GEOG 5500 Fundamentals of GIS
Online, 3 credits

Syllabus & Schedule – Fall 2019

Course Description

Geographic Information Systems (GIS) are software systems that are emerging as one of the major areas of innovation in the world of information technology. Geographic information systems are used widely in industry, government, and scientific research to analyze “geospatial information,” that is information linked to particular locations on the Earth’s surface. GIS are part of the broader field of Geographic Information Science (GIScience), a STEM discipline that is helping to address important research questions that bridge science and technology.

This class provides an excellent introduction to the principles and theories of GIS and spatial analysis using a wide range of examples. The course uses readings, discussions, quizzes and computer-based exercises to explore key GIS issues. The class offers students experience with Esri’s ArcMap, one of the most widely used GIS software systems.

Course Objectives

At the completion of this course, you will be able to:
• Discuss GIS software principles and applications
• Explain fundamental GIS concepts
• Solve spatial problems utilizing GIS mapping and statistical methods
• Develop a GIS-based approach to address a geographic problem
• Identify and solve GIS technical issues

Instructor

Instructor: Dr. Shuowei Zhang
Visiting Assistant Professor, Geography, University of Connecticut
Office: 421 Austin Building; UConn (Storrs campus)
shuowei.zhang@uconn.edu
cell phone: (716) 239-3769
Office hours: Tu & Th 4:00-5:00pm or by appointment
I will hold my office hours online using Blackboard Collaborate Ultra integrated into the course HuskyCT page. I will also be available in-person during this time in my office.

### Course Materials

Required course materials should be obtained during the first week of class

The textbook is available through any online bookstores and publisher.

**Required text:** Kang-tsung Chang Introduction to Geographic Information Systems, 8th Ed. McGraw-Hill

Please be sure to purchase the 8th, rather than the 9th edition. The activities we will be using are keyed to the 8th edition.

All videos, images, charts, graphs not created by the instructor are used with the permission of the publisher or are in the public domain and cited under Fair Use practices.

### Course Outline

Your course will be conducted online in 10 sessions. Each session includes readings from the textbook, a quiz, a discussion posting, and activities using ArcGIS software. There will be three exams. You will also have the opportunity to complete a project related to your interests.

### Software Requirements and Technical Help

The technical requirements for this course include:

- ArcGIS
- Flash Player
- Word processing software
- Adobe Acrobat Reader
- Internet access
- Web browser

This course is completely facilitated online using the learning management platform HuskyCT. If you have difficulty accessing HuskyCT, students have access to the in person/live person support options available during regular business hours through the Help Center. Students also have 24x7 Course Support including access to live chat, phone, and support documents.
Minimum Technical Skills

To be successful in this course, you will need the following technical skills:

- Use electronic mail with attachments
- Save files in commonly used word processing program formats
- Copy and paste text, graphics or hyperlinks
- Use presentation software to create and share information
- Work within two or more browser windows simultaneously
- Open and access PDF files
- **Patience.** The software we will are using takes time to learn. To complete the ArcGIS activities, you may need to practice some steps more than once to master the concepts involved.

This course will help you develop and extend your abilities with information and computer technologies. Visit UConn’s [Computer Technology Competencies](#) for more information.

Grading

Your grade will be based on your performance on 10 exercises, participation in 10 online discussions, 3 exams, and a final project.

**Assignments:** Every session will require you to complete an exercise. Exercises include tasks from the textbook that you will complete using ArcGIS as well as a short quiz of multiple-choice and true-false questions drawn from the content of each chapter. All exercises are due at the time noted below in the Course Calendar. Late assignments will be accepted with penalty. See Due Dates and Late Policy below.

**Discussions:** There will be an online discussion keyed to each of the 10 sessions. The discussions encourage you to share ideas and questions with other members of the class. You will be asked to both post an original response and respond to the post of another student.

**Exams:** The exams include short-answer, multiple choice, and true/false questions and focus on the material covered in the textbook. Anyone who will miss an exam must notify the instructor in advance of the exam date; see Due Dates and Late Policy.

**Course project:** Students will propose and create a GIS application in their area of interest. It will offer an opportunity to refine and apply skills learned throughout the course. Students must submit a project proposal and consult with their instructor prior to executing the project. Students will also examine and critique the project of another student in a project online discussion.
Weighting of Assignments:

<table>
<thead>
<tr>
<th>Grade Item</th>
<th>Total Points</th>
<th>Grade Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course project</td>
<td>200 points</td>
<td>20%</td>
</tr>
<tr>
<td>Exercises (10)</td>
<td>400 points</td>
<td>40%</td>
</tr>
<tr>
<td>Discussions (10)</td>
<td>100 points</td>
<td>10%</td>
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<tr>
<td>Exam 1</td>
<td>100 points</td>
<td>10%</td>
</tr>
<tr>
<td>Exam 2</td>
<td>100 points</td>
<td>10%</td>
</tr>
<tr>
<td>Exam 3</td>
<td>100 points</td>
<td>10%</td>
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Grading Scale:

