Geospatial Visualization Design – GSEN 6384.001/W01
Department of Computing Sciences
Fall 2020

A. COURSE INFORMATION

Course number/section: GSEN 6384.001/W01
Class meeting time: TR 11:00 AM – 12:15 PM (001)
Fully Online (W01)
Class location: CBI 104 (001 virtually online)
Course Website: http://bb9.tamucc.edu

B. INSTRUCTOR INFORMATION

Instructor: Dr. Hongzhi Song
Office location: CBI 108
Office hours: TR 2:00 – 3:30 PM and W 10 AM – 12 PM via WebEx;
or by appointment
Telephone: 361-825-3198
e-mail: hongzhi.song@tamucc.edu
Appointments: Email to make an appointment (include “GISC 6384” in subject line).

C. COURSE DESCRIPTION

Catalog Course Description
Basic elements of thematic cartography, cartographic theory, and cartographic projections. Integration of cartographic principles with GIS visualization. Principles of map design with GIS data. Fall.

Visualization provides one means of combating information overload, as a well-designed visual encoding can supplant cognitive calculations with simpler perceptual inferences and improve comprehension, memory, and decision making. Furthermore, visual representations may help engage more diverse audiences in the process of analytic thinking. Students in this course will study techniques and algorithms for creating effective visualizations based on principles from graphic design, visual art, perceptual psychology, and cognitive science.

D. PREREQUISITES AND COREQUISITES

Prerequisites
None

Corequisite
None

E. REQUIRED TEXTBOOK(S), READINGS AND SUPPLIES
Reference Textbook(s)
Information Visualization:
https://ebookcentral.proquest.com/lib/tamucc/detail.action?docID=892223#

Suggested Supplies
- Windows Operating System.
- Adobe PDF viewer. (e.g. Adobe Acrobat Reader).
- Web browser with Java Virtual Machine installed.
- Video player able to play MPEG-4 video (VLC, Windows Media Player).
- Speakers/headphones.
- **Online students:** Microphone and webcam.
- **Online students:** Consistent, weekly access to high-speed internet.

F. STUDENT LEARNING OUTCOMES AND ASSESSMENT
Assessment is a process used by instructors to help improve learning. Assessment is essential for effective learning because it provides feedback to both students and instructors. A critical step in this process is making clear the course’s student learning outcomes that describe what students are expected to learn to be successful in the course. The student learning outcomes for this course are listed below. By collecting data and sharing it with students on how well they are accomplishing these learning outcomes students can more efficiently and effectively focus their learning efforts. This information can also help instructors identify challenging areas for students and adjust their teaching approach to facilitate learning.

By the end of this course, students should be able to:

1. An understanding of the key techniques and theory used in visualization, including data models, graphical perception and techniques for visual encoding and interaction.
2. Exposure to a number of common data domains and corresponding analysis tasks, including multivariate data, networks, text and cartography.
3. Practical experience building and evaluating visualization systems.
4. The ability to read and discuss research papers from the visualization literature.

G. INSTRUCTIONAL METHODS AND ACTIVITIES
Approach: lecture, discussion, and practice exercises. Non-graded class problem sets, and graded assignments and exams, will be given to gauge student progress, ensure students are following the material, and spur your thinking.

Course lecture will be conducted virtual online synchronous (via WebEx) and asynchronous (recorded). Lectures will be recorded and posted to the course’s Blackboard (Bb) website for asynchronous viewing. The detail schedule will be available via Blackboard and its announcement. Announcements will be made beforehand to notify students. Students are expected to keep pace with the course, and completely assigned work in a timely fashion for that week.

H. MAJOR COURSE REQUIREMENTS AND GRADING
Student learning outcomes will be assessed through assignments, project, and exams.

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<th>ACTIVITY</th>
<th>% of FINAL GRADE</th>
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<tr>
<td>Exams</td>
<td>30</td>
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<tr>
<td>Project</td>
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<td>Assignments</td>
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I. COURSE CONTENT/SCHEDULE (*Subject to Change*)

<table>
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<tr>
<th>Week</th>
<th>Topic</th>
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<tbody>
<tr>
<td>1</td>
<td>Introduction</td>
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<td>2</td>
<td>Visual Queries</td>
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<tr>
<td>3</td>
<td>Analysis of information</td>
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<td>4</td>
<td>Data abstraction, visualization marks and channels</td>
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<td>5</td>
<td>Visualization of tables, networks and trees</td>
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<td>6</td>
<td>Multidimensional visualization</td>
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<td>7</td>
<td>Information Visualization</td>
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<td>13</td>
<td>Validation of Visualization</td>
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<td>14</td>
<td>Validation of Visualization</td>
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<td>15</td>
<td>Final Exam</td>
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Note: Changes in this course schedule may be necessary and will be announced to the class by the Instructor. See Blackboard for detail schedule and updates.

