GISC 2301 – Geospatial System II  
department of Computing Sciences  
Spring 2020

A. COURSE INFORMATION

<table>
<thead>
<tr>
<th>Course number/section</th>
<th>GISC 2301.001/2301.201</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class meeting time/Location:</td>
<td>Lecture: MW 10:00 – 10:50 AM, OCNR-132</td>
</tr>
<tr>
<td></td>
<td>Lab: M 11:00 – 1:50 PM, CI-229</td>
</tr>
<tr>
<td>Course Website:</td>
<td><a href="https://bb9.tamucc.edu/">https://bb9.tamucc.edu/</a></td>
</tr>
</tbody>
</table>

B. INSTRUCTOR INFORMATION

Instructor: Dr. Tianxing Chu  
Office location: NRC 3406  
Office hours: TR 9:30 – 10:45 AM, 12:30 – 1:45 PM or by appointment  
Telephone: 361-825-2685  
e-mail: tianxing.chu@tamucc.edu

Teaching Assistant: TBD  
Office location: TBD  
Office hours: TBD  
e-mail: TBD

C. COURSE DESCRIPTION

Catalog Course Description  
Geospatial System II is an intermediate level course in the concepts and applications of GIS, with a focus on GIS analysis methods and their applications. This course has a lecture and a lab component. Topics covered include spatial data processing and analysis, terrain mapping and analysis, spatial database design and management, and geodatabase. The technical focus of the course includes computer lab tutorials and group projects using up-to-date leading desktop GIS software, i.e. ESRI ArcGIS Pro.

D. PREREQUISIT ES AND COREQUISIT ES

Prerequisites  
GISC-1470

E. REQUIRED TEXTBOOK(S), READINGS AND SUPPLIES

Required Textbook(s)  

Optional Textbook(s) or Other References

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 immediately 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 must be completed and 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 computer and internet access in working order.

Required Software & Hardware for Online Students
• ArcGIS Pro 2.2 or higher with 3D Analyst and Spatial Analyst extensions. This is provided in lab 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. Extract spatial information from data using vector and raster data analysis
2. Understand terrain mapping and analysis methods and apply these methods to solve real world problems
3. Understand fundamental concepts and principles for spatial database design and management
4. Design, create and work with Geodatabase
5. Understand the practical applications of GIS
G. INSTRUCTIONAL METHODS AND ACTIVITIES

The course will be taught in a lecture, discussion, in-class activity and lab format. Weekly lab will be given. There will be a number of article review assignments that require an oral presentation at the end of the semester. There will also be a group project that requires an oral team presentation. Three exams will be given.

H. MAJOR COURSE REQUIREMENTS AND GRADING

<table>
<thead>
<tr>
<th>ACTIVITY</th>
<th>% of FINAL GRADE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exam 1</td>
<td>20%</td>
</tr>
<tr>
<td>Exam 2</td>
<td>20%</td>
</tr>
<tr>
<td>Labs</td>
<td>30%</td>
</tr>
<tr>
<td>Article Review and Presentation</td>
<td>15%</td>
</tr>
<tr>
<td>Group Project</td>
<td>15%</td>
</tr>
</tbody>
</table>

Labs
There will be tentatively 12 labs to help students familiarize with basic and advanced GIS operations and applications. Most of labs are from the required ESRI ArcGIS Pro tutorial book and online courses, and some labs build upon each other, so it is important to be up to date on your labs.

Exams
There will be tentatively TWO exams in this course. These exams are non-cumulative. There will be no make-up exams. Exceptions are possible only with documentation of a medical or family emergency.

Group Projects
We will have group projects during the last six weeks of class. There are about 2-3 people in a group, and the groups will be formed with your input. A specific topic will be assigned to each group and it is up to each group to figure out the best way to work together. Each group will create a Word document report that includes a detailed description and product of your project and maps inserted. The length of the report is 5-10 pages, 12pt Times New Roman font, double-spaced, 1" margins, and 8.5" by 11" paper space. During the last week of class, each group will also present your project. In addition to the group submission, each group member will have to turn in a (private) evaluation of each group member. The grade for the group project is based on your report, the presentation of your project, and the evaluation of group members (1/3).

Article Review and Presentation
Each student is expected to read three (3) GIS application articles and develop a review for each article. The 3 articles should cover ONE topic of student’s interest. All articles must be peer-reviewed journal or conference publication.
Each article review should be typed in one double-spaced page. The review should briefly describe: 1) the purpose of the study, 2) the data and GIS analysis used for the study (1/2 page minimum), 3) general critique – your opinions of how well (or poorly) the authors did their research in the article, and 4) key bibliographic reference of the article. The reviews are usually due on Mondays via BlackBoard. Each review will be given a maximum of 5 points.

At the end of the semester, each student is expected to summarize these reviews and give a presentation to the class.

Reference format of the Article

Articles in Journals

Conference proceedings

Journals that cover GIS
Cartography and Geographic Information Systems
Computers and Geosciences
Computers, Environment and Urban Systems
Journal of Geographical Systems
Geoinformatica
International Journal of Geographical Information Science
Transactions in GIS
Environment and Planning B
International Journal of Health Geographics

* Interlibraryloan provided by our library is a good resource to request articles from other libraries.

