1. Textbook and Resource Material

Textbook


2. Course Description and Prerequisites

This course offers a unique social science approach on the theory and application of Geographic Information Systems (GIS) to solve societal problems. Students will look at real-world societal problems wearing a spatial lens (GIS, spatial analysis, and spatial modeling) to understand them in the context of geographical space and time and search for sustainable solutions.

Prerequisites: six hours of sociology

3. Learning Objectives

After taking GIS for Social Sciences, you should be able to demonstrate your understanding of the following topics through a spatial lens:

   LO 1. Geographic Information System (GIS);
   LO 2. Basic spatial concepts and spatial analyses;
   LO 3. Geovisualization and mapping;
   LO 4. GIS and network analysis; and
   LO 5. Applications of GIS to social sciences.

5. Grading Policies

Grade points: This course consists of face-to-face lectures, group discussions, and practical activities in a GIS lab. There are three elements that contribute to your grade: practical activities, participation, and weekly course feedback. The point distribution for the three elements are as follows:
<table>
<thead>
<tr>
<th>Element</th>
<th>Point Value</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Practical activities</td>
<td>(12 assignments at 35 points each)</td>
<td>420</td>
</tr>
<tr>
<td>Participation</td>
<td>(28 classes at 5 points each)</td>
<td>140</td>
</tr>
<tr>
<td>Weekly course feedback</td>
<td>(15 weeks at 5 points each)</td>
<td>75</td>
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<tr>
<td>Extra Credit (TBA)</td>
<td></td>
<td>30</td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>635</td>
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</tbody>
</table>

**Final grade:** The grade scale will be based on the total points you earn at the end of the course (out of a total of 600 points) and is as follows:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Point Value</th>
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</thead>
<tbody>
<tr>
<td>A</td>
<td>517-635</td>
</tr>
<tr>
<td>B</td>
<td>508-516</td>
</tr>
<tr>
<td>C</td>
<td>444-507</td>
</tr>
<tr>
<td>D</td>
<td>381-443</td>
</tr>
<tr>
<td>F</td>
<td>&lt;380</td>
</tr>
</tbody>
</table>

**Your grade:** Your grade in this course will reflect your efforts in class participation, required reading, and practical activities. To earn a high grade in this course, you should carefully follow instructions and announcements, complete assignments and submit them on time, and actively participate in all class discussions. To receive a satisfactory grade in this course, students are encouraged to regularly attend classes with minimal absences and study a minimum of two hours per lecture.

**Incomplete:** I do not give “I” (incomplete) grades. However, understanding that in some unusual circumstances life emergencies may occur, I may assign an incomplete grade during the last quarter of a semester if a student is unable to complete the course due to justifiable, documentable, non-academic circumstances. These circumstances will be reviewed on a case-by-case basis, and are limited to significant illness or other emergency conditions beyond your control.

**Grade appeals:** If you think your exam or assignment is not graded correctly, you must make an appeal within seven days of receiving the grade.

**6. Course policies**

**Emails:** You are required to use UTRGV email, originating from UTRGV.EDU. I will not respond to emails sent from other accounts. To email Dr. Kyne, please use your UTRGV email and write “SOCI 4385.03” in the subject line of your email. I expect email communication to be professional and concise. I believe that you must learn a proper form and way of communication in professional settings for your future success. It is important that your email must show respect and courteousness in tone and content. You must begin with a proper salutation, e.g. Dear Dr. Kyne or Hi Dr. Kyne, and a proper ending, e.g. Sincerely, John Doe or Thank you, John Doe). In addition, you must NOT use text-messaging and incomplete sentences in your content. If your email does not have the required format mentioned, I will not respond to your email.
Electronic devices: My goal is to encourage you to engage in class activities and discussion. To achieve this goal, your electronic devices, including smart phones and iPads, may not be used in class. All electronic devices must be on silent mode and not visible in class.

Class participation: Students are expected to read study materials prior to each lecture and must be prepared to engage in class activities and discussions.

Exams: There are no exams in this course.

Practical activities: Students will be provided with weekly practical exercises in the GIS lab. You are required to work on the practical exercises and submit them on time.

Late submission: No late assignments are accepted for this course. Students will receive zero points out of the total points per assignment if they do not submit their work on the due date.

