[CLICK IMAGE FOR THE COURSE GOOGLE DRIVE]

IDCE-376: Spatial Databases
Prof. Jonathan P. Ocón (jocon@clarku.edu)
Kunal Malhan (kmalhan@clarku.edu)

Office Hours
By Appointment Only, Mondays & Thursdays
IDCE House, 4th Floor, Room 46
Virtual Meeting Link

TA Office Hours
Tuesdays, 10 a.m. - 12 p.m.
Location by Appointment
Virtual Meeting Link

Throughout this syllabus, bold light blue text indicates an active hyperlink.

Syllabus Contents

Course Description

Spatial database development, a key component of GIS project management, focuses on the organization of location-based data. Participants will learn database development best practices, data collection and standardization, and how to apply topological rules to a database. Throughout the course, students will work on final database projects which will build skills required in professional GIS positions, with an emphasis on collaboration and real-world applications of data.

Prerequisites

Students are required to have introductory knowledge of GIS, basic map making and design principles, and spatial data handling.

Learning Objectives:
Spatial Database Development in Practice

Student evaluation during this course will depend on understanding and applying fundamental spatial database development and interaction through assignments and class exercises. For a more comprehensive understanding of the course schedule and what is expected of students, please continue to **Section 8**.

By the end of the course, students will:

- Understand the foundational knowledge behind databases, specifically geodatabases;
- Interact with spatial data using different relationships across databases with SQL;
- Learn standard database management protocols, including data collection.

Student Responsibilities

Each student is responsible for the following:

- Completely reading the syllabus and understanding course requirements;
- Staying informed and up-to-date on all course-related work each and every week;
- Reading announcements and participating in Slack;
- Posting and answering questions about the course and assignments to Slack for the benefit of other students.

Course Format

Mondays will consist of lecture format only. This is where the instructor will introduce this week's topic, readings, and slides. All materials will be posted to the course website before the start of class, with the exception of Week 1.

Tuesday lab session will introduce the assignment and its rubric, and provide an opportunity to begin working through it together. More on grading in **Section 9**.

Thursday lecture will consist of partial lecture time and partial discussion time. This will be a great time to bring questions regarding the week's content or the assignment.

Canvas will be used solely for Syllabus updates and grading. The Course Website will host all course materials. Slack and Email will be the primary methods of communication.

Suggested weekly timeline, about 10-15 hours per week including lecture & lab:

MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	SUNDAY
~2 hours 1) Weekly Reading 2) Review Lecture Slides & Notes --- Following Monday **Deadline 11:55pm: Assignment** --- **Schedule a 1-on-1 Office Hours**	~1 hours 1) Work on assignment(s) 2) Engage with peers and the instructor on Slack (Ask Questions!)	~1 hours 1) Work on assignment(s) 2) Engage with peers and the instructor on Slack (Ask Questions!)	~5 hours 1) Weekly Reading 2) Review Lecture Slides & Notes --- **Schedule a 1-on-1 Office Hours**	~3 hours 1) Engage with peers and the instructor on Slack (Ask Questions!) 2) Finish + submit assignment(s)	No Emails! Enjoy the day off!	No Emails! Enjoy the day off!

No matter the schedule students decide to adhere to, remember to take plenty of breaks while working!

Technical Requirements

This course will incorporate the free and open source Quantum GIS (QGIS) software package to explore a number of different cartographic principles. In addition to setting up the appropriate software, students will need to ensure they have adequate data storage for assignments and backups.

Software
- **QGIS**
    - **Download and Installation**
- **TBD**

Office Hours

The instructor holds student office hours <u>by appointment only on Mondays & Thursdays (see below)</u>. Students are guaranteed up to 15 minutes each, one-on-one per week – though, the student can likely requested more depending on the instructor's availability. Appointments will be made for 15 minute sessions, and the instructor will confirm via email whether the meeting will be held in person or via Zoom. If multiple students reach out with a similar issue, the instructor will instead schedule a small group meeting instead of one-on-one's.