<table>
<thead>
<tr>
<th>Graduate Pct of Total Points</th>
<th>Letter Grade</th>
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<tbody>
<tr>
<td>97-100</td>
<td>A+</td>
</tr>
<tr>
<td>93-96</td>
<td>A</td>
</tr>
<tr>
<td>90-92</td>
<td>A-</td>
</tr>
<tr>
<td>87-89</td>
<td>B+</td>
</tr>
<tr>
<td>83-86</td>
<td>B</td>
</tr>
<tr>
<td>80-82</td>
<td>B-</td>
</tr>
<tr>
<td>77-79</td>
<td>C+</td>
</tr>
<tr>
<td>73-76</td>
<td>C</td>
</tr>
<tr>
<td>70-72</td>
<td>C-</td>
</tr>
<tr>
<td>67-69</td>
<td>D+</td>
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<tr>
<td>63-66</td>
<td>D</td>
</tr>
<tr>
<td>60-62</td>
<td>D-</td>
</tr>
<tr>
<td>&lt;60</td>
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Due Dates and Late Policy:
All course due dates are identified in the Course Schedule. Deadlines are based on Eastern Standard Time; if you are in a different time zone, please adjust your submittal times accordingly.

Assignments handed in late will be penalized by a 10% deduction per day up to three days past the due date, unless you have contacted the instructor and made special arrangements. No assignments will be accepted for credit after three days past the due date. Exceptions to this rule require instructor approval and must be made prior to the assignment’s due date.

Make-up exams may be scheduled in the event of personal illness or extraordinary circumstances. If you know you will miss an exam due to a scheduled conflict (e.g., conference, University event), please contact me no later than two weeks prior to the scheduled exam date to schedule a make-up exam.

Feedback and Grades:
I will make every effort to provide feedback and grades in a timely manner. I will try to grade all work within one week of its due date. Use the My Grades tool in HuskyCT to keep track of your performance in the course.
<table>
<thead>
<tr>
<th>Session</th>
<th>Dates</th>
<th>Topic</th>
<th>Reading</th>
<th>Activity</th>
<th>Due Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Aug 26 – Sept 1</td>
<td>Introduction &amp; Coordinate systems</td>
<td>Chapters 1 &amp; 2</td>
<td>Exercise 1</td>
<td>Sept 1, 11:59 pm</td>
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<tr>
<td></td>
<td>Sept 2 – Sept 8</td>
<td>Vector and Raster data models</td>
<td>Chapters 3 &amp; 4</td>
<td>Discussion 1</td>
<td>Sept 8, 11:59 pm</td>
</tr>
<tr>
<td>2</td>
<td>Sept 9 – Sept 15</td>
<td>GIS data acquisition &amp; Geometric transformation</td>
<td>Chapters 5 &amp; 6</td>
<td>Exercise 3</td>
<td>Sept 15, 11:59 pm</td>
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<tr>
<td></td>
<td>Sept 16 – Sept 22</td>
<td>Spatial data accuracy and quality &amp; Attribute data management</td>
<td>Chapters 7 &amp; 8</td>
<td>Discussion 3</td>
<td>Sept 22, 11:59 pm</td>
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<td>Exam 1</td>
<td>Sept 23 – Sept 29</td>
<td>Sessions 1 – 4</td>
<td>Online (HuskyCT)</td>
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<td>Sept 29, 11:59 pm</td>
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<td>Session 5</td>
<td>Sept 30 – Oct 6</td>
<td>Data display and cartography</td>
<td>Chapter 9</td>
<td>Exercise 5</td>
<td>Oct 6, 11:59 pm</td>
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<td>Session 6</td>
<td>Oct 7 – Oct 13</td>
<td>Data exploration &amp; Vector data analysis</td>
<td>Chapters 10 &amp; 11</td>
<td>Discussion 6</td>
<td>Oct 13, 11:59 pm</td>
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<td>Session 7</td>
<td>Oct 14 – Oct 20</td>
<td>Raster data analysis</td>
<td>Chapter 12</td>
<td>Exercise 7</td>
<td>Oct 20, 11:59 pm</td>
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<td>Session 8</td>
<td>Oct 21 – Oct 27</td>
<td>Terrain mapping &amp; Viewshed and watershed analysis</td>
<td>Chapters 13 &amp; 14</td>
<td>Discussion 8</td>
<td>Oct 27, 11:59 pm</td>
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<td>Exam 2</td>
<td>Oct 28 – Nov 3</td>
<td>Sessions 5 – 8</td>
<td>Online (HuskyCT)</td>
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<td>Nov 3, 11:59 pm</td>
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<tr>
<td>Session 9</td>
<td>Nov 4 – Nov 10</td>
<td>Spatial interpolation &amp; Geocoding and dynamic segmentation</td>
<td>Chapter 15 &amp; 16</td>
<td>Exercise 9</td>
<td>Nov 10, 11:59 pm</td>
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<tr>
<td>Session 10</td>
<td>Nov 11 – Nov 17</td>
<td>Least-cost path and network analysis &amp; GIS models and modeling</td>
<td>Chapters 17 &amp; 18</td>
<td>Discussion 9</td>
<td>Nov 17, 11:59 pm</td>
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<tr>
<td><strong>Project</strong></td>
<td>Nov 18 – Nov 24</td>
<td>Course project work session</td>
<td>Course Project</td>
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<td>Nov 24, 11:59 pm</td>
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<tr>
<td><strong>Project</strong></td>
<td>Dec 2 – Dec 8</td>
<td>Course project discussion</td>
<td>Project Discussion</td>
<td></td>
<td>Dec 8, 11:59 pm</td>
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<tr>
<td>Exam 3</td>
<td>Dec 9 – Dec 15</td>
<td>Sessions 9 – 10</td>
<td>Online (HuskyCT)</td>
<td></td>
<td>Dec 15, 11:59 pm</td>
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Student Responsibilities and Resources