Websites for journal article search
http://www.sciencedirect.com/ (In order to access full-text articles from this website, you need to use the computer on campus)
http://scholar.google.com

I. COURSE CONTENT/SCHEDULE

<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Lecture</th>
<th>Reading</th>
<th>Labs (on Mondays)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Jan. 20</td>
<td>Martin Luther King, Jr. Holiday</td>
<td></td>
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<tr>
<td></td>
<td>Jan. 22</td>
<td>Course Introduction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Week</td>
<td>Date</td>
<td>Topic</td>
<td>Reference</td>
<td>Lab/Handout</td>
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</tr>
<tr>
<td>2</td>
<td>Jan. 27</td>
<td>Attribute data and tables 1</td>
<td>[Bolstad] Chapters 8</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Jan. 29</td>
<td>Attribute data and tables 2 ([Article review topic due])</td>
<td>[Bolstad] Chapter 8</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Feb. 3</td>
<td>GIS data models &amp; Vector data analysis 1</td>
<td>[Bolstad] Chapter 2, 9</td>
<td>Lab 1: Get started with ArcGIS Pro [ESRI online course]</td>
</tr>
<tr>
<td></td>
<td>Feb. 5</td>
<td>GIS data models &amp; Vector data analysis 2</td>
<td>[Gorr &amp; Kurland] Chapter 2, 9</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Feb. 12</td>
<td>Raster data analysis 2</td>
<td>[Bolstad] Chapters 10</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Feb. 24</td>
<td><strong>Exam 1—covers weeks 1-4</strong></td>
<td></td>
<td>Lab 4: Geoprocessing [Gorr &amp; Kurland] Chapter 6 (II)</td>
</tr>
<tr>
<td></td>
<td>Feb. 26</td>
<td>Automating processes – ModelBuilder</td>
<td>ArcGIS Help</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mar. 4</td>
<td>Terrain mapping</td>
<td>[Bolstad] Chapter 11 &amp; [Chang] Chapter 13</td>
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*Section 2: Terrain mapping and analysis*

*Spring break, No Class*
<table>
<thead>
<tr>
<th>No.</th>
<th>Date</th>
<th>Topic</th>
<th>Reading Material</th>
<th>Lab</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mar. 18</td>
<td>Viewshed analysis</td>
<td>[Bolstad] Chapter 11 &amp; [Chang] Chapter 13</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Mar. 23</td>
<td>Watershed analysis</td>
<td>[Bolstad] Chapter 11 &amp; [Chang] Chapter 14</td>
<td>Lab 7: Terrain mapping and analysis [ESRI online course]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mar. 25</td>
<td>Surface interpolation 1</td>
<td>[Bolstad] Chapter 12</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Mar. 30</td>
<td>Surface interpolation 2 Exam Review</td>
<td>[Bolstad] Chapter 12</td>
<td>Lab 8: Viewshed analysis [ESRI online course]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Apr. 1</td>
<td>3D visualization</td>
<td>ArcGIS Help</td>
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**Section 3: Spatial Database Management and Design**

<table>
<thead>
<tr>
<th>No.</th>
<th>Date</th>
<th>Topic</th>
<th>Reading Material</th>
<th>Lab</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>Apr. 6</td>
<td>Exam 2 – covers Weeks 6-10</td>
<td></td>
<td>Lab 9: 3D visualization [Gorr &amp; Kurland] Chapter 11 (I)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Apr. 8</td>
<td>Database system &amp; Relational database design (Groups will be formed for group project)</td>
<td>ArcGIS Help</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Apr. 13</td>
<td>Introduction to SQL (Article review 3 due)</td>
<td>Handouts</td>
<td>Lab 10: 3D visualization [Gorr &amp; Kurland] Chapter 11 (II)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Apr. 15</td>
<td>ESRI geodatabase model 1</td>
<td>ArcGIS Help</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Apr. 20</td>
<td>ESRI geodatabase model 2</td>
<td>ArcGIS Help</td>
<td>Lab 11: Getting started with geodatabase [ESRI online course]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Apr. 22</td>
<td>Working with features</td>
<td>ArcGIS Help</td>
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**Section 4: GIS Applications**

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<tr>
<th>No.</th>
<th>Date</th>
<th>Topic</th>
<th>Reading Material</th>
<th>Lab</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>14</td>
<td>Apr. 27</td>
<td>GIS applications: student presentations</td>
<td></td>
<td>Lab 12: Integrating data in ArcGIS Pro [ESRI online course]</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.

J. COURSE POLICIES

Due Date and Late Policy
Each of the labs will have a due date clearly written under the title of the lab. All labs must be completed on time. Any lab that is turned in after the due date is considered late. Submission of a late lab is accepted, but with a penalty of 10% of the grade per day (including weekends). Late lab 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

K. COLLEGE AND UNIVERSITIY POLICIES

- Academic Advising (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/](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.C2.01, 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 encouraged 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.C2.01, Student Grade Appeal Procedures. These documents are accessible through the University Rules website at [http://www.tamucc.edu/provost/university_rules/index.html](http://www.tamucc.edu/provost/university_rules/index.html), and the College of Science
and Engineering Grade Appeals webpage at
http://sci.tamucc.edu/students/GradeAppeal.html. 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/

- **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.