

**APTECH 191 - INTRO to GEOSPATIAL PROBLEM  
SOLVING & QUANTITATIVE REASONING  
COURSE SYLLABUS (v1a) - FALL 2017, Sec. 2912**

**Instructor: Reg Parks**

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Lect: M, 2:00 PM - 5:00 PM, Shuhaw 1751

Office Hr: M, 5:00-5:45 PM, Shuhaw 1775

**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 APTECH 191!!!**

**Lectures and Laboratory: Mondays from 2:00 PM to 5:00 PM in 1751 Shuhaw Hall on the Santa Rosa campus.** (Lectures will be held in Shuhaw 1751 computer lab. Some portions of class time will be devoted to the use of computers and software applications in the problem solving process)

**Final Exam Date: Students should plan on being present for a mandatory final exam on: Monday, December 18th, 1:00pm – 3:45pm.**

<b>ApTech 191 Required Course Materials:</b>	<b>ApTech 191 Course Reference Materials:</b>
1.) Elementary Technical Mathematics, Ewen, Cengage Learning, 11th Edition, 2015	1.) ApTech 191 Library Folder: articles, handouts, white papers, user guides and manuals (always under construction)
2.) Hand calculator -- (see below)	2.) Mastering Technical Mathematics, Gibilisco, MGCI Press, 3rd Edition, 2008, ISBN-13: 978-0071494489 (Doyle Reserve, recommended)

**SRJC CESGT Program & Career Technical Education (CTE)**

Students enrolled in the SRJC CESGT Technology Program must complete all coursework with a grade of C or higher to qualify for a Certificate. For more information, please consult the Program Coordinator (see links above).

This is an introductory course in a series of college courses that build some basic computational and quantitative reasoning skills for students preparing for an entry or mid-level technical professional career. These courses are designed in conjunction with guidance from local professionals who assist in establishing course curriculum. Introductory courses are also gateway courses leading to a degree or certificate. SRJC recognizes its responsibilities to all CTE students and to the professional community into which they will graduate.

**APTECH 191 COURSE CONTENT:**

**Student Learning Outcomes:**

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

1. Define and solve algebraic, geometric and trigonometric problems in the fields of civil engineering, land surveying, geospatial and construction technologies.
2. Describe and evaluate measurement data using descriptive statistics and exploratory data analysis.

**Objectives:**

1. Solve problems involving triangles, polygons, curves and curve elements, terrestrial baselines (vectors), Global Positioning System, GPS signal vectors, matrices and measurement data.
2. Calculate curve elements, arc lengths and areas of sectors and segments.
3. Analyze and solve problems relating to the dimensions of geometric solids such as earth volumes, cut and fill, tailings, concrete forms.
4. Solve linear equations and inequalities with one, two or three variables such as those found in trilateration methods of GPS ranging.
5. Solve systems of equations through the use of graphing, addition, substitution and comparison as well as through the use of determinants and matrices.
6. Evaluate and solve ratio and proportion problems found in the civil engineering, land surveying, geospatial and construction fields.
7. Evaluate and summarize measurement data using descriptive statistics and exploratory data analysis methods.

**COURSE EXPECTATIONS:**

ApTech191 emphasizes concepts and methods for geospatial problem solving and quantitative reasoning. Along with coverage of basic mathematical concepts, approaches to solving practical and relevant industry problems will be discussed. These skills will be further utilized in subsequent technology based courses within the three certificate disciplines; civil engineering, GIS and land surveying. A serious student attitude is strongly encouraged and a team learning approach underpins the course culture. A team learning approach is one where a student takes an equal (or better) measure of responsibility for their learning experience through their participation, performance and professional attitude.

**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 high school math (Algebra, Geometry and Trigonometry or equivalent) \*\* with a grade of C or better. Students are expected to be familiar with microcomputer operations, Microsoft (MS) Windows and MS Windows file management, MS Windows Explorer, MS Internet Explorer, Adobe Acrobat Reader (free download), MS Notepad and MS Excel spreadsheet software. Tutorials are available on the SRJC campus.

Access to a computer and to the internet is key to passing this course. If students require additional time beyond the allocated class time to complete their assignments, there will be scheduled open lab hours posted outside Shuhaw 1751 and 1799. 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 8GB capacity by the second class meeting.

***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 Issues:

- Attendance is required. Your lack of attendance can affect your grade for this course. Class generally begins on the hour and ends at ten (10) minutes before the hour.
- 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 discussed in class as well as the readings and assignments. *Students are responsible for correctly obtaining any missed lecture or laboratory course information from their fellow classmates.* Taking notes is a good practice.
- Students are responsible for correctly obtaining any missed-class course information from their fellow classmates. 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, 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 any course, they can be dropped from the course.

