

**IST 423 (CJ 582) GIS & Data Systems**  
Fall 2014, 3 Credits, SEC 101 (CRN 2829)  
T/R: 09:30 – 10:45pm  
Room: Morrow Library 122

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**Instructor**

Min Kook Kim, Ph.D.

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Office Hours: M/W: 09:50 – 11:50am, T/R: 10:50 – 11:50am

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](http://www.marshall.edu/academic-affairs) and clicking on “Marshall University Policies.” Or, you can access the policies directly by going to [http://www.marshall.edu/academic-affairs/?page\\_id=802](http://www.marshall.edu/academic-affairs/?page_id=802)

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>).
- ***Making Spatial Decisions Using GIS***. Redlands, CA: ESRI Press  
(<http://esripress.esri.com/display/index.cfm?fuseaction=display&websiteID=203&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.

## 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](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: EVXXXXXXXXXX).

## 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 DVDs.

## Data & Copyright

The data, maps, and resources contained in the textbook DVDs 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 DVDs.

## 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. Various case studies included in the textbooks (hazardous emergency decision, demographic decision, law enforcement decision, hurricane damage decision, & urban planning decision) will be reviewed and analyzed by student groups during the semester (**Pre/co-requisites:** N/A).

## 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 <i>understand</i> the	In-class	Lab exercise, exam 1 and 2,

key concepts and spatial analysis techniques widely used in the field of GIS	examples/materials/lab exercises	weekly report, final poster presentation
Students will <i><b>understand</b></i> 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 <i><b>demonstrate</b></i> 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 <i><b>conduct</b></i> spatial analyses via a series of case studies	In-class examples/materials/lab exercises	Lab exercise, exam 1 and 2, weekly report
Students will <i><b>demonstrate</b></i> 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 <i><b>communicate</b></i> 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 five different case studies will be analyzed by each student group (2-3 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 19, 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.).
- 6) **Extra Point Chance - MU PROS Participation**: The Marshall University Park and Recreation Organization for Students (MU PROS) was created to promote active involvement in park and recreation related events on campus and in the community. Students in this course may earn up to three points of extra credit by participating in MUPROS meetings and events. A total of two points can be earned by participating in weekly MUPROS meetings (0.5 point earned per meeting). An additional one points can be earned by participating in MUPROS events (0.5 point per event).

### **Grading Policy**

Exam 1 (**20** pts.)

Exam 2 (**30** pts.)

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

Poster Presentation (**15** pts.: instructor 12 pts., peer-evaluation: 3 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) **Late Submissions** are strongly discouraged. Weekly reports not submitted to the instructor on the specified due date will be considered late. Late assignment will be accepted with a penalty of 25 percent for each day that the assignment is late. Exceptions to this policy will be made only for extraordinary circumstances that are cleared with the instructor ahead of time or with documentation when advance notice is not possible (Weekly reports placed in my campus mailbox or slid under my office door will not be accepted after the deadlines).
- 4) **Classroom Etiquette**: Students are expected to exhibit proper classroom etiquette. This means, among other things, that classroom discussions should be appropriate and respectful, cell phones should be turned off and put away at all times, newspapers and other non-class related reading materials should not be on desks, and students should not pack-up to leave until class has been dismissed. Failure to exhibit proper classroom behavior will affect your participation grade.
- 5) **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 2014 semester are as follows: M/W: 09:50 – 11:50am, T/R: 10:50 – 11:50am.
- 6) **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 (CJ 582) GIS & Data Systems		
Date	Topic	Assignment
Aug. 26	Introduction & Overview	
Aug. 28	Getting familiar with ArcGIS, Data & Software Installation	
Sept. 02	Chapter 1: Shapefile and essential ArcMap tools	
Sept. 04	Chapter 2: Creating basic maps and layouts	
Sept. 09	Chapter 3: Projecting shapefile	<b>Weekly Report 1</b>

Sept. 11	Chapters 4, 5 & 16: Preparing data, joining and spatial join	<i>Led by instructor</i>
Sept. 16	Chapters 6: Thematic maps	<i>Led by instructor</i> <i>Weekly Report 2</i>
Sept. 18	Chapters 7 & 9: Basic editing, <u>geocoding (concept explanation)</u> and categorical maps	
Sept. 23	Chapter 10: GPS mapping	<i>Weekly Report 3</i>
Sept. 25	Chapters 11, 12 & 13: Editing and attribute/location queries	
Sept. 30	Chapters 14 & 15: Geoprocessing tools and geodatabase	<i>Weekly Report 4</i>
Oct. 02	Chapters 17 – 20: Remote sensing and other useful tips	
Oct. 07	<b>Exam 1 (09:30 am)</b>	<i>Weekly Report 5</i>
Oct. 09	Workflow for GIS Project (Keranen & Kolvoord Intro Chapter) Poster Presentation Topic Allocation / Schedule / O & A	
Oct. 14	Chapter 1: Hazardous emergency decision 1-1	
Oct. 16	Chapter 1: Hazardous emergency decision 1-2	
Oct. 21	Chapter 2: Demographic decision 1-1	<i>Weekly Report 6</i>
Oct. 23	Chapter 2: Demographic decision 1-2	
Oct. 28	Chapter 3: Law enforcement decision 1-1	<i>Weekly Report 7</i>
Oct. 30	Chapter 3: Law enforcement decision 1-2	
Nov. 04	Chapter 4: Hurricane damage decision 1-1	<i>Weekly Report 8</i>
Nov. 06	Chapter 4: Hurricane damage decision 1-2	
Nov. 11	Chapter 5: Urban planning decision 1-1	<i>Weekly Report 9</i>
Nov. 13	Chapter 5: Urban planning decision 1-2 * The instructor will be in Washington D.C. for the 2014 NARSC conference presentation	
Nov. 18	Poster Presentation Preparation * Poster Display for GIS Day Event (NOV. 19, Memorial Student Center)	<i>Weekly Report 10</i>
Nov. 20	<b>Poster Presentation for IST faculty/students</b>	
Nov. 25/27	<b>NO CLASS</b> – Thanksgiving/Fall Break	
Dec. 02	Bonus Exercises 1 (Clemmer Final Chapter)	
Dec. 04	Bonus Exercises 2 (Clemmer Final Chapter)	
Dec. 09	<b>Exam 2 (09:00 am)</b>	