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COURSE SYLLABUS

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**Instructor:** Wei Wu

Office: Oceanography Building 111

Email: [wei.wu@usm.edu](mailto:wei.wu@usm.edu)

Phone: 228-818-8855

**Class schedule:** Monday 2-4:45 pm at Caylor 103 on GCRL Halstead campus

**Office Hours:** Drop by or by appointment

**Prerequisites:** Ready to think spatially!

**Course description:**

This course offers an introduction to geographic information systems and their application in coastal and marine science, focusing on spatial data development and analysis in science and resource management. Topics covered include: basic data structures, data sources, data collection, data quality, geodesy and map projections, spatial and tabular data analyses, spatial interpolation, and useful toolkits in coastal and marine science. Laboratory exercises provide practical experiences that complement the theories covered in lecture.

**Course Objectives:**

At the conclusion of the course, students should be able to:

- 1) Explain the fundamental concepts in the acquisition, processing, organization, and management of spatial data, including data models, relational database management, map coordinate systems etc.
- 2) Be familiar with the software ArcGIS in performing spatial analysis.
- 3) Conduct research using spatial data and spatial analysis.

**Textbook:**

A First Text on Geographic Information Systems. Fourth edition. By Paul V. Bolstad, Eider Press 2012. ISBN: 978-0-9717647-3-6.

**Course documents:**

Course lectures, lab assignment, and data will be uploaded to my GitHub repository <https://github.com/wu16/GIS2017>. For the installation instructions for Git, please refer to <https://github.com/tylerthardy/GitHub-Tutorials/blob/master/CloneAndPull.md>

**Student responsibilities:**

As a student, it is your responsibility to attend the lectures, do the readings, and do assigned lab problems. Please send your completed assignment to

[geostats.hw@gmail.com](mailto:geostats.hw@gmail.com). Email your questions and other issues to [wei.wu@usm.edu](mailto:wei.wu@usm.edu).

**Software:**

ArcGIS 10.x. Registered students will receive a 1-year license of ArcGIS for use at home.

**Lab assignments:**

Approximately 12 labs will be given over the semester. Lab problems will be due in one week after assignment. Labs won't be accepted if they are more than 1 week late. You may choose to redo the lab assignments to improve your grade, but keep in mind that the full mark for redo is 90 instead of regular 100.

**Evaluation:**

Lab assignments = 50%

Course project = 25%

Quiz = 20%

Class participation = 5%

**Course grading:**

Grading will be on a straight scale, not on a curve. If you do well, you will all get an A.

A 90 – 100 Excellent

A- 88 – 89.9 Very Good

B+ 86 – 87.9 Good

B 82 – 85.9 Satisfied

B- 78 – 81.9 Adequate, but needs improvement

C+ 70 – 77.9

C 65 – 69.9

C- 60 – 64.9 Minimum passing

F 0 – 59.9

**Plagiarism / Cheating Statement:**

Students are expected to adhere to the highest standards of academic honesty as outlined in the USM Student Handbook. Academic dishonesty will result in the grade of a "0" on the assignment and/or in the course, and/or the student may be reported for further disciplinary action.

**Disability Statement:**

Student with disabilities that qualify under the American with Disabilities Act (ADA) and require accommodations should contact the Office for Disability Accommodations (ODA) for information on appropriate policies and procedures. Disabilities covered by ADA may include learning, psychiatric, physical disabilities, or chronic health disorders. Students can contact ODA if they are not certain whether a medical condition/disability qualifies.

Address:

The University of Southern Mississippi  
Office for Disability Accommodations

118 College Drive # 8586

Hattiesburg, MS, 39406-0001

Voice Telephone: (601) 266-5024 or (228) 214-3232 Fax: (601) 266-603

Individuals with hearing impairments can contact ODA using the *Mississippi Relay Service* at 1-800-582-2233 (TTY) or email Suzy Hebert at [Suzanne.Hebert@usm.edu](mailto:Suzanne.Hebert@usm.edu).

### **Tentative Schedule<sup>1</sup>**

Week	Topic	Required readings
January 23	Course introduction, what is GIS, raster and vector data structure, ESRI courses	Chapter 1
January 30	Data models	Chapter 2
February 6	Map projection and coordinates	Chapter 3
February 13	Maps, data entry and editing <b>Quiz 1</b>	Chapter 4
February 20	Aerial and satellite images	Chapter 6
February 27	Digital data	Chapter 7
March 6	Relational database <b>Course project proposal due</b>	Chapter 8
March 13	<b>Spring break</b> , class does not meet.	
March 20	Basic spatial analysis	Chapter 9
March 27	Raster analysis and modeling <b>Quiz 2</b>	Chapter 10
April 3	Spatial interpolation	Chapter 12
April 10	Marine Spatial Ecology Tools	
April 17	Marine Spatial Ecology Tools II	
April 24	Fishery Analyst	
May 1	Marsh Analysis and Planning Tool Incorporating Tides and Elevations	
May 8	Final presentation	

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<sup>1</sup> A few times throughout the semester, I need to reschedule the class due to scientific meetings and other professional activities: February 6, late Feb-early March (possible), and March 27 (possible).