J. COURSE POLICIES

COVID-19
Face Coverings—Face coverings (cloth face covering, surgical mask, etc.) must be properly worn in all non-private spaces including classrooms, teaching laboratories, common spaces such as lobbies and hallways, public study spaces, libraries, academic resource and support offices, and outdoor spaces where 6 feet of physical distancing is difficult to reliably maintain. Extra masks will be made available if needed.
**Attendance/Tardiness**
When the lecture is synchronous (see class meeting time in Section A), students are expected to attend virtually. Occasionally, the professor may decide to hold in-person discussion and learning sessions for students. These will be held in CBI 104 during the scheduled meeting time. The class will be notified beforehand. The occurrence of these events during the semester will be subject to the evolving situation with COVID-19 and maximum capacity requirements (6 at the time of this writing).

**Late Work and Make-up Exams**
All assignments must be completed on time. A 7% penalty per day will be applied to late assignments up to one week after they are due date/time. This means that assignments handed in late on the due date or the next calendar day get a 7% point-deduction, for 2 days late this gives a 14% penalty, and so on. Assignments will NOT be accepted if handed in more than one week (7x24 hours) after the due date/time. If you know in advance that you will be late for an assignment, let the professor know in advance (via email with an official document), and it will be decided by the professor whether an exception can be made on a case-by-case basis. Make-up Exams and assignments are not permitted except for official documentation, exceptional reasons.

**Email**
Consider email as official correspondence warranting professional language. Professional emails include elements such as a short descriptive subject line, salutation, complete inquiry in the body of the message, your full name, and course and section number. Unprofessional emails will result in a non-response and request for proper correspondence.

**Technological Excuses**
Hard drive crashes and other computer woes will not be accepted as excuses for late submission. Students should, given the complexity of the tasks they will pursue, be sure that they maintain adequate backup copies of all aspects of their work. Additionally, plan ahead so that you have time to use the on-campus computers and printers if necessary. You may NOT submit papers/assignments by e-mail. If for some reason you feel you have to do this, you must ask for, and receive, permission ahead of time; furthermore, you may not consider an e-mailed paper/assignment to be submitted until you have received a reply confirming that I have received the paper/assignment.

**Communication about Life Events**
It is your responsibility to keep up with the course instruction, assignments, and examinations. Should a life event interrupt your ability to meet these responsibilities, you must inform the instructor about this as soon as possible and within a reasonable amount of time so that a course of action can be determined. Communicating with the instructor about these life events in an unreasonable time frame is not acceptable and will not change the outcome of missed work nor will it be a valid reason to receive an ‘Incomplete’ designation for the course.
Originality of Work

Every exam, project and assignment for this class must be your own work.

Note to Online Students

It is your responsibility to check emails and Blackboard often, so you will stay up with the course. You are responsible for contacting the professor if you have any questions/concerns.

K. COLLEGE AND UNIVERSITY POLICIES

• Academic Integrity (University)
  University students are expected to conduct themselves in accordance with the highest standards of academic honesty. Academic misconduct for which a student is subject to penalty includes all forms of cheating, such as illicit possession of examinations or examination materials, falsification, forgery, complicity or plagiarism. (Plagiarism is the presentation of the work of another as one’s own work.) In this class, academic misconduct or complicity in an act of academic misconduct on an assignment or test will result in a failing grade.

• Classroom/Professional Behavior
  Texas A&M University-Corpus Christi, as an academic community, requires that each individual respect the needs of others to study and learn in a peaceful atmosphere. Under Article III of the Student Code of Conduct, classroom behavior that interferes with either (a) the instructor’s ability to conduct the class or (b) the ability of other students to profit from the instructional program may be considered a breach of the peace and is subject to disciplinary sanction outlined in article VII of the Student Code of Conduct. Students engaging in unacceptable behavior may be instructed to leave the classroom. This prohibition applies to all instructional forums, including classrooms, electronic classrooms, labs, discussion groups, field trips, etc.

