GISC 3300.W01 GEOSPATIAL MATHEMATICAL TECHNIQUES

Prerequisites: MATH 2413

Lecture times and location: Online

Instructor: Dr. Peter Kuntu-Mensah

Office hours: 9:00 am to 10:30 am MW, and by appointment
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COURSE DESCRIPTION

Characteristics of geographic information; overview of relevant sections of numbers, algebra and geometry; plane and spherical trigonometry; matrices, determinants and vectors; curves and surfaces; coordinate transformations; overview of basic statistics; best-fit solutions.

COURSE OBJECTIVES

1. Understand basic concepts of geographic information
2. Understand how algebra and geometry are applied to GIS
3. Understand the basic principles of plane and spherical trigonometry
4. Understand the basic concepts of coordinate transformations
5. Understand basic statistics as applied to GIS problems

REQUIRED TEXT

“Introduction to mathematical techniques used in GIS” by Peter Dale. CRC Press, 2005

COURSE REQUIREMENTS, ETC.

See attached sheets on "General Course Instructions"

GRADE

The final grade for this course will be made up from the graded marks as follows:

1. Homework assignments 25% of grade
2. Mid-semester exams 35% of grade (9/26/12; 11/14/12)
3. Final Comprehensive Exam 35% of grade
4. Class attendance 5% of grade

Final Examination will be held on Friday December 07, 2012 from 11:00 am to 1:30 pm

ONLY THE TEXTBOOK AND A CALCULATOR WILL BE ALLOWED IN THE MIDTERMS AND THE EXAMS

CHANGES MAY BE MADE BY THE INSTRUCTOR WITH PRIOR NOTICE GIVEN IN CLASS

Each mid semester exam will be based on ALL the course material covered up to the end of the class meeting prior to the exam
SYLLABUS

1. Characteristics of geographic information
2. Numbers and numerical analysis
3. Algebra – treating numbers as symbols
4. The geometry of common shapes
5. Plane and spherical trigonometry
6. Differential and integral calculus
7. Matrices, determinants and vectors
8. Curves and surfaces
9. Transformations
10. Basic statistics
11. Best fit solutions
12. Special geospatial applied statistics