When emailing the instructor, please include the following information:
- **Time slots within the instructor's availability that you are available to meet:**
  - Instructor Availability:
    - <u>Monday & Thursdays, 9 a.m. - 1 p.m.</u>

- **A brief description of the questions/issue/conversation you would like to have.**

Topics for our meeting can include (but not limited to) assignment questions, clarification of course/assignment expectations, pre- or post-submission in-person evaluation of your work, questions about grading or performance, or simply to just grab coffee and chat!

Communications Protocol

It is neither practical nor efficient to respond to technical questions via email. To ensure that questions are answered in a timely manner and to benefit all students, the following communication protocols for the course have been established.

Technical Difficulties
Direct questions about software issues, student accounts, Canvas, and Zoom to the ITS Help Desk at (508) 793-7745.

Slack
Use the "idce-376-questions" private channel in Slack to address any non-confidential questions regarding the course or assignment. To ensure constructive engagement, please follow these forum guidelines:

- Post all questions related to the syllabus, course requirements, course organization, weekly assignments, and course content to Slack.
- Slack will be monitored closely on weekdays and instructor responses, when necessary, will be posted within one business day of the original post.
- Students are expected and encouraged to respond to unanswered questions on Slack.

Forum posts should be specific and informative. Posts that contain questions that are ambiguous (e.g., "Help, I'm stuck!") or where the answer is obvious (e.g., "What is this week's deadline?") may not receive a response. Any requests that ask others to complete any work (e.g., "What is the answer to X question?"), or that include non-constructive remarks (e.g., "This assignment is so dumb"), will be

ignored and may be removed. The instructor reserves the right to remove and modify forum posts in accordance with the guidelines specified in the syllabus.

Emailing the Instructor
For questions about grading or confidential matters, contact the instructor and schedule a time to meet via Zoom or in person. The instructor will not discuss grades or grading via email. Students must schedule a time to meet via Zoom. Use "IDCE-376 Meeting Request" as the subject of the email, and please include in the message a description of the purpose of the meeting.

The instructor responds to emails within one business day (but usually same day) and from Monday through Friday between the hours of 9am and 6pm only. Do not expect a response to any email outside of these days and hours.

This means the instructor will not be available over the weekends or in the evenings. Please adhere to the suggested schedule provided in the syllabus, show up to Office Hours, and schedule any one-on-one meetings to avoid any last second assignment issues or submissions.

Accountability
The instructor highly encourages taking measures to ensure the student, instructor, and course assistant are held accountable. In addition to mid- and end-of-semeter instructor evaluations, students are invited to request all one-on-one meetings are held in a public setting, or an all-party, consent-given, audio-recorded space.

Otherwise, the instructor will request that students follow up via email with a recap of any one-on-one conversations that are not confidential in nature. This recap should include a detailed summary of what was discussed, as well as bullet points covering any action items that the student, or instructor, are expected to complete with a clear deadline for each item.

Weekly Schedule

⬚ = Class cancellations

Week 1, Jan 15 – House Keeping & Setting Course Expectations
No Lecture or Lab (Mon/Thurs)

Week 2, Jan 22 – Software Installation & Intro to Databases
Assignment 1

Week 3, Jan 29 – Geodatabases
Assignment 2

Week 4, Feb 5 – Database Components
No Lecture (Mon), instructor away.
Assignment 3

Week 5, Feb 12 – Relationships

Assignment 4

Week 6, Feb 19 – Relational Database Part 1
Assignment 5

Week 7, Feb 26 – Relational Database Part 2
Assignment 6
Mid-course Evaluations for Instructor & Course Assistant

Week 8, Mar 4 – SPRING BREAK
No Lecture or Lab (All week)
No Assignment

Week 9, Mar 11 – SQL Part 1
Assignment 7

Week 10, Mar 18 – SQL Part 2
Assignment 8

Week 11, Mar 25 – PostgreSQL
Assignment 9

Week 12, Apr 1 – Final Projects
Assignment 10: Final Project Proposal

Week 13, Apr 8 – Final Projects
Tentative – No Lecture (Mon), solar eclipse.
Final Project Feedback & Updates

Week 14, Apr 15 – INSTRUCTOR AWAY
Lecture & Lab optional
Schedule virtual meetings with instructor (6-hour time difference)
Work on Final Projects

Week 15, Apr 22 – Final Projects
Tentative – No Lecture (Mon), instructor scheduled travel.

