GIS 40 – Introductory GIS
COURSE SYLLABUS (v1a) – SPRING 2024, Sec. 7017

Instructor: Reg Parks
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Lect: Tues, 6:00 AM -- 9:00 AM, ONLINE-ZM
Lab: Th, 6:00 AM -- 9:00 PM, ONLINE-ZM
Office Hour: T-Th 9:00 PM – 9:45 PM, ONLINE-ZM
OR by appointment

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 GIS 40 !!!

Lectures and Laboratory: GIS 40 is a 4-unit course. **It is listed as a general education course, but is taught WITH 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. Active, synchronous, full-face Zoom attendance via laptop or desktop over a reliable, 5+ Mbps internet connection is mandatory.

Mandatory Final Exam Date: TENTATIVE – Tuesday, May 21st, 6:00PM – 9:00 PM

Textbook and Required Supplies:

GIS 40 Required Course Text: 1.) GIS Fundamentals: A First Text on Geographic Information Systems, Paul Bolstad, Eider Press, 7th Edition, 2022 **GIS 40 Recommended Course Text:** 1.) Lining Up Data in ArcGIS: A Guide to Map Projections, Margaret M. Maher, ESRI Press, 3rd Edition, 2018	**GIS 40 Course Reference Materials:** 1.) GIS Library Folder: articles, handouts, white papers and user guides and manuals (work in progress and constant revision) **ALSO REQUIRED:** Scientific-Engineering calculator (I will only support the following: HP 33s, HP 35s, TI- 30X-IIs models).

Additional Outside Reading: *OPTIONAL!!!*

1.) Introduction to Geographic information Systems, Kang-tsung Chang, McGraw-Hill, 5th Edition, 2010 2. GIS Concepts and ArcGIS Methods, David M. Theobald, Conservation Planning Technologies, 2nd Edition (ver. 9.x), 2005 3. GIS Concepts and ArcView Methods, David M. Theobald, Conservation Planning Technologies, 3rd Edition (ver. 3.x), 2001	3.) Statistical Analysis of Geographic Information with ArcView GIS and ArcGIS, David W.S. Wong. Jay Lee, Wiley Press, 2005 4.) Elementary Surveying: An Introduction to Geomatics, Paul R Wolf, Charles D Ghilani Prentice Hall, 11th Edition, 2005 ** ** most of these books are on reserve in the Doyle Library

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 first in a series of three Geospatial/GIS certificate courses (Intro, Advanced, Data Acquisition). Together, they are designed to provide the fundamentals of cartography, GIS data management, data analysis, basic project development & basic map/report production skills. In GIS 40, we introduce the fundamentals within the program context of preparing students to become entry level and mid-level GIS technicians. 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. Note taking in class is **strongly** encouraged. It is also 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 thoroughly

familiar with microcomputer operations, the Microsoft (MS) Windows Operating System (OS). *MS Windows file management*, MS Windows File Explorer, MS Internet Explorer/Edge or Google Chrome, Adobe Acrobat Reader or Sumatra PDF (free downloads), MS Notepad and MS Office (Word, Excel, PowerPoint). Classes and tutorials are available on the SRJC campus and on You Tube.

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 passing this course. This is a lecture and lab course held online and/or in a computer lab. **Remote access to CESGT computer lab facilities will be expected to successfully completing the assignments. Scheduled online open lab hours will be posted when available. Students must obtain a VM Ware class account from the instructor on 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 hours. Lack of attendance can and will affect student grades for this course. Class generally begins on the hour and ends at ten (10) minutes before the hour.
- Roll will be taken. It is good practice to notify the instructor **by email** if one is 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 lecture and lab, class readings or instructions via the internet (email) as well as the readings and assignments. Taking notes is a strongly recommended practice.
- **Students are responsible for correctly obtaining any missed lecture or laboratory course information from their fellow classmates.** *Please do not expect the instructor to provide concierge email services for absenteeism or failure to retrieve one's files from the network drives.*
- Student class participation is semi-quantitatively graded, It can and will affect final grades as will class conduct.
- There will be no make-ups for missed class activities (quizzes, exams, in-class demonstrations, labs, etc).
- Rarely, certain late assignments may be accepted but will be discounted starting at 20% off of the total point value depending on how many classes have passed since the due date. Such instances will be solely at the instructor's discretion. After a certain date, no late submittals will be accepted. That date will be announced by the instructor during class, ~1 week in advance.
- According to school policy, if a student misses over 10% of any course, they can be dropped from the course. In a 4-unit course, this is the equivalent of 1.75 lectures or lab meetings

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 online drop box area,
- 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 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 **eight (7-8)** virtual campus laboratory modules found in a PDF version of original the ESRI E-Learning Site Workbook, each worth **30-150 points**. *Supplementary handouts will be provided for many of the exercises. They are to be followed along with module instructions and supersede them when indicated.*

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

VIP!!! The ESRI course materials AND exercise datasets are no longer offered as online courses but as a PDF provided by your instructor. Very occasionally ArcGIS Desktop Version 10.7 or 10.8 dialog boxes and screens will appear be slightly differently than in the course PDF. THIS IS A LEARNING OPPORTUNITY and an ongoing challenge found in ANY large application software suite (Adobe, Autodesk, Topcon, Trimble, Microsoft, etc.) that is annually revised. My advice…STOP, reread the instructions, and think about what it is you are doing to the data and to the map in that particular step.