### Assignments and Examinations:

- Required readings, handouts, weekly assignments and other information will be listed at the end of the lecture slides and/or on the white board at or near the beginning of each class meeting. The assignments will consist of a combination of chapter problems, worksheets, mock exercises and written summaries.
- All assignments are to be completed per given instructions and due at the beginning of class on the assigned due date. Late assignments will only be accepted with instructor's **prior** approval. A substantial penalty (determined by the instructor) will be deducted from the grade of the **approved** late assignment. After a certain point in the semester NO late assignments will be accepted - that date will be announced in class.
- All assignments shall be submitted on 8½" x 11" ruled binder or graph paper or on sheets provided to you by the instructor.
- Students will include their name, course number, assignment parameters and due date on the first page. Staple multiple sheets together **prior** to turning in. When multiple assignment sections are due, they should be stapled together SEPARATELY and submitted in chronological order. *(No name / no info / no staple = no score!!)*
- Any written reports, essays, or term papers shall be typed and formatted per instructions provided.
- Completed assignments per specifications are the student's responsibility. Failure to observe these conditions will result in papers being returned without credit!
- Students 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).
- It is strongly recommended that students write down any questions about the material while reading and studying and bring them to class for clarification.

**Quizzes & Exams:** Students will be given one (1) to four (4) unannounced quizzes, usually administered at the beginning of class, over the course of the semester. Students will be given one (1) to three (3) midterms and one final exam. The format for the quizzes and exams is straight calculations, word problems, matching, short answer and short essay. Class examinations are mandatory as scheduled. There will be no make-up exams or quizzes. Please

note: a phone message left a few minutes before class stating that you cannot be present does NOT constitute a potential prior arrangement or excused absence. Please plan ahead.

### **Assignment Submission and Format:**

Assignments are due at the beginning of class on the due date for that assignment. All assignments are to be neatly typed or word processed.

**No handwritten assignments will be accepted. Exception -- textbook chapter problem sets may be submitted NEATLY handwritten. 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 as an answer. If the instructor cannot read an assignment, it will not be graded and returned with no score. Only assignments submitted on time will be given priority for timely grading returns.**

Any essay type exercises or questions will follow the standard five (5) paragraph essay format for writing style. Links to examples of writing styles discussed above:

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](http://www.custom-essays.org/essay_types/Five_5_Paragraph_Essay.html)

This semester, I will be using the **SRJC FILE DEPOT** to distribute large files (over and to receive large 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>

### **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 recommends the HP33s, the **HP 35s** and the **TI-30XIIs** or a TI-36X-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 of scientific calculators.

Possession **and** working knowledge of a hand calculator 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. In order to receive the most credit for work performed, please attempt, at all times, to SHOW YOUR WORK.

### **Grading Policy:**

- Student grades will be based on the total number of weighted points accumulated with respect to the total number of possible weighted points.

Work Distribution	Point Weighting	Percentage	Grade
Homework	~60%	90 - 100%	A
Quizzes & Exams	~31%	80 - 89%	B
Student Participation	~05%	70 - 79%	C
Subjective	~04%	60 - 69%	D
		< 60%	F
<b>Total:</b>	<b>100%</b>		

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

**During laboratory use:** 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 Shuhaw 1799 and 1751. 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. APTECH 191 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 FOOD 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:** (for lab courses and open lab use)

In comparison to many other campuses, SRJC has **CURRENT** and 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 (Shuhaw 1751 and 1799). **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 are to treat the course equipment with proper care. Any damaged or malfunctioning computer or 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.

APTECH 191 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 work folders - to be established in class for the file location or locations.

### **SHUHAW 1751 and 1799 Network Drives**

Drive C: Local hard drive in the computer  
Drive F: (Network - Private drive unique to each person-copy all class materials to this drive)  
Drive N: (Network - Read-only to students. Full-access to faculty and staff. Copy distributed class materials FROM this drive ASAP)  
Drive M: (Network - 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.

### **Syllabus Purpose and Disclaimers:**

This syllabus is an agreement. Continued participation (past day 1) in APTECH 191 means that you, the student, 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 quickly. Most of the CESGT Fall courses are introductory, gateway courses to the Spring semester courses. The follow-on spring semester courses offer additional curriculum towards the CESGT certificate / degree and build the foundation of all professional technical employment in this field.

The bulk of mathematics and problem solving is initially performed in your brain and subsequently implemented with technology as simple 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, activities and examinations in these various courses are not easy. They are designed to orient and prepare students for the qualification and licensure exams. They also reflect the serious professional obligations that newly certificated or licensed technical 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