

**Advanced Spatial Database Design and Management**  
**(PSMA 6540)**

TENNESSEE STATE UNIVERSITY  
DEPARTMENT OF AGRICULTURAL AND ENVIRONMENTAL  
SCIENCES

**Course Syllabus**

**Course Number:** AGSC 6540

**Course Name:** Advanced Spatial  
Database Design and Management

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Complex, Tennessee State University

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**Course Description:**

The examination and demonstration of the accuracy and usability of geo-data determines the analysis, output, and cost of any geospatial information system (GIS). Spatial database design and management optimizes the definition, creation, update, storage, query and administration of geographic features: points, lines and polygons; topology (i.e., spatial relations), linear network and surface features (3D). This course will introduce students to principle and practices of accessing, and reading, a well-designed GIS data model i.e., personal, file-based, multi-user geodatabase. The course will also present techniques of geodatabase design, manipulation, maintenance, and presentation needed for geodatabase administration and/or to obtain required functionality from a GIS analysis. 3 credit hours

**Prerequisites and Co-requisites:**

Prerequisites: PSMA 6510 Geospatial Information Systems.

Corequisites: None.

**Required Textbook(s), including ISBN:**

Allen, D. W., and Coffey, J. M. (2011). GIS Tutorial: Advanced Workbook 3, ESRI Press. ISBN: 9781589482074.

## Course Outline by Week:

Topics	Assignment	Date	Individual Topic(s) covered	Lab Assignments (Allen and Coffey., 2011) (Please complete before beginning of next week's class and hand in assignments (each map, such as 3-1, 3-2, 3-3, 4-1, 4-2... etc.), as emailed PDFs.
Geodatabase Design, Creation and Building	Assign. 1	Week of Monday, August 26 <sup>th</sup>	Class Introduction and Overview	Buy the book (if you have not already done so)
	Assign. 2	Week of Monday, September 2 <sup>rd</sup>	Ch. 1. Designing the Geodatabase Schema	Lab. 1. Tutorial 1-1 and 1 -2
	Assign. 3	Week of Monday, September 9 <sup>th</sup>	Ch. 2. Creating a Geodatabase	Lab 2. Tutorial 2-1 and 2-2
	Assign. 4	Week of Monday, September 16 <sup>th</sup>	Ch. 3. Populating a Geodatabase	Lab 3. Tutorial 3-1 and 3 -2
Geodatabase Processing & Maintenance	Assign. 5	Week of Monday, September 23 <sup>th</sup>	Ch. 4. Working With Features	Lab 4. Tutorial 4-1 and 4 -2
	Assign. 6	Week of Monday, September 30 <sup>st</sup>		Lab 5. Tutorial 4-3 and 4 -4
	Assign. 7	Week of Monday, October 7 <sup>th</sup>		Lab 6. Tutorial 4.5 - 5-1
	Assign. 8	Week of Monday, October 14 <sup>th</sup>	Ch. 5. Working With Topology	Lab 7. Tutorial 5-2
	Assign. 9	Week of Monday, October 28 <sup>th</sup>		Lab 8. Tutorial 5-3
Geodatabase Representation & Presentation	Assign. 10	Week of Monday, November 4 <sup>th</sup>	Ch. 2. Developing Labels and Annotation	Lab 9. Tutorial 8-1 and 8 -2
	Assign. 11	Week of Monday, November 11 <sup>th</sup>	Ch. 2. Exploring Cartographic Techniques	Lab 10. Tutorial 9-1 and 9 -2
Synthesis	Assign. 12	Week of Monday, November 18 <sup>th</sup>	Submittal of Final GIS Research Project Proposal (Final GIS Research Project Proposal Due November 19 <sup>th</sup> )	<u>None</u>
	Assign. 13	Week of Monday, November 25 <sup>th</sup>	Continue Working on Final GIS Research Project	<u>None</u> Geodatabase Processing & Modeling
	Assign. 14	Week of Monday, December 2 <sup>nd</sup>	Continue Working on Final GIS Research Project	<u>None</u>
		Week of Monday, December 9 <sup>rd</sup>	Submittal of Final GIS Research Project (Final GIS Research Project Due December 13 <sup>th</sup> )	<u>None</u>

## Syllabus Changes:

The instructor reserves the right to make changes, as necessary, to this syllabus. If

changes are necessitated during the term of the course, the instructor will immediately notify students of such changes by an announcement on the course homepage.

## **Assessment and Grading**

### Testing:

There will be no Midterm or Final exams administered within this course.

### Grading Procedure:

Students will study advanced spatial database design and management through tutorial exercise activities and a final project. Tutorial exercise activities will contribute 45% to the final course grade, while a final project will contribute 55% to the final course grade. Students will have opportunities for discussion of content with faculty and other students via email and discussion forums.

**Assigned chapter exercises account for 55% of final grade (270 points) while the Final Project 45% of final grade (230 points)**

### Grading Scale:

A = 100 - 90  
B = 89 - 80  
C = 79 - 70  
D = 69 - 60  
F = 59 and below