As a member of the University of Connecticut student community, you are held to certain standards and academic policies. In addition, there are numerous resources available to help you succeed in your academic work. This section provides a brief overview of these important standards, policies and resources.

**Student Code:**
You are responsible for acting in accordance with the University of Connecticut's Student Code. Review and become familiar with these expectations. Particularly make sure you have read the section that applies to you on Academic Integrity:
- Academic Integrity in Graduate Education and Research

Cheating and plagiarism are taken very seriously at the University of Connecticut. As a student, it is your responsibility to avoid plagiarism. If you need more information about the subject of plagiarism, use the following resources:
- Plagiarism: How to Recognize it and How to Avoid It
- University of Connecticut Libraries’ Student Instruction (includes research, citing and writing resources)

**Copyright:**
Copyrighted materials within the course are only for the use of students enrolled in the course for purposes associated with this course and may not be retained or further disseminated.

**Netiquette and Communication:**
At all times, course communication with fellow students and the instructor are to be professional and courteous. It is expected that you proofread all your written communication, including discussion posts, assignment submissions, and mail messages. If you are new to online learning or need a netiquette refresher, please look at this guide titled, The Core Rules of Netiquette.

**Adding or Dropping a Course:**
If you should decide to add or drop a course, there are official procedures to follow:
- Matriculated students should add or drop a course through the Student Administration System.
- Non-degree students should refer to Non-Degree Add/Drop Information located on the registrar's website.

You must officially drop a course to avoid receiving an “F” on your permanent transcript. Simply discontinuing class or informing the instructor you want to drop does not constitute an official drop of the course. For more information, refer to the:
- Graduate Catalog

**Academic Calendar:** [https://registrar.uconn.edu/academic-calendar/](https://registrar.uconn.edu/academic-calendar/)
There are important dates and deadlines for each semester and session classes are offered:
Academic Support Resources:
Technology and Academic Help provides a guide to technical and academic assistance.

Students with Disabilities:
Students needing special accommodations should work with the University's Center for Students with Disabilities (CSD). You may contact CSD by calling (860) 486-2020 or by emailing csd@uconn.edu. If your request for accommodation is approved, CSD will send an accommodation letter directly to your instructor(s) so that special arrangements can be made. (Note: Student requests for accommodation must be filed each semester.)

Blackboard measures and evaluates accessibility using two sets of standards: WCAG 2.0 standards issued by the World Wide Web Consortium (W3C) and Section 508 of the Rehabilitation Act issued in the United States federal government. (retrieved March 24, 2013 from Blackboard's website)

Policy against Discrimination, Harassment and Inappropriate Romantic Relationships:
The University is committed to maintaining an environment free of discrimination or discriminatory harassment directed toward any person or group within its community – students, employees, or visitors. Academic and professional excellence can flourish only when each member of our community is assured an atmosphere of mutual respect. All members of the University community are responsible for the maintenance of an academic and work environment in which people are free to learn and work without fear of discrimination or discriminatory harassment. In addition, inappropriate romantic relationships can undermine the University’s mission when those in positions of authority abuse or appear to abuse their authority. To that end, and in accordance with federal and state law, the University prohibits discrimination and discriminatory harassment, as well as inappropriate romantic relationships, and such behavior will be met with appropriate disciplinary action, up to and including dismissal from the University. Refer to the Policy against Discrimination, Harassment and Inappropriate Romantic Relationships for more information.

Sexual Assault Reporting Policy:
To protect the campus community, all non-confidential University employees (including faculty) are required to report assaults they witness or are told about to the Office of Diversity & Equity under the Sexual Assault Response Policy. The University takes all reports with the utmost seriousness. Please be aware that while the information you provide will remain private, it will not be confidential and will be shared with University officials who can help. Refer to the Sexual Assault Reporting Policy for more information.

Evaluation of the Course

Students will be provided an opportunity to evaluate instruction in this course using the University’s standard procedures, which are administered by the Office of Institutional Research and Effectiveness (OIRE). Additional informal formative surveys may also be administered within the course as an optional evaluation tool.

Last updated 2019.8.24