A. COURSE INFORMATION

Course number/section: GISC 4335 001
Class meeting time: T 11:00-12:50 PM (Lecture) Blended/50-84% Online Course
                  R 11:00 – 12:50 PM (Lab) Fully Online
Class location: T: CI 229
Course Website: https://bb9.tamucc.edu/

B. INSTRUCTOR INFORMATION

Instructor: Dr. Lucy Huang
Office location: CBI 109
Office hours: TR 9:00 – 10:30 am, 1:00-2:00 pm
Telephone: 361-825-2646
e-mail: Lucy.Huang@tamucc.edu
Appointments: Email the instructor for making an appointment

Teaching Assistant: Zeqian Feng
Office location: NRC 2100
Office hours:
e-mail:

C. COURSE DESCRIPTION

Catalog Course Description
Advanced spatial analysis and modeling in GIS. Topics covered include exploratory analysis of spatial data, network analysis, spatial point patterns, area objects and spatial autocorrelation, and spatial interpolation. Also covers new approaches to spatial analysis.

Extended Course Description
The course includes lecture and lab sessions. The lecture session focuses on the principles and concepts of geospatial analysis. The lab session focuses on the practical experience in the use of geospatial analysis methods and in conducting a GIS analysis project.

D. PREREQUISITES AND COREQUISITES

Prerequisites
GISC 2301-Geospatial Systems II, GISC 3421-Visualization for GIS, and MATH 3342 – Applied Probability &Statistics

E. REQUIRED TEXTBOOK(S), READINGS AND SUPPLIES
Required Textbook(s)

Optional Textbook(s) or Other References

Required Software & Hardware for Online Students
- Windows Operating System (XP/Vista/7).
- ArcGIS Pro 2.4 or higher. This software is provided in computer labs on campus. If attending online, software will be provided as a download.
- Adobe PDF viewer. (e.g. Adobe Acrobat Reader).
- Video player able to play MPEG-4 video (Quicktime, VLC, Windows Media Player).
- Web browser with Java Virtual Machine installed.
- Speakers or headphones connected to computer are required for online students.
- Microphone or headset connected to computer.
- High-speed internet access required.

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). Understand the fundamental concepts and principles of geographic information analysis
2). Understand and apply various point pattern analysis
3). Perform network analysis to determine best routes, service areas and other network applications
4). Examine area objects through spatial autocorrelation measures
5). Describe and analyze fields using spatial interpolation techniques
6). Apply GIS software for real analysis projects
G. INSTRUCTIONAL METHODS AND ACTIVITIES

Note to Online Students
- You are responsible for checking emails (your islander account) daily for announcements, lectures, labs, exams and other assignments.
- Lectures will be posted on Class BlackBoard after the in-class meeting. It is your responsibility to read the lectures in a timely fashion so you stay up with the course.
- Laboratory and other assignments will also be posted on BlackBoard and will be completed on your home computer and must be submitted digitally to the BlackBoard online on time by the due date.
- You are responsible for installing the required software in a timely fashion and keeping your home computer and internet access in working order.

H. MAJOR COURSE REQUIREMENTS AND GRADING

<table>
<thead>
<tr>
<th>ACTIVITY</th>
<th>% of FINAL GRADE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Labs/Assignments/Quizzes</td>
<td>50%</td>
</tr>
<tr>
<td>Midterm</td>
<td>15%</td>
</tr>
<tr>
<td>Final Exam</td>
<td>15%</td>
</tr>
<tr>
<td>Term Project</td>
<td>20%</td>
</tr>
</tbody>
</table>

The following grading scale applies:

A  >90
B  80 and <90
C  70 and <80
D  60 and <70
F  <60

Labs/Assignments
There are some assignments and tentatively 10 labs. The labs are designed in such a way that students will gain first-hand experience in understanding spatial analysis methods and applying spatial analysis methods to GIS applications.

Exams
There will be TWO exams, midterm and final exam. These exams are non-cumulative. Each one takes 15% of the total grade.

Term Project
Each student is required to develop a project by the end of the semester. The project is expected
to carry out an analysis on a data set of your choice. Each student must: 1) submit a one-page project proposal; 2) deliver a presentation to report the methods and major findings during a scheduled project presentation time; 3) complete a term paper to report the methodology and your findings.

The project proposal must include the objective of the project, GIS data and methods that will be used for the project.

Each student will have 10 minutes for presentation and 5 minutes for questions.

The term paper should follow the format of formal journal articles including, at least, Introduction, Data and Methods, Results and Discussion, Conclusions, and References. The length of the paper is 8-12 pages, 12pt Times New Roman font, double-spaced, 1" margins, and 8.5" by 11" paper space.
I. COURSE CONTENT/SCHEDULE *(Subject to modifications)*

