

GSC 202-01: Introduction to Geographic Information Sciences

Fall 2014

Department: Geosciences	Instructor: Dr. Sung-ho Hong
Course & Semester: GSC 202-01	Office: Blackburn 310
Credit Hours: 4	E-mail: shong4@murraystate.edu
Lecture: MWF 9:30-10:20am in Blackburn 312	Phone: 270-809-6319
Lab: W 2:30-4:20pm in Blackburn 347 & 306b	Office Hours: 8:00 –9:30; 10:30–11:30; 1:30–2:30 MWF

- I. **Title:** Introduction to Geographic Information Sciences
- II. **Course Description:** This course is designed to provide an introduction to the fundamental principles and concepts of the mapping sciences. The course will focus on digital image processing and geographic information systems as techniques for land cover and land capability mapping utilizing current mapping software. The introduction of global positioning systems as an auxiliary mapping tool is also covered in the course.
- III. **Purpose:** The primary purpose of this course is to introduce Geoscience students to the advanced mapping and analysis technologies available at the Mid-America Remote Sensing Center at an early stage of their college careers. The topics of study involve contemporary technologies in Geoscience careers.
- IV. **Course Objectives:**
1. Become familiar with techniques of fundamental cartographic knowledge of map projections, scale, coordinates and mapping accuracy.
 2. Understand basic theoretical concept of spatial data sampling and analysis.
 3. Provide a basic understanding and skills of geographic information systems (GIS), global positioning systems (GPS), and remote sensing.
 4. To be able to use current mapping softwares such as ArcGIS and IMAGINE to produce thematic maps and process remotely sensed data.
- V. **Content Outline:** Lecture
1. Introduction to GISci
 2. Coordinate Systems
 3. Height Systems
 4. Map Projection
 5. Maps and Mapping
 6. Topographic Maps
 7. Global Positioning Systems
 8. Aerial Photographs
 9. Satellite Imagery
 10. Statistics in GISci
 11. Intro to GIS
 12. GIS Components and ArcGIS
 13. Data Model
 14. Basic Spatial Analysis

- 15. Raster and Terrain Analysis
- 16. Data Measurement and Quality

VI. **Instructional Activities:**

- A. Lecture
- B. Laboratory
- C. Exam
- D. Quiz
- E. Presentation

Your instructor is demanding and maintains high academic standards. You should come to the course expecting to work hard. Please come by to see me if you are having trouble with any of the material presented in this class. I want to help. Please make use of my office hours and feel free to email or call me at any time with questions. Email is the best way to get in touch with me.

VII. **Field, Clinical, and/or Laboratory experiences:** Field and laboratory activities will be utilized in the laboratory component of this course.

VIII. **Resources:** The Mapping Sciences Laboratory at the Mid-America Remote Sensing Center (MARC) will serve as both classroom and laboratory. Maps, digital data, software, and computers at MARC will be utilized, IMAGINE, ArcGIS and various Arc Extensions. GPS units and software will also be utilized.

IX. **Grading Procedures:** The final grade will be computed as follows:

Exam (3)	50%
Pop-up quizzes	25%
Lab assignment	20%
Presentation	5%

Final Grade will be computed: A: $\geq 90\%$, B: 80-89.9, C: 70-79.9, D: 60-69.9, E: < 60

Lab assignments are due in by 6:00 PM on the next day assigned (Thursday) (please slide assignment under the door of my office). Late assignment will be discounted 15% per day. Assignment over a week late will not be accepted. I expect you to get together in small groups and discuss the material. However, do not use these discussions as an excuse to copy someone else's work or let someone else copy your work. All work you submit must be your own and should reflect your own understanding.

Exam/Quiz Policy: You must arrive on time for each exam or risk not being admitted to take the exam. Exam and Quiz are based on the materials were covered during both Lecture and Lab sessions. **Exams may be made up only with a proper excuse** (e.g., doctor's excuse or university sanctioned event) **and if arrangements have been made ahead of time.** No Exceptions. Unannounced pop-up quiz CANNOT be made up without an absence notification in advance. You can drop the **lowest** score from a sequence of quizzes.

Class participation & behavior: Participation will keep us all awake - class is more interesting if you ask questions and engage. Disruptive behaviors, including excessive talking, arriving late to class, sleeping, reading newspapers, using unauthorized electronic devices during class is not permitted. Repetitive and seriously disruptive behavior, e.g., fighting, using profanity, personal or physical threats or insults, damaging property, may result in your removal from class. **Very importantly, text messaging and the use of laptop computers, iPads, and similar devices are not allowed in class. Violations of this above policy will result in the student being administratively dropped from the class by the professor!!** Extra credit (up to 3%) to your final score will be given to students who manage their class participation and behavior very well.

- X. **Attendance Policy:** Attendance is mandatory. In this class, **I expect you to notify me in advance of any absences.** After the second unexcused absence (including lab), the student's grade will be dropped 1.5% for each absence. **I reserve the right to fail anyone missing 10 classes or more.** Please refer to pages 9-10 of the 2011-2013 Murray State Undergraduate Bulletin.
- XI. **Academic Honesty Policy:** Please refer to the Murray State University Undergraduate Bulletin for the MSU's current policy statement regarding Academic Honesty. Cheating or plagiarism on classroom exams or on homework assignments will result in a grade of zero being recorded for that exam or assignment. A second offense will result in a failing grade for the course. Please refer to pages 9-10 of the 2011-2013 Murray State Undergraduate Bulletin.
- XII. **Textbook (required):**
Title: GIS Fundamentals, a First Text on Geographic Information Systems (3rd Edition)
Author(s): Paul Bolstad
Publication: Eider Press
Year: 2008
ISBN-10: 0971764727
- XIII. **Prerequisites:** NA
- XIV. **Non-Discrimination Statement:** Murray State University endorses the intent of all federal and state laws created to prohibit discrimination. Murray State University does not discriminate on the basis of race, color, national origin, gender, sexual orientation, religion, age, veteran status, or disability in employment, admissions, or the provision of services and provides, upon request, reasonable accommodation including auxiliary aids and services necessary to afford individuals with disabilities equal access to participate in all programs and activities. For more information, contact the Executive Director of Institutional Diversity, Equity and Access, 103 Wells Hall, (270) 809-3155 (voice), (270) 809-3361 (TDD).
- XV. **Other Required Departmental or Collegiate Committee Information**
Assessment plan: Students must participate in all class assessment activities. I want to learn how well certain concepts are getting across and how the class is feeling about the material and the course as we go along. Course assessment will be done by first, asking set of multiple choice questions at the end of the semester and second, writing reviews of 2 current news stories

regarding GISci applications and their short and long-term effects on human populations and their environment. Assessment activities will help me find out how well the day's outcomes were achieved and to determine the extent to which the course is meeting its goals.

- XVI. The Racer Oral Communication Center offers free, one-on-one help with all aspects of the presentation process. We can provide assistance with topic selection, outlining, delivery, visual aids, and can video record your presentation. To make an appointment, please call 809-3458 or visit our website (<http://comcenter.murraystate.edu>) to schedule through our online calendar. To best make use of your time at the Center, please bring a copy of your assignment with you to your appointment.