

GIS 40 – Introductory GIS

COURSE SYLLABUS (v1a) – FALL 2024, Sec. 2135

Instructor: Annie Maher

Office: # 244 Lindley STEM Center

Email: emaher@santarosa.edu

Lect: T/Th, 6:00 PM -- 9:00 PM, **Lindley 196**

Office Hour: T/Th after class, **Lindley 196**

OR by appointment

Program and Instructor Web Pages:

[Annie Maher SRJC Web Page](#)

[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 GIS 40 !!!

Lectures and Laboratory: GIS 40 is a CESGT required 4-unit course. **It is listed as a general education course, but is taught WITH SOME EMPHASIS on civil engineering and land surveying because it is a required course for the CESGT AS/Certificate Program.** Lectures will comprise approximately three (3) of the six (6) weekly course hours with the remainder devoted to laboratory activities. The distribution may vary occasionally and slightly depending on student progress and specific class projects. Some portions of class time will be devoted to the use of computers and software applications in the cartographic, data management and problem-solving process.

Mandatory Final Exam Date: [Tuesday, December 19th 2024, 6:00PM – 8:45 PM](#)

Textbook and Required Supplies:

<p>GIS 40 Required Course Text: 1.) GIS Fundamentals: A First Text on Geographic Information Systems, Paul Bolstad, Eider Press, 7th Edition, 2022</p> <p>GIS 40 Recommended Course Text: 1.) Lining Up Data in ArcGIS: A Guide to Map Projections, Margaret M. Maher, ESRI Press, 3rd Edition, 2018</p>	<p>GIS 40 Course Reference Materials: 1.) As posted on Canvas: articles, handouts, white papers and user guides and manuals</p> <p>ALSO IMPORTANT (for CEGST program and beyond): Programed, Scientific-Engineering calculator (HP 33s, HP 35s, TI-30X-IIs models).</p>
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Additional Outside Reading: **OPTIONAL!!!**

<p>1.) Introduction to Geographic information Systems, Kang-tsung Chang, McGraw-Hill, 9th Edition, 2019</p> <p>2. GIS Concepts and ArcGIS Methods, David M. Theobald, Conservation Planning Technologies, 2nd Edition (ver. 9.x), 2005</p> <p>3. GIS Concepts and ArcView Methods, David M. Theobald, Conservation Planning Technologies, 3rd Edition (ver. 3.x), 2001</p>	<p>3.) Statistical Analysis of Geographic Information with ArcView GIS and ArcGIS, David W.S. Wong. Jay Lee, Wiley Press, 2005</p> <p>4.) Elementary Surveying: An Introduction to Geomatics, Paul R Wolf, Charles D Ghilani Prentice Hall, 16th Edition, 2021 **</p> <p>** most of these books are on reserve in the Doyle Library</p>
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SRJC GIS Technology Certificate Program & Career Technical Education (CTE)

Students enrolled in the SRJC Geospatial Technology Program must complete all coursework with a grade of C or higher to advance or to qualify for a certificate. For more information, please consult the Program Coordinator (see links above). CESGT Certificate students should begin immediately by establishing their certificate candidacy in their cubby, Link: "District Announcements" > "Degree Audit Available".

This is an introductory course in a series of college courses that prepare the student for a career as a GIS technician/professional. These courses are designed to develop entry-level or mid-level career skills and 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.

GIS 40 COURSE CONTENT:

Student Learning Outcomes:

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

1. Define the elements of a geographic information system (GIS)
2. Describe the applications of GIS for different disciplines
3. Create a GIS using image, geographic and database information

Objectives:

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

1. List the primary functions of a GIS.
2. Understand elementary spatial analysis of data.
3. Define image, geographic and database methods of representing data.
4. Describe the differences between CAD and GIS.
5. Use different types of graphic symbols.
6. List and identify different file structures and their advantages and disadvantages.
7. Describe data storage, editing and retrieval techniques used in a GIS.
8. Create a GIS using image, geographic and database information.

COURSE EXPECTATIONS:

GIS40 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 additional 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.**

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 YouTube.