**LECTURE SCHEDULE**

<table>
<thead>
<tr>
<th>Week</th>
<th>Dates</th>
<th>Topics</th>
<th>Chapter</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>August 20</td>
<td>Course Introduction</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>August 25</td>
<td>Pitfalls and potential of spatial data</td>
<td>[Sullivan] Ch 1 &amp; 2</td>
</tr>
<tr>
<td></td>
<td><em>August 26 Last day to late register or add a class</em></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>September 1</td>
<td>Fundamentals: maps as outcomes of processes</td>
<td>[Sullivan] Ch 4</td>
</tr>
<tr>
<td>4</td>
<td>September 8</td>
<td>Point pattern analysis</td>
<td>[Sullivan] Ch 5</td>
</tr>
<tr>
<td>5</td>
<td>September 15</td>
<td>Point pattern analysis</td>
<td>[Sullivan] Ch 5</td>
</tr>
<tr>
<td>6</td>
<td>September 22</td>
<td>Practical point pattern analysis</td>
<td>[Sullivan] Ch 5</td>
</tr>
<tr>
<td>7</td>
<td>September 29</td>
<td>Path analysis</td>
<td>[Sullivan] Ch 6</td>
</tr>
<tr>
<td>8</td>
<td>October 5</td>
<td>Network analysis</td>
<td>Handout</td>
</tr>
<tr>
<td>9</td>
<td>October 13</td>
<td><strong>Mid-term Exam</strong></td>
<td>Handout</td>
</tr>
<tr>
<td>10</td>
<td>October 20</td>
<td>Area objects and spatial autocorrelation</td>
<td>[Sullivan] Ch 7</td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>Project proposal due</em></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>October 27</td>
<td>Local statistics</td>
<td>[Sullivan] Ch 8</td>
</tr>
<tr>
<td>12</td>
<td>November 3</td>
<td>Spatial interpolation</td>
<td>[Sullivan] Ch 9 &amp; 10</td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>November 5: Last day to drop a class</em></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>November 10</td>
<td>Spatial interpolation</td>
<td>[Sullivan] Ch 9 &amp; 10</td>
</tr>
<tr>
<td>14</td>
<td>November 17</td>
<td>Advanced topics in spatial analysis</td>
<td>[Sullivan] Ch 12</td>
</tr>
<tr>
<td>15</td>
<td>November 24</td>
<td><strong>Final Exam</strong></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>December 1 Tuesday</td>
<td><strong>Project Presentation (11:00 am -1:30 pm)</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Project report due</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><a href="https://registrar.tamucc.edu/Register%20for%20Classes/Final_Exams.html">https://registrar.tamucc.edu/Register20for20Classes/Final_Exams.html</a></td>
<td></td>
</tr>
</tbody>
</table>

Note: Changes in this course schedule may be necessary and will be announced to the class by the Instructor. The assignments and exams shown are directly related to the Student Learning Outcomes described in Section F.
LAB SCHEDULE

<table>
<thead>
<tr>
<th>Week</th>
<th>Dates</th>
<th>Topics</th>
<th>Chapter</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>August 27</td>
<td>Lab 1: Frame the problem, explore the study area, and preview the data</td>
<td>[Smith] Lessons 1 &amp; 2</td>
</tr>
<tr>
<td>3-4</td>
<td>September 3</td>
<td>Lab 2: Working with Census data (due in two weeks)</td>
<td>Handout</td>
</tr>
<tr>
<td>5</td>
<td>September 17</td>
<td>Lab 3: Choose the data and build the database</td>
<td>[Smith] Lessons 3 &amp; 4</td>
</tr>
<tr>
<td>6</td>
<td>September 24</td>
<td>Lab 4: Point pattern analysis</td>
<td>Handout</td>
</tr>
<tr>
<td>7</td>
<td>October 1</td>
<td>Lab 5: Edit the data and conduct the analysis</td>
<td>[Smith] Lessons 5 &amp; 6</td>
</tr>
<tr>
<td>8</td>
<td>October 8</td>
<td>Lab 6: Path and network analysis</td>
<td>Handout</td>
</tr>
<tr>
<td>9-10</td>
<td>October 15</td>
<td>Lab 7: Automate the analysis and present your analysis results (due in two weeks)</td>
<td>[Smith] Lessons 7 &amp; 8</td>
</tr>
<tr>
<td>11</td>
<td>October 29</td>
<td>Lab 8: Measuring spatial autocorrelation</td>
<td>Handout</td>
</tr>
<tr>
<td>12</td>
<td>November 5</td>
<td>Lab 9: Share your results</td>
<td>[Smith] Lesson 9</td>
</tr>
<tr>
<td>13</td>
<td>November 12</td>
<td>Lab 10: Spatial interpolation</td>
<td>Handout</td>
</tr>
<tr>
<td>14-15</td>
<td>Project</td>
<td>Project</td>
<td>Project due on Dec. 1</td>
</tr>
</tbody>
</table>

Note: Changes in this course schedule may be necessary and will be announced to the class by the Instructor. The assignments and exams shown are directly related to the Student Learning Outcomes described in Section F.

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.

Late Work
Each of assignments (including for example, labs, homework, literature review, etc.) will have a due date clearly written under the title of the assignment. All assignments must be completed on time. Any assignment that is turned in after the due date is considered late. Submission of a late assignment is accepted, but with a penalty of 10% of the grade per day (including weekends). *Late assignment will only be accepted up to one week after they are due. Exceptions are possible only with prior permission and*
for exceptional cause (with written documentation). Please work well ahead of the deadlines!

Make-up Exams
There will be no make-up exams. Exceptions are possible only with documentation of a medical or family emergency.

Extra Credit
There is no provision for “extra credit”. No final grades will be given via the telephone, e-mail, etc.

Cell Phone Use
All cellular phones and other similar devices MUST BE TURNED OFF during lectures, labs and other class meetings

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 will have time to use the on-campus computers and printers if necessary. You may NOT submit labs/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 lab/assignment to be submitted until you have received a reply confirming that I have received the paper/assignment.

Communication about Life Events
It is the your (student’s) 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.

Others
• Unless explicitly noted otherwise, the work in this course is to be done independently.
• Grades can be appealed up to two weeks after they have been posted; no appeals will be considered after that time.

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
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.

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 (Rosie.Ruiz@tamucc.edu) x5826, or visit website at Title IX/Sexual Assault/Pregnancy.

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.