Final Presentations:
Monday, April 29

Course & Course Assistant Evaluations

No Lab or Lecture (Thurs, May 2)

Final project & Extra credit due Friday, May 3 @ 11:55:00 p.m. (Eastern)
Grades submitted by noon (Eastern) on Thursday, May 9

*Course content may vary or be adjusted in order to meet the needs of the class. The instructor reserves the right to adjust the schedule or amend the content of this syllabus at any time and without notice.

Grades

A standard plus/minus letter grading scheme is used to assign final course grades for all students who take this course on a letter grading basis. Grades will be assigned according to the following scheme, with the percentages corresponding to final weighted grades following the evaluation procedures described in the section below:

A (93.0 to 100.0)	B (83.0 to 86.9)	C (73.0 to 76.9)	D (63.0 to 66.9)
A- (90.0 to 92.9)	B- (80.0 to 82.9)	C- (70.0 to 72.9)	D- (60.0 to 62.9)
B+ (87.0 to 89.9)	C+ (77.0 to 77.9)	D+ (67.0 to 69.9)	F (0.0 to 59.9)

A student who enrolls in this course on a pass/no-pass grading basis will earn a passing grade only if their final course grade is equivalent to a "C" or better.

Breakdown of Final Grade

Assignments (75%): Each assignment will have an associated rubric and the total points earned from all assignments will be weighted to 75% of the student's grade.

Final Project (10%): The final project will consist of a presentation, some predetermined assignment connected to a topic of the student's choice that has been signed off by the instructor. The final grade earned on the project will be weighted to 10% of the student's grade.

Participation (10%): Every student is expected to participate in class discussions, help answer questions on Slack, and attend lectures, labs, and office hours. Although attendance is not taken, if a student consistently arrives late to class, misses labs and lectures, or never attends either the instructor or TA's office hours, participatory points will be deducted.

Syllabus Quiz (5%): Students will need to score 80% or better on their first attempt to earn the full 5%. Failure to earn 80% or better will result in the student needing to take the quiz a second time and score 100% to earn 2.5/5%. Failure to score satisfactory scores on either attempt will result in 0% and strong encouragement from the instructor to not take the course.

Late Policy

First Offense: No issue. We all need extra time every now and then. If students need additional time to complete an assignment—excluding the final project—students will be given an extra week, no questions asked.

Second Offense: Should students need extra time again—excluding the final project—students will need to provide a reason and some information corroborating your excuse. Failure to provide this info triggers the third offense protocol below.

Third (or more) Offense: For each 24-hour period that an assignment is late—including the final project—beginning immediately after the deadline passes according to the Canvas or Outlook system clock, the assignment score will be adjusted downward by 20%. In other words, the **assignment is considered late if submitted at 11:55:01pm and the deadline is 11:55:00 pm**. Work that is more than five days late will not be graded and will receive a zero. Exceptions will be granted only under the most pressing and urgent of circumstances and must be discussed with the instructor <u>in advance of the deadline</u>.

Extra Credit

Students will be given the opportunity to re-do **one assignment** based on the comments and feedback the instructor or course assistant provide. Students cannot make up an assignment that was never turned in. This also excludes the seminar engagement and workshop participation from extra credit eligibility.

At the end of the semester, students can choose their worst performing assignments, take the instructor's comments and feedback, and re-do the assignment with new data or insights. **Extra credit will be due Friday, May 3, 2024 @ 11:55 p.m.** The instructor will grade any extra credit assignments with even more scrutiny than before (since students have their comments to go off of), and the new assignment's grade will completely replace the old grade for that assignment.

Academic Honesty and Integrity

Students are encouraged to collaborate with one another in reviewing course material and working on assignments. However, every student must turn in an original, unique, and individual creation for every assignment; students working together may not submit the same work. Collaboration with another student on an assignment will require students cite their collaborators and external sources by providing the names of collaborators either within the assignment or alongside the link that you submit to the course website. Students are also required to provide the URL to any external resources or code used in the assignment and comment this code thoroughly to demonstrate an understanding of its function and logic. Failure to cite your sources will trigger this section of the Syllabus.