Access to a computer, word processor, spreadsheet application, PDF organizer/editor and a reliable internet connection of 5+ Mbps or better are key and critical to completing the required coursework. **In addition to lab time, you will need to utilize open lab hours on campus to complete assignments.** VMWare access may be provided, enabling you to log into the Lindley 196 network and access the software remotely from home. **There is a limit to the number of students who can remote in at any given time. Please do not rely solely on having remote access.** Scheduled open lab hours will be posted when available. Students should obtain a VMWare class account during the first few days of class. Access will require use of their student ID number. The computer lab manager is Todd Amos, Micro Computer lab Specialist. He will issue notices to student regarding important Lindley Computer Lab issues during the semester. Please pay close attention to those emails as they are issued.

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 Canvas messaging** 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. This course has 17.5 wks x 3 hrs/week = 52.5 hrs.

Assignments (includes Examinations):

- ⌚ According the SRJC policy, 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., 4-8 hours per week for a 4 unit course).
- ⌚ All assignments are to be completed per instructions and are due at the beginning of class on the assigned due date. A course calendar will be provided. It is the responsibility of the student to clarify any inconsistencies BEFORE submittal and with enough time to make any necessary changes.
- ⌚ Course deliverables shall be submitted as follows:
 - ⌚ on 8½" x 11" sheets (paper or PDF per spec) or on worksheets provided by the instructor. Unless otherwise directed, any maps and diagrams shall be submitted on 8½" x 11", 11" x 17" or 24" x 36" sheets (properly folded if hard copy) or on worksheets provided by the instructor,
 - ⌚ *when* specified, assignments will be submitted as PDFs. They may be saved/exported from an application (ArcGIS, C3D, MS Word, etc.) or scanned to PDFs (NO PHOTOS). Multiple PDFs will be appended in page/logical assigned order and submitted as ONE SINGLE FILE to a specified submittal link,

- ⌚ each file will have a prescribed filename that will be provided in each assignment's instructions. There will be no exceptions. *When an assignment originates from an MS Word file, **BOTH** the .DOC AND the .PDF files are to be submitted. The same goes for .DWGs and their corresponding .PDFs,*
- ⌚ put your name, course number, assignment parameters (module number, exercise number, problem numbers, etc.), and due date on the first page (cover page) of every assignment,
- ⌚ any written reports, essays, or term papers shall be word processed and formatted per instructions provided. No handwritten assignments will be accepted,

Failure to observe any of these conditions may result in papers being returned without credit!

Completed assignments are the student's responsibility. Familiarize oneself with assignments early, if clarification is needed or an ambiguity is noted, contact the instructor early. Waiting until the night or morning before the due date to inquire and not receiving a timely answer is on YOU!

Your instructor WILL NOT CONVERT third party software like Libre Office Apps, or Google Docs, Google Sheets, anything Google!!!

E-Learning Lab Modules: Students will complete between six and eight **(6-8)** laboratory assignments. Modules include exercises and mapping assignment utilizing various functions in ArcGIS Pro. Some will be further explained with additional supplementary instructions. Each will be worth **30-150 points**. *Any supplementary handouts will be provided at the time of the assignment and reviewed in class.*

Students will follow the exercises instructions and handouts as directed by your instructor, completing (submitting) all map layouts where directed (5-20 points per map, usually 10). All module exercises will be completed and submitted as follows:

- ⌚ Module cover sheet (student name, course, date, module #, exercise #)
- ⌚ Module maps in order of module assignment per specifications and instructor directions
- ⌚ All pages stapled together and folded to 8.5 x 11" format size (excepting 24x36") – if hard copy

The instructor will scale the total scores as reflected in the point distribution column in the table below. Students will be assigned 2-3 Challenge Exercises related to certain modules, each worth 50 - 150 points. Instructions will accompany the assignment. They will be more rigorous than the Modules. Please take them very seriously.