Be advised that one of the BEST sources of help after trying ArcGIS desktop onboard 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**. The format for any midterm exam is short answer, short essay, and may include a lab component. Class examinations are mandatory as scheduled. There will be no make-up exams. Please note: a phone message left 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 output from Lindley plotters, shall be submitted per specifications or as directed 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
http://abacus.bates.edu/~ganderso/biology/resources/writing/HTWgeneral.html

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

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.

Class Conduct & Courtesy: (in-class or online attendance where applicable)

Passwords, Accounts and Access Codes: Students will be allowed virtual and physical access to SRJC workstations in Lindley 196, and will be required to establish user accounts there, and at other industry 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.

During online course sessions: Students should be on time, prepared, attentive, timely with all quiz and exam submittals and avoid disruptive behavior during lecture and laboratory sessions, ***note taking is <u>strongly</u> encouraged***.

During virtual Lindley 196 open lab sessions:
The department will hold several ONLINE open lab sessions per week in the *virtual Lindley 196 computer lab*. They will be hosted by Mr. Todd Amos. He is familiar with many of the software programs and available for assistance with software methods – <u>NOT</u> course content or assignment questions. Todd is a valuable resource. A schedule of these sessions will be circulated when he makes one available. He is in-charge of the administration of these sessions at all times.

During these sessions, or at any other time you are online using virtual Lindley 196, if you are given a screen warning to shut down, please do so. Save your work and shut down PROMPTLY. This means another scheduled class needs that workstation and will begin shortly or scheduled maintenance will begin soon. **If you do not comply in a timely fashion, you run the risk of an abrupt automatic shut-down and loss of work.**

Screen shutdowns are the student's responsibility to notice. Proper window management/desktop organization will help to avoid such events as data loss from a "surprise" shutdown due to not having seen the warning screen,

Cell Phones: Turn cell phone ringtones off and refrain from taking calls during class or open lab sessions. If you must receive a call, please mute your session and/or leave the room.

ABSOLUTELY NO FOOD OR EATING ALLOWED DURING ON-SCREEN CLASSES OR IN L196 OPEN LABS!!!
(nobody wants to see (or hear) you crunching potato/corn chips, eating your chicken salad sandwich with your mouth open, licking your fingers, stuffing a burrito down your pie hole, or belching afterward thankyouverymuch)

Password Accounts and Access Codes: Students will be given SRJC computer user accounts and will be required to establish a user accounts 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.

Computers, Equipment and Equipment Handling: (online and in-person class sessions, some may not apply) The Department of Engineering and Applied Technology CESGT Program updates and maintains excellent computer hardware, software, printing and plotting devices. In order to provide optimum laboratory access and usage experience; all students are expected to be familiar with and follow the posted and expressed rules for the computer labs (L196, L186). **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 moving between classes (e.g. SURV to GIS to SURV), the same computer profile may NOT follow you to another station. Desktops may appear a bit different and privileges may differ slightly. Please take that into account. Students will be assigned specific, semester-long, physical workstations for in-person labs and assigned random workstations for online labs. Students may not sit at another physical workstation without permission from the instructor. All students will complete a laboratory compliance agreement during the first class meeting.

Students are to treat CESGT 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 (named folders) on the various network drives. Some will contain equipment documentation files for the various devices and software applications on the 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 File Depot or course 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 Pro software. Please make certain that you allow yourself the necessary time to transfer the appropriate support documentation in advance of assignments and class exercises.

GIS 40 students will receive a familiarization presentation covering the in-class/online remote computing, ~~printing and plotting~~ equipment as part of the first-day regular curriculum (class time). 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

LINDLEY 196 & 186 Computer Lab Network Drives ***(subject to change due to new VMware changes)***

Drive C: Local hard drive in the computer
Drive ?: (**TBA**, 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 private or important files on this drive.
Drive ?: (**TBA**, under construction, this is a student submittal/grading drive, more later)

FOLDER AND FILE NAMING IS IMPORTANT!!!...no wait, CRITICAL!!!
The instructor will review file and folder naming conventions for this course. Students will maintain identical folder structures, pathnames and file names for their module assignments between network and USB and home drives. This will avoid the loss of internal software data linkages. (aka: the red exclamation point of death occurring in ESRI software)

NOTE: On physical workstations, 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:

Certain course files for distribution will be available on the classroom network drive (N:\ drive) and/or on the SRJC File Depot (link below). Details to be discussed in class…

This semester, I will be using a combination of the Lindley196 network drives AND the Google drive-like **SRJC FILE DEPOT** to distribute large files over the internet and to receive large files and assignments. This will keep my SRJC mailbox from over filling with large attachments (assignments). Use of this site will be discussed over the first few class meetings.

Note: instructor-posted files 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 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 CESGT program moves along quickly. The GIS 40 course is an introductory, gateway

courses to the spring semester courses. The follow-on spring semester courses offer additional curriculum towards the Geospatial certificate / degree and build the foundation for a professional career in GIS.

The bulk of GIS is initially performed in your mind 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, 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.

Respectfully,

Reg Parks

SRJC E&AT CESGT Program

(Please report any typos, broken links, or inconsistencies)