment shall be promptly reported to the instructor. Students observed mistreating the equipment will be warned either openly or in conference. Students who are repeatedly observed misusing equipment will be excused from that class. Students excused from class activities for mistreating equipment will not be allowed to make up that day's work. A second such event may result in a student being dropped from the course.

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 student local and network drives. Any hard copy documentation and display articles are **NOT** to be taken off the lab premises or off campus for **ANY** reason without prior approval of the instructor. STUDENTS ARE NOT PERMITTED TO PRINT THE DOCUMENTATION FILES ON SRJC PRINTERS. When such documentation is required for an out of class assignment, it may be obtained from the \PATHNAME*\Library folder in electronic format. Assignments and support information will be provided on the SRJC network drive and should be copied to the student's local drive BEFORE opening or operating on the file or files. 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 53 students 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. SRJC provides laboratory supervision and limited software support during the open lab hours on the Santa Rosa Campus. Please familiarize yourselves with Mr. Todd Amos' schedule. He is super knowledgeable and a valuable resource.

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

Kunde 111 or 151 Network Drives

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.

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

File Distribution:

This semester I will be using the **SRJC FILE DEPOT** to distribute selected files and to receive certain files and assignments. This will keep my SRJC mailbox from over filling with large attachments (assignments). Certain files for distribution will be available in the File Depot (link below). Files that students will be instructed to send will be uploaded to the SRJC File Depot Dropbox (link below). Use of this site will be discussed at the first class meeting.

Link to File Depot: https://www2.santarosa.edu/file-depot/
Link to Dropbox: http://www2.santarosa.edu/file-depot/dropbox.php

Note: instructor-posted files will remain on the site for ~ 2 weeks after posting and then be deleted. Be certain to download the files right away.

Syllabus Purpose and Disclaimers:

This syllabus is an agreement. Continued participation (past day 1) in SURV53 means that you, the student, tacitly agree to the policies and procedures outlined in this document. If some aspect or aspects of the syllabus are unclear to a student, it is their responsibility to inquire regarding that matter at the outset of the course.

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

Instructor Commentary:

The 1-year program moves along very quickly. The Fall courses are introductory, gateway courses to the Spring semester courses. The follow-on 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 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 to orient and prepare students for the workplace, qualification and licensure exams. They also reflect the serious professional obligations that newly licensed land surveyors will undertake for the state or states in which they practice. Please make the absolute best use of your time. Thank you and WELCOME.

Neil King
Reg Parks

SURV 53 – Route Surveying & Design
SPRING 2020 COURSE OUTLINE

The objective of this outline 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.

You should be familiar with the Topic *prior* to the class lecture by reading the assigned chapter pages. You should allow yourself a minimum of six hours per week to complete the reading and homework assignments.

Instructor will assign homework problems for each topic listed below. See the Course Syllabus for guidelines and specific information on course objectives, homework, lab assignments, exams and grading.

Asgnmt	Description	Handouts and/or Text	Problems
1	Route Location Process	Samples from Textbook	Asgnmt #1
2	Total Stations & Data Collectors	Supplemental Handout Total Stations/Data Collectors using TDS Handout & Video	Field Exercises using Total Sta/Data Collectors
3	Topographic Mapping & Photogrammetry / LiDAR	Supplemental Handouts	Field Exercises mapping Photogrammetric planning & layout
4	Horizontal Alignment Simple, Compound & Reverse Curves	Samples from Textbooks. Supplemental Handouts	Field Exercises Stakeout procedures, PLS & NCSJAC exam questions

5	Vertical Alignment Parabolic Curves	Samples from Textbooks. Supplemental Handouts	Field Exercises Stakeout procedures, PLS & NCSJAC exam questions
6	Construction Surveys	Samples Textbooks. Supplemental Handouts	Field Exercises Earthwork Quantities NCSJAC & PLS exam questions
7	Elevation Certificates	FEMA Supplements	Field Exercises