• Statement of Civility
  Texas A&M University-Corpus Christi has a diverse student population that represents the population of the state. Our goal is to provide you with a high quality educational experience that is free from repression. You are responsible for following the rules of the University, city, state and federal government. We expect that you will behave in a manner that is dignified, respectful and courteous to all people, regardless of sex, ethnic/racial origin, religious background, sexual orientation or disability. Behaviors that infringe on the rights of another individual will not be tolerated.

• Deadline for Dropping a Course with a Grade of W (University)
  I hope that you never find it necessary to drop this or any other class. However, events can sometimes occur that make dropping a course necessary or wise. Please consult with your academic advisor, the Financial Aid Office, and me, before you decide to drop this course. Should dropping the course be the best course of action, you must
initiate the process to drop the course by going to the Student Services Center and filling out a course drop form. Just stopping attendance and participation WILL NOT automatically result in your being dropped from the class. Please consult the Academic Calendar (http://www.tamucc.edu/academics/calendar/) for the last day to drop a course.

- **Grade Appeals (College of Science and Engineering)**
  As stated in University Procedure 13.02.99.C0.03, Student Grade Appeal Procedures, a student who believes that he or she has not been held to appropriate academic standards as outlined in the class syllabus, equitable evaluation procedures, or appropriate grading, may appeal the final grade given in the course. The burden of proof is upon the student to demonstrate the appropriateness of the appeal. A student with a complaint about a grade is required to first discuss the matter with the instructor. For complete details, including the responsibilities of the parties involved in the process and the number of days allowed for completing the steps in the process, see University Procedure 13.02.99.C0.03, Student Grade Appeal Procedures. These documents are accessible through the University Rules website at http://academicaffairs.tamucc.edu/rules_procedures/assets/13.02.99.c0.03_student_grade_appeals.pdf. For assistance and/or guidance in the grade appeal process, students may contact the chair or director of the appropriate department or school, the Office of the College of Science and Engineering Dean, or the Office of the Provost.

- **Disability Services**
  The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please call (361) 825-5816 or visit Disability Services in Corpus Christi Hall 116.

  If you are a returning veteran and are experiencing cognitive and/or physical access issues in the classroom or on campus, please contact the Disability Services office for assistance at (361) 825-5816.

  http://disabilityservices.tamucc.edu/

- **Civil Rights Complaints**
  Texas A&M University-Corpus Christi is committed to fostering a culture of caring and respect that is free from discrimination, relationship violence and sexual misconduct, and ensuring that all affected students have access to services. For information on reporting Civil Rights complaints, options and support resources (including pregnancy support accommodations) or university policies and procedures, please contact the University Title IX Coordinator, Sam Ramirez (Samuel.ramirez@tamucc.edu) or Deputy Title IX Coordinator, Rosie Ruiz.
Limits to Confidentiality. Essays, journals, and other materials submitted for this class are generally considered confidential pursuant to the University's student record policies. However, students should be aware that University employees, including instructors, are not able to maintain confidentiality when it conflicts with their responsibility to report alleged or suspected civil rights discrimination that is observed by or made known to an employee in the course and scope of their employment. As the instructor, I must report allegations of civil rights discrimination, including sexual assault, relationship violence, stalking, or sexual harassment to the Title IX Coordinator if you share it with me.

These reports will trigger contact with you from the Civil Rights/Title IX Compliance office who will inform you of your options and resources regarding the incident that you have shared. If you would like to talk about these incidents in a confidential setting, you are encouraged to make an appointment with counselors in the University Counseling Center.

• Statement of Academic Continuity
In the event of an unforeseen adverse event, such as a major hurricane and classes could not be held on the campus of Texas A&M University–Corpus Christi; this course would continue through the use of Blackboard and/or email. In addition, the syllabus and class activities may be modified to allow continuation of the course. Ideally, University facilities (i.e., emails, web sites, and Blackboard) will be operational within two days of the closing of the physical campus. However, students need to make certain that the course instructor has a primary and a secondary means of contacting each student.

L. OTHER INFORMATION

• Academic Advising
The College of Science & Engineering requires that students meet with an Academic Advisor as soon as they are ready to declare a major. The Academic Advisor will set up a degree plan, which must be signed by the student, a faculty mentor, and the department chair. Meetings are by appointment only; advisors do not take walk-ins. Please call or stop by the Advising Center to check availability and schedule an appointment. The College’s Academic Advising Center is located in Center for Instruction 350 or can be reached at (361) 825-3928.

GENERAL DISCLAIMER
I reserve the right to modify the information, schedule, assignments, deadlines, and course policies in this syllabus if and when necessary. I will announce such changes in a timely manner during regularly scheduled lecture periods.