

IST 423 GIS & Data Systems
Fall 2015, 3 Credits, SEC 101 (CRN 2662)
T/R: 09:30 – 10:45 pm
Room: Morrow Library 122

Instructor

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Office Hours: M/W: 09:50 – 11:50 am, T/R: 10:50 – 11:50 am, Other times by appointment

University Policies

By enrolling in this course, you agree to the University Policies listed below. Please read the full text of each policy by going to www.marshall.edu/academic-affairs and clicking on “Marshall University Policies.” Or, you can access the policies directly by going to www.marshall.edu/academic-affairs/policies/. Academic Dishonesty/Excused Absence Policy for Undergraduates/Computing Services Acceptable Use/Inclement Weather/Dead Week/Students with Disabilities/Academic Forgiveness/Academic Probation and Suspension/Academic Rights and Responsibilities of Students/Affirmative Action/Sexual Harassment

Required Texts, Additional Reading, and Other Materials

- 1) Main Text: ***The GIS 20: Essential Skills*** (2nd Ed.). Redlands, CA: ESRI Press (<http://esripress.esri.com/display/index.cfm?fuseaction=display&websiteID=240&moduleID=0>).
- 2) Recommended, but **not required**: If you have no previous experience with ArcGIS, you may purchase “*Getting to Know ArcGIS Desktop*” for your own exercise purpose.
- 3) Additional reading/lab materials will be assigned by the instructor as needed.

Software Installation (ArcGIS 10.1 for Desktop)

- 1) Working at School (University Computer)
- 2) Working at Home (Personal Computer)
 - a. Remote Access (remote desktop connection → type “muremote.marshall.edu”)
 - b. ESRI Global Account (180-day-use version): A free, fully functioning 180-day-

use version, with advanced license level, can be directly downloaded at http://esripress.esri.com/display/dsp_ArcGIS10Eval.cfm or <http://www.esri.com/180daytrial> (create an account → an authorization number can be found on the inside back cover of our textbooks: **EVA*******).

Data Installation

- 1) Working at School (University Computer): All data needed to perform the exercises will be installed on a network server (College of Science).
- 2) Working at Home (Personal Computer): Please install the textbook DVD.

Data & Copyright

The data, maps, and resources contained in the textbook DVD are educational/exercise purpose only, including teaching and classroom use. If you have more questions regarding the copyright, please see the ESRI Data License Agreement included in the textbook DVD.

Course Description

The course is designed to help students of all disciplines to understand the key concepts and techniques of Geographic Information Systems (GIS). Additionally, this course focuses on understanding the fundamentals of GIS data system. In order to develop problem-solving and analytical skills, students will accomplish a series of spatial analyses in a computer laboratory with minimal input from the instructor. In addition, various case studies via ESRI SpatialLABS (<http://edcommunity.esri.com/Resources/Collections/SpatialLabs>) will be reviewed and analyzed by student during the semester (**Pre/co-requisites:** N/A).

Natural Resources/Recreation Management Discipline-Specific Learning Outcomes

Students will **demonstrate** the ability to **identify** natural resource and or/recreation management problems, **propose** appropriate management actions to address those problems, and **evaluate** the potential implications of their proposed management actions.

Course Student Learning Outcomes and Assessment Measures

Upon completion of this course, student will be able to

Course Student Learning Outcomes (Questions)	How students will practice each outcome in the course	How student achievement of each outcome will be accessed in the course
Students will understand the key concepts and spatial	In-class examples/materials/lab	Lab exercise, exam 1 and 2, weekly report, final poster

analysis techniques widely used in the field of GIS	exercises	presentation
Students will understand the data systems utilized in GIS applications	In-class examples/materials/lab exercises	Lab exercise, exam 1 and 2, weekly report, final poster presentation
Students will demonstrate proficiency in the utilization of ESRI major products such as ArcMap, ArcCatalog, and ArcToolbox	In-class examples/materials/lab exercises	Lab exercise, exam 1 and 2, weekly report
Students will independently conduct spatial analyses via a series of case studies	In-class examples/materials/lab exercises	Lab exercise, exam 1 and 2, weekly report
Students will demonstrate their understandings by writing a brief weekly report in appropriate technical style	In-class examples/materials/lab exercises, low-stake writing	Weekly report
Students will effectively communicate in relating findings and recommendations resulting from case studies	In-class examples/materials/lab exercises	Final poster presentation/ GIS day poster exhibition

Course Requirements

- 1) **Exams:** There will be two in-class exams during the semester (closed book test).
- 2) **Weekly Report:** Almost every week, students will be required to submit a weekly report based on the laboratory exercise/work. Weekly report is expected to be professionally presented. The instructor will provide instructions for the expected style of assignment.
- 3) **Poster Presentation:** A total of seven different case studies will be analyzed by each student group (3-4 students). The case studies will be assigned to each student group later this semester and presentation schedule will arranged. All groups are expected to prepare a poster (max. poster size: 40 × 30 inch.) about the case studies assigned.
- 4) **Poster Exhibition for GIS Day Event:** To celebrate GIS day this year (November 18, Wednesday), the IST and Geography departments will be jointly hosting a series of events (GIS/RS poster presentation, guest lecture, geocaching event, etc.) in the Memorial Student Center. All groups will be required to exhibit their posters on that day as well.