7. Calendar of Activities

Week 1 (08/28/2018 & 08/30/2018)
Introduction to GIS for Social Sciences
Course Syllabus
Chapter 1 An Introduction to GIS
• What a GIS is and how it can be used
• Spatial Concepts
• Map projections
• Spatial Data

Week 2 (09/04/2018 & 09/06/2018)
Practical Activity 1
• Intro to ArcMap and basic data types.
• Loading Spatial Data, Layering, Attribute Data

Week 3 (09/11/2018 & 09/13/2018)
Chapter 2 Data querying and spatial analysis
• Perform spatial and aspatial queries
• The Modifiable Areal Unit Problem (MAUP)
• Advance spatial analysis

Week 4 (09/18/2018 & 09/20/2018)
Practical Activity 2
• Basic attribute and spatial queries and overlay
Week 5 (09/25/2018 & 09/27/2018)
Chapter 3 Thematic mapping, GIS and geovisualization
- Attribute data and table
- Reference maps
- Thematic maps
- Cartography and human-scaled geovisualizations

Week 6 (10/02/2018 & 10/04/2018)
Practical Activity 3
- Visualisation and thematic mapping, Choropleth mapping, classification (for choropleth mapping), cartograms.
- Working with social media data – preparing .csv file for import, importing from .csv, visualising point data, point-in-polygon

Week 7 (10/09/2018 & 10/11/2018)
Chapter 4 GIS and Network Analysis
- The basis networks
- Common types of network analysis
Practical Activity 4
- Basic Network Analysis. Creating a network, working with networks (routing, impedance)

Week 8 (10/16/2018 & 10/18/2018)
Chapter 5 GIS and the classification of people and areas
- Composite indicators
- Geodemographic classification
Practical Activity 5
- Area based classification – downloading and processing Census and boundary data, joining data, creating and mapping small area index

Chapter 6 GIS and small-area estimation of income, well-being and happiness
- Combining small-area with national social survey data
- Generating indirect non-survey designed estimates
- Statistical model-based estimates
- Geosimulation and spatial microsimulation
Practical Activity 6
- Estimating Rates - Importing and exporting data from ArcMap, using survey data to estimate small area expenditure, aggregation to different geographies, working with layouts and multiple data frames.
Week 10 (10/30/2018 & 11/01/2018)

Chapter 7 GIS and crime pattern analysis
- Crime data
- GIS for the allocation of funding
- GIS for mapping and analyzing crime patterns
- Crime profiling

Practical Activity 7
- Downloading point data, importing .csv files, aggregation (point-in-polygon), hot spot analysis

Week 11 (11/06/2018 & 11/08/2018)

Chapter 8 GIS for retail network planning and analysis
- The building blocks for analysis
- GIS for retail analysis and planning
- Adding a modelling capability to the GIS
- GIS for public sector retail planning

Practical Activity 8
- Thematic mapping, calculating values, spatial decision making and independent problem solving

Week 12 (11/13/2018 & 11/15/2018)

Chapter 9 GIS and Health Care Planning and Analysis
- Geographical components of health care policy
- Using GIS to analysis health care provisions

Practical Activity 9
- Need/provision/access – Visualizing rates, evaluating service provision (buffering and network analysis), optimizing service provision using Location-Allocation.

Week 13 (11/20/2018 & 11/22/2018)

Chapter 10 GIS for emergency planning
- What is emergency
- Data requirements
- GIS for vulnerability assessment
- GIS and social media and crowd-sourced data

11/22/2018 Thanks Giving: No Class


Practical Activity 10
- Fire Station Location – Identifying areas of ‘risk’, Data preparation, Geocoding point data, working with networks – assessing provision of fire services and access to pop at risk
Chapter 11 GIS and education planning
- Demography and pupil forecasting
- School catchment areas and the dynamics of provision
- Educational performance in market systems
- GIS in higher education

Week 15 (12/04/2018 & 12/06/2018)

Practical Activity 11
- Education planning – Working with complex attribute tables, thematic mapping, geocoding point data, profiling school catchments, interpreting spatial and tabular outputs

Chapter 13 GIS for environmental justice and policy evaluation
- Data and conceptual challenges
- What do we study when we study GIS and environmental justice
- Common GIS methods employed in environmental justice and policy research

12/06/2018 Study Day: No Class

Week 16 (12/13/2018)

Practical Activity 13
- Evaluating access to green space (parks) – Thematic mapping, Buffer and overlay (including multi-ring buffer), areal interpolation, Thiessen Polygons

8. UGRTV policy statements

STUDENTS WITH DISABILITIES: Students with a documented disability (physical, psychological, learning, or other disability which affects academic performance) who would like to receive academic accommodations should contact Student Accessibility Services (SAS) as soon as possible to schedule an appointment to initiate services. Accommodations can be arranged through SAS at any time, but are not retroactive. Students who suffer a broken bone, severe injury or undergo surgery during the semester are eligible for temporary services.

