**Florida Atlantic University**



**Geosciences Department**

**GIS 4115C Geospatial Databases**

**Spring 2019**

**3 Credit Hours**

**Instructor:** Dr. Weibo Liu

**Office Location:** SE 410

**Office Hours:** Monday, 2-4 pm or by appointment.

**Contact Phone Number:** 561-297-4965

**Email:** [liuw@fau.edu](mailto:liuw@fau.edu)

**Class Meetings:** W 6:00-8:50 pm, SE 483

**Course Prerequisites:** GIS 4043C or equivalent

**Course Description**

Geospatial databases provide the functions of storing, managing and querying geospatial data, and are essential component of Geographical Information System (GIS). This course covers the fundamental principles, techniques and methodologies for designing and implementing a geospatial database and querying and geoprocessing in geospatial databases.

**Course Objectives**

The first is to introduce the fundamental theories of data management in geospatial databases to develop a strong conceptual understanding of geospatial database design and implementation. The second is to obtain hands-on experience with mainstream open source and enterprise spatial database management systems (DBMS) such as PostgreSQL/PostGIS, and use Structured Query Language (SQL) to create and manipulate databases.

**Textbook**

1. PostGIS in Action, 2nd Edition by Regina O. Obe and Leo S. Hsu (ISBN: 9781617291395, <http://www.postgis.us/>).

2. Additional reading materials will be available on Canvas.

**Tentative Course Schedule**



|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **WEEK** |  | **DATE** |  | **TOPIC** |  | **READING** | **TO DO** |
| 1 | | 01.10 | | Retrieving Data from a Relational  Database | |  | | Assignment #1 |
| 2 | |  | 01.17 |  | Relational Database Concepts and  Theory |  |  | Assignment #2 |
|  | |  |  |  |  |
| 3 | | 01.24 | | Intro to PostGIS  Spatial Data Types | | Chapter 1 & 2 | |  |
| 4 | | 01.31 | | Spatial Reference System | | Chapter 3 - 5 | | Assignment #3 |

Spatial Query

5 02.07 Geometry and Geography Functions Chapter 6

6 02.14 Raster processing Chapter 7 & 12 Assignment #4

7 02.21 Midterm Exam

8 02.28 Geometry Relationships Chapter 9 & 10

9 03.07 Spring Break (no class)

Geometry and Geography

Chapter 11 Assignment #5

10 03.14

Processing

11 03.21 Building and Using Topologies Chapter 13 & 14

Working with Esri’s Desktop

Assignment #6

12 03.28

13 04.04

14 04.11

15 04.18

Geodatabases

Enterprise Geodatabase

Administration

AAG Conference (final project/no class)

Data Management in an Enterprise

Geodatabase

Assignment #7

Assignment #8

16 04.26 Final Exam

Contents are subject to change.



**Grading Policy**

**Your final grade will be based on the following weighted distribution.**

|  |  |
| --- | --- |
| Eight Assignments | 40% |
| Midterm Exam | 30% |
| Final Exam | 30% |

**Grade Scale:**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| total  points | 100-  93 | 92-  90 | 89-  85 | 84-  80 | 79-  75 | 74-  70 | 69-  65 | 64-  60 | 59-  50 | <50 |
| Grade | A | A- | B+ | B | B- | C+ | C | C- | D | F |

**Attendance, Makeup Test, Late Work, and Incomplete Policy**

**Attendance:** Students are expected to attend all of their scheduled University classes and to satisfy all academic objectives as outlined by the instructor. The effect of absences upon

grades is determined by the instructor, and the University reserves the right to deal at any time with individual cases of non-attendance.

Students are responsible for arranging to make up work missed because of legitimate class absence, such as illness, family emergencies, military obligation, court-imposed legal obligations or participation in University approved activities. Examples of University- approved reasons for absences include participating on an athletic or scholastic team, musical and theatrical performances and debate activities. It is the student’s responsibility to give the instructor notice prior to any anticipated absences and within a reasonable amount of time after an unanticipated absence, ordinarily by the next scheduled class meeting. Instructors must allow each student who is absent for a University-approved reason the opportunity to make up work missed without any reduction in the student’s final course grade as a direct result of such absence.

**Late Assignments Policy:** Assignments will be deducted 5% for each day that they are

late, unless arranged in advance and with good reason. Also, note that grades of Incomplete

(“I”) are reserved for students who are passing a course but have not completed all the

required work because of exceptional circumstances.

**Make up Policy for Tests:** No make-up exams will be given.

**Communication Policy**

• Announcements

o You are responsible for reading all announcements posted by the instructor. Check the course announcements each time you login to be sure you have read all of them since your last login session.

• Email Policy

o Except for Saturdays, Sundays, and holidays, instructor typically, will respond to messages within 48 hours. Such messages should only be used to communicate personal or confidential matters; otherwise, please use the discussion board within the course.

• Assignment Feedback Policy

o Feedback will be provided on submitted assignments within one week of the submission date. Some assignments may require a longer review period, which will be communicated to you by your instructor.