- 5) **Attendance & Participation**: Attendance will be part of your grade as noted below. If students miss more than 30 percent of the lectures/labs, the instructor reserves the right to summarily assign you a failing grade for the course. Absences will only be excused if they have been pre-approved by the instructor or if the student is able to document a valid reason for their absence (i.e. illness, death in family, automobile accident, the Dean of Students, etc.).

Grading Policy

Exam 1 (30 pts.)

Exam 2 (20 pts.)

Weekly Report ($2 \times 10 = 20$ pts.)

Poster Presentation (15 pts.)

Poster Exhibition for GIS Day Event (10 pts.)

Attendance (5 pts.)

Total: 100 pts.

Grading Scale

100 – 93	A
92.9 – 85	B
84.9 – 77	C
76.9 – 70	D
69.9 – 0	F

Additional Policies and Expectations

- 1) ***Class participation*** is essential for the successful completion of the course. Students are expected to read the assigned papers prior to class and to come to class ready to discuss what they have read. In the absence of meaningful classroom discussions/activity, quizzes may be given to ensure that readings have been done.
- 2) ***Class materials*** can be found at MU-online (<http://www.marshall.edu/muonline>). The instructor will upload all lecture and class discussion files (pdf format) at MU-online in a timely manner. It is mandatory that students monitor the MU-online for updated class materials at least once a week.
- 3) ***Assignment*** (weekly report) is expected to be professionally presented. The instructor will provide instructions for the expected style of assignment as well as the sample of the review assignment.
- 4) ***Resources***: Students who find themselves in need of additional assistance are reminded

that the instructor is available during office hours. Again, the instructor's office hours during the fall 2015 semester are as follows: M/W: 09:50 – 11:50am, T/R: 10:50 – 11:50am.

- 5) **Course Evaluation:** Mid-semester evaluation will be done by the instructor to identify students' suggestions on the course (i.e. pace and topic/subject of the course). Final student course evaluation will be conducted during the last two weeks of the semester in a manner that maintains the integrity of the process and the anonymity of evaluators (online format).

Course Outline (Please note this is a tentative schedule and it may change upon class progress)

IST 423 (GIS & Data Systems)		
Date	Topic	Assignment
Aug. 25	Introduction & Overview	
Aug. 27	Getting familiar with ArcGIS, Data & Software Installation	
Sept. 01	Chapter 1: Shapefile and essential ArcMap tools	
Sept. 03	Chapter 2: Creating basic maps and layouts	
Sept. 08	Chapter 3: Projecting shapefile	Weekly Report 1
Sept. 10	Chapters 4, 5 & 16: Preparing data, joining and spatial join	
Sept. 15	Chapters 6: Thematic maps	Weekly Report 2
Sept. 17	Chapters 7 & 9: Basic editing, geocoding (concept) and categorical maps	
Sept. 22	Chapter 10: GPS mapping	Weekly Report 3
Sept. 24	Chapters 11, 12 & 13: Editing and attribute/location queries	
Sept. 29	Chapters 14 & 15: Geoprocessing tools and geodatabase	Weekly Report 4
Oct. 01	Chapters 17 – 20: Remote sensing and other useful tips	
Oct. 06	Exam 1 (09:30 am)	Weekly Report 5
Oct. 08	Workflow for GIS Exercise/Project (ESRI SpatialABS) Poster Presentation Schedule / O & A	
Oct. 13	Geodatabase & ESRI SpatialABS I (1)	
Oct. 15	Geodatabase & ESRI SpatialABS I (2)	
Oct. 20	ESRI SpatialABS II (1)	Weekly Report 6
Oct. 22	ESRI SpatialABS II (2)	
Oct. 27	ESRI SpatialABS III (1)	Weekly Report 7
Oct. 29	ESRI SpatialABS III (2)	

Nov. 03	ESRI SpatiaLABS IV (1)	<i>Weekly Report 8</i>
Nov. 05	ESRI SpatiaLABS IV (2)	
Nov. 10	ESRI SpatiaLABS V (1)	<i>Weekly Report 9</i>
Nov. 12	ESRI SpatiaLABS V (2)	
Nov. 17	Poster Presentation Preparation * Poster Display for GIS Day Event (NOV. 18 th , Memorial Student Center)	<i>Weekly Report 10</i>
Nov. 19	Poster Presentation for IST faculty/students	
Nov. 24/26	NO CLASS – Thanksgiving/Fall Break	
Dec. 01	Bonus Exercises 1 (Clemmer Final Chapter)	
Dec. 03	Bonus Exercises 2 (Clemmer Final Chapter)	
Dec. 08	Exam 2 (09:00 am)	