Be advised that one of the BEST sources of help after trying ArcGIS Pro3.x help functions is a *focused online key word search*. PLEASE become familiar with how to use online help to support your work just as one would if they were employed in the industry. Save your work often and in a location KNOWN TO YOU! Follow the GIS 40 folder structure and file naming as pointed out by the instructor.

Quizzes & Exams: Students may expect one (1) to four (4) unannounced quizzes, usually administered at the beginning of class, over the course of the semester. Students may expect one (1) to three (3) midterms and one oral final exam. **Exams are usually worth 100-350 points each.** Midterms may include short answer questions, short essays, and lab component. Class examinations are mandatory as scheduled. There will be no make-up exams. Please note: a message a few minutes before class stating that you cannot be present is an appropriate courtesy but does NOT constitute an excused absence. Please plan ahead.

Student Mini Map Project: Students will develop and present a special map project over the latter course of the semester. This project will involve submitting a project proposal for instructor approval, obtaining GIS data to complete a preliminary map, completing the map and presenting the map to the class.

Essay / Report Assignment Submittal and Format:

All essay assignments are to be neatly word processed. *Electronic copies (Word and PDF) should accompany any hard copy submittals and shall be submitted as specified by your instructor.*

Laboratory assignments (reports/summaries and class projects) will be submitted in scientific manuscript format (*Introduction, Materials & Methods, Results, Discussion and Conclusions*). This includes any examinations that require a laboratory report or project report. Any essay type questions will follow the [standard 5 paragraph essay format](#) for writing style.

Links to additional examples of writing styles discussed above:

A. Scientific Writing Format:

<http://writing.colostate.edu/guides/processes/science/pop2a.cfm>

B. Essay Writing Format:

<https://www.grammarly.com/blog/five-paragraph-essay/>

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 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 in this class.

For Civil and Survey certificate students, your instructor strongly recommends the HP33s, or the HP35s as these are calculators that will be allowed on certifying, licensure and board examinations. Students are responsible for learning and performing the programming and operation of the HP calculators. HP Programming guides will be discussed in APTECH 191 and SURV60

Grading Policy:

A score is assigned to all submitted work. A letter grade will be assigned at the end of the semester based on the point weighting and percentage breakdowns described below.

Work Distribution	Point Weighting	Percentage (Grade)
Module/Challenge Assignments	~51%	90 - 100% (A)
Quizzes & Exams	~40%	80 - 89% (B)
Student Map Project	same as a Module	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. In order to advance in the CESGT program students must receive a grade of "C" or better.

SRJC 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. Students will follow all directions on exams and assignments sheets. When asked to work independently that means no collaboration *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)

Classroom Safety:

Students are expected to follow **all posted and published** SRJC classroom safety and courtesy rules during class or when working during open or available lab times.

Please familiarize yourselves with the emergency evacuation diagrams and instructions on the walls of Lindley 196 and 194.

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 open lab time supervised by Mr. Todd Amos, SRJC Micro Computer Lab Specialist. While on campus in-person or virtually, GIS 40 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 OR EATING ALLOWED IN THE COMPUTER LABS!!! NO OPEN CONTAINERS!!!

Password Accounts and Access Codes: Students will be given SRJC computer user accounts and will be required to establish a user account at other websites such as ESRI. In some cases, authorization codes may be assigned to each student. 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.

Computer Labs. Computers, Equipment and Equipment Handling: (for CESGT equipment)

GIS 40 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.

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.

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.

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

Drive names and functions to be confirmed during lecture

Drive C:

Local hard drive on the workstation. Do NOT work or leave files on this drive

Drive F:

Individual network drive space, copy class materials TO this drive. SECURE

Drive N:

Read-only to students. Full-access to faculty and staff. Copy distributed class materials FROM this drive ASAP). INSTRUCTOR SECURE

Drive M:

Full-access to everyone will be deleted periodically. Please don't leave your important files on this drive. NOT SECURE.

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:

Course file exchanges will primarily be conducted via Canvas. Occasionally 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.

Note: instructor-posted files on the network drive will remain available 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 enrollment in GIS40 means that you, the student agrees 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 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 CESGT 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!

- Annie Maher

SRJC E&AT CESGT Program