**Selected University and College Policies**

**Support Services and Resources**

|  |  |
| --- | --- |
| Office of Information Technology Online Help Desk: | [http://helpdesk.fau.ed](http://helpdesk.fau.edu/)u |
| eLearning Student Success Advisor- Eduardo Santiago | [esantia5@fau.ed](mailto:%20esantia5@fau.edu)u |
| FAU Ombuds (Ask a question about University related issues) | Twitter @FAUOmbuds |
| [ombuds@fau.ed](mailto:ombudsman@fau.edu)u | |
| Academic Advising Services: | [http://www.fau.edu/freshmanadvisin](http://www.fau.edu/freshmanadvising)g |
| FAU Libraries Website: | [http://www.fau.edu/librar](http://www.fau.edu/library/)y |
| Center for Learning and Student Success Website: | [http://www.fau.edu/clas](http://www.fau.edu/class)s |
| University Center for Excellence in Writing: | [http://www.fau.edu/UCE](http://www.fau.edu/UCEW)W |
| Math Learning Center: | [http://www.math.fau.edu/ML](http://www.math.fau.edu/MLC)C |
| Office of Undergraduate Research and Inquiry: | [http://www.fau.edu/our](http://www.fau.edu/ouri)i |
| Office for Students with Disabilities Website: | [http://osd.fau.edu](http://osd.fau.edu/)/ |
| Office of International Programs and Study-abroad: | [www.fau.edu/goabroa](http://www.fau.edu/goabroad)d |

**Disability Policy Statement**

In compliance with the Americans with Disabilities Act (ADA), students who require special accommodation due to a disability to properly execute coursework must register with Student Accessibility Services (SAS) and follow all SAS procedures. SAS has offices across three of FAU’s campuses – Boca Raton, Davie and Jupiter – however disability services are available for students on all campuses.

**Code of Academic Integrity Policy Statement**

Students at Florida Atlantic University are expected to maintain the highest ethical standards. Academic dishonesty is considered a serious breach of these ethical standards, because it interferes with the university mission to provide a high quality education in which no student enjoys an unfair advantage over any other. Academic dishonesty is also destructive of the university community, which is grounded in a system of mutual trust and places high value on personal integrity and individual responsibility. Harsh penalties are associated with academic dishonesty. For more information, see [University](http://www.fau.edu/regulations/chapter4/Reg_4.001_5-26-10_FINAL.pdf)

[Regulation 4.001.](http://www.fau.edu/regulations/chapter4/Reg_4.001_5-26-10_FINAL.pdf)

[Plagiarism](http://owl.english.purdue.edu/owl/resource/589/1/) is unacceptable in the University community. Academic work that is submitted by students is assumed to be the result of their own thought, research, or self-expression. When students borrow ideas, wording, or organization from another source, they are expected to acknowledge that fact in an appropriate manner. Plagiarism is the deliberate use and appropriation of another's work without identifying the source and trying to pass-off such work as one’s own. Any student who fails to give full credit for ideas or materials taken from another has plagiarized. This includes all discussion board posts, journal entries, wikis, and other written and oral presentation assignments. If in doubt, cite your source!

**Religious Accommodation Policy Statement**

In accordance with rules of the Florida Board of Education and Florida law, students have the right to reasonable accommodations from the University in order to observe religious practices and beliefs with regard to admissions, registration, class attendance and the scheduling of examinations and work

assignments. For further information, please see  [Academic Policies and Regulations.](http://www.fau.edu/academic/registrar/catalog/academics.php)

**University Approved Absence Policy Statement**

In accordance with rules of the Florida Atlantic University, students have the right to reasonable accommodations to participate in University approved activities, including athletic or scholastics teams, musical and theatrical performances and debate activities. It is the student’s responsibility to notify the course instructor at least one week prior to missing any course assignment.

**Incomplete Grade Policy Statement**

A student who is passing a course, but has not completed all work due to exceptional circumstances, may, with consent of the instructor, temporarily receive a grade of incomplete (“I”). The assignment of the “I” grade is at the discretion of the instructor, but is allowed only if the student is passing the course.

The specific time required to make up an incomplete grade is at the discretion of the instructor. However, all work required to satisfy an incomplete (“I”) grade must be completed within a period of time not exceeding one calendar year from the assignment of the incomplete grade. After one calendar year, the incomplete grade automatically becomes a failing (“F”) grade.

**Withdrawals**

Any student who decides to drop is responsible for completing the proper paper work required to withdraw from the course.

**Grade Appeal Process**

A student may request a review of the final course grade when s/he believes that one of the following conditions apply:

 There was a computational or recording error in the grading.

 Non-academic criteria were applied in the grading process.

 There was a gross violation of the instructor’s own grading system.

 The procedures for a grade appeal may be found in  [Chapter 4 of the University Regulations.](http://www.fau.edu/regulations/chapter4/index.php)

**Disruptive Behavior Policy Statement**

Disruptive behavior is defined in the FAU Student Code of Conduct as *“... activities which interfere with the educational mission within classroom.”* Students who behave in the face-to-face and/or virtual classroom such that the educational experiences of other students and/or the instructor’s course objectives are disrupted are subject to disciplinary action. Such behavior impedes students’ ability to learn or an instructor’s ability to teach. Disruptive behavior may include, but is not limited to: non- approved use of electronic devices (including cellular telephones); cursing or shouting at others in such a way as to be disruptive; or, other violations of an instructor’s expectations for classroom conduct.

**Faculty Rights and Responsibilities**

Florida Atlantic University respects the right of instructors to teach and students to learn. Maintenance of these rights requires classroom conditions which do not impede their exercise. To ensure these rights, faculty members have the prerogative:

 To establish and implement academic standards

 To establish and enforce reasonable behavior standards in each class

 To refer disciplinary action to those students whose behavior may be judged to be disruptive under the *Student Code of Conduct*.

**Instructor reserves the right to adjust this syllabus as necessary.**