Pregnancy, Pregnancy-related, and Parenting Accommodations
Title IX of the Education Amendments of 1972 prohibits sex discrimination, which includes discrimination based on pregnancy, marital status, or parental status. Students seeking accommodations related to pregnancy, pregnancy-related condition, or parenting (reasonably immediate postpartum period) are encouraged to contact Student Accessibility Services for additional information and to request accommodations.

Student Accessibility Services:
Brownsville Campus: Student Accessibility Services is located in Cortez Hall Room 129 and can be contacted by phone at (956) 882-7374 (Voice) or via email at ability@utrgv.edu.
Edinburg Campus: Student Accessibility Services is located in 108 University Center and can be contacted by phone at (956) 665-7005 (Voice), (956) 665-3840 (Fax), or via email at ability@utrgv.edu.
MANDATORY COURSE EVALUATION PERIOD: Students are required to complete an ONLINE evaluation of this course, accessed through your UTRGV account (http://my.utrgv.edu); you will be contacted through email with further instructions. Students who complete their evaluations will have priority access to their grades. Online evaluations will be available on or about:

Module 1          October 4 – 10
Module 2          November 29 – December 5
Full Fall Semester    November 15 – December 5

ATTENDANCE: Students are expected to attend all scheduled classes and may be dropped from the course for excessive absences. UTRGV’s attendance policy excuses students from attending class if they are participating in officially sponsored university activities, such as athletics; for observance of religious holy days; or for military service. Students should contact the instructor in advance of the excused absence and arrange to make up missed work or examinations.

SCHOLASTIC INTEGRITY: As members of a community dedicated to Honesty, Integrity and Respect, students are reminded that those who engage in scholastic dishonesty are subject to disciplinary penalties, including the possibility of failure in the course and expulsion from the University. Scholastic dishonesty includes but is not limited to: cheating, plagiarism (including self-plagiarism), and collusion; submission for credit of any work or materials that are attributable in whole or in part to another person; taking an examination for another person; any act designed to give unfair advantage to a student; or the attempt to commit such acts. Since scholastic dishonesty harms the individual, all students and the integrity of the University, policies on scholastic dishonesty will be strictly enforced (Board of Regents Rules and Regulations and UTRGV Academic Integrity Guidelines). All scholastic dishonesty incidents will be reported to the Dean of Students.

SEXUAL HARASSMENT, DISCRIMINATION, and VIOLENCE: In accordance with UT System regulations, your instructor is a “Responsible Employee” for reporting purposes under Title IX regulations and so must report any instance, occurring during a student’s time in college, of sexual assault, stalking, dating violence, domestic violence, or sexual harassment about which she/he becomes aware during this course through writing, discussion, or personal disclosure. More information can be found at www.utrgv.edu/equity, including confidential resources available on campus. The faculty and staff of UTRGV actively strive to provide a learning, working, and living environment that promotes personal integrity, civility, and mutual respect that is free from sexual misconduct and discrimination.

COURSE DROPS: Recommended on all syllabi; may be modified by the instructor as long as it is not inconsistent with UTRGV policy. According to UTRGV policy, students may drop any class without penalty earning a grade of DR until the official drop date. Following that date, students must be assigned a letter grade and can no longer drop the class. Students considering dropping the class should be aware of the “3-peat rule” and the “6-drop” rule so they can recognize how dropped classes may affect their academic success. The 6-drop rule refers to Texas law that dictates that undergraduate students may not drop more than six courses during their undergraduate career. Courses dropped at other Texas public higher education institutions
will count toward the six-course drop limit. The 3-peat rule refers to additional fees charged to students who take the same class for the third time.

**STUDENT SERVICES:** Students who demonstrate financial need have a variety of options when it comes to paying for college costs, such as scholarships, grants, loans and work-study. Students should visit the Students Services Center (U Central) for additional information. U Central is located in BMAIN 1.100 (Brownsville) or ESSBL 1.145 (Edinburg) or can be reached by email (ucentral@utrgv.edu) or telephone: (888) 882-4026. In addition to financial aid, U Central can assist students with registration and admissions.

Students seeking academic help in their studies can use university resources in addition to an instructor’s office hours. University Resources include the Learning Center, Writing Center, Advising Center and Career Center. The centers provide services such as tutoring, writing help, critical thinking, study skills, degree planning, and student employment. Locations are:

- Learning center: BSTUN 2.10 (Brownsville) or ELCTR 100 (Edinburg)
- Writing center: BLIBR 3.206 (Brownsville) or ESTAC 3.119 (Edinburg)
- Advising center: BMAIN 1.400 (Brownsville) or ESWKH 101 (Edinburg)
- Career center: BCRTZ 129 (Brownsville) or ESSBL 2.101 (Edinburg)

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