All students are expected to demonstrate integrity in all academic endeavors. Students are evaluated on their own merits. Cheating, plagiarism, unauthorized and/or inappropriate collaborative work, or any other form of academic dishonesty are considered unacceptable behavior and will result in a failing grade for the assignment, and a second offense will result in a failing grade for the course and a referral to university administration for disciplinary action.

Use of Large Language Models

Large language models, or generative AI like ChatGPT, are incredibly useful learning tools if used responsibly. This course will not cover their use or application to GIS in detail, but using LLMs for assignments and the final project may be tempting. As beginners in a new technical skill, LLMs may seem magical in their ability to provide answers and ideas, but they should be treated as overzealous interns from which students can test their newly acquired knowledge.

Despite having access to massive datasets (e.g. the internet) to mimic speech based on user-specified prompts, as well as the recent ability to query the internet to search for answers, the models may cherry-pick data for you based on the quality of your prompt. A low quality prompt will produce low quality outputs. Even a detailed, descriptive, and clear prompt may still yield errors in accuracy.

They should not replace existing internet or library search protocols, and whatever LLMs produce will contain "hallucinations" or errors in accuracy. Only individuals with advanced knowledge in a technical or theoretical skill will notice these errors.

The instructor placed the LLM section after the "Academic Honesty and Integrity" section purposefully. If the instructor suspects LLMs have done the work for the student, similar consequences will follow if proven. Likewise, students are required to provide the URL to the chat used to generate any code or writing outputs and follow the same procedures for citing their sources as in the previous section.

Additional Campus Resources

Students with Disabilities
Clark University is committed to providing students with documented disabilities equal access to all university programs and facilities. Students are encouraged to register with **Student Accessibility Services** (SAS) to explore and access accommodations that may support their success in their coursework. SAS is located on the second floor of the Shaich Family Alumni and Student Engagement Center (ASEC). Please contact SAS at **accessibilityservices@clarku.edu** with questions or to initiate the registration process.

FERPA
Clark's policy regarding student privacy under the **Family Education Rights and Privacy Act**

Title IX
Clark University and its faculty are committed to creating a safe and open learning environment for all students. Clark University encourages all members of the community to seek support and report incidents of sexual harassment to the Title IX office (**titleix@clarku.edu**). If students or someone students know has experienced any sexual harassment, including sexual assault, dating or domestic violence, or stalking, help and support is available.

Please be aware that all Clark University faculty and teaching assistants are considered responsible employees, which means that if students tell the instructor about a situation involving the

aforementioned offenses, the instructor must share that information with the Title IX Coordinator, Brittany Rende (**titleix@clarku.edu**). Although, the instructor has to make that notification, the student will, for the most part, control how their case will be handled, including whether or not they wish to pursue a formal complaint. Our goal is to make sure they are aware of the range of options available to them and have access to the resources they need.

If students wish to speak to a confidential resource who does not have this reporting responsibility, they can contact Clark's Center for Counseling and Professional Growth (508-793-7678), Clark's Health Center (508-793-7467), or confidential resource providers on campus:

- Prof. Stewart (**als.confidential@clarku.edu**)
- Prof. Palm Reed (**kpr.confidential@clarku.edu**)
- Prof. Cordova (**jvc.confidential@clarku.edu**)

GIS Help Desk

GIS HELP DESK

NEW SPRING 2024 HOURS:

Need help with GIS? Can't make it to visit your professor or TA for office hours? Stop by our GIS Help Desk in the Jefferson Tower (6th floor) and visit one of our Help Desk Assistants!

MONDAYS	APPLE 10 AM - 2 PM
TUESDAYS	LARA 2 PM - 5 PM
WEDNESDAYS	APPLE 10 AM - 2 PM LARA 2 PM - 5 PM
THURSDAYS	LARA 12 PM - 2 PM

GIS Help Desk hours follow a University schedule. If the University is closed from remote/online operations for any reason, the GIS Help Desk may also be unavailable. GIS Help Desk Assistants operate on a first-come, first-serve drop-in basis. Contact Marjorie Miller (marmiller@clarku.edu) with any questions, or call the Geography Main Office at 508-793-7336 for more information. The GIS Help Desk is sponsored by the Graduate School of Geography at Clark University.