Course Prefix/Number/Title: ENVT 255 - Introduction to GIS

Number of credits: 4

Course Description:
Geographic Information Systems (GIS) is a system of hardware, software, and procedures designed to support the capture, management, manipulation, analysis, modeling and display of spatially referenced data for solving complex planning and management problems. GIS applications use both spatial information (maps) and databases to perform analytical studies.

This course covers underlying geographic concepts including world coordinate systems and projections, vector map topology, tiled and layered maps, standard computer map file formats, urban applications, and emphasis will be given to natural resource applications. This course also provides computer lab tutorials and case studies using the GIS software, ArcGIS 10 from Environmental Systems Research Institute (ESRI).

Pre-/Co-requisites: None

Course Objectives:
Successful completion of this course enables students to:
. Demonstrate ability to use ArcGIS 10 Software
. Demonstrate ability to project data in the form of a map or presentation quality
. Be able to understand and describe the range of applications of GIS
. Discuss what a GIS is in terms of its components and functionality
. Identify sources of spatial data
. Plan, prepare, and carry out a GIS based investigation
. Demonstrate ability to use a standard GPS unit, including an introduction to using a Trimble unit and ArcPad.

Instructor: Kenneth C Cabarle

Office: NSC 113

Office hours: M,W,F 11:00-11:50, M,W, 2:00-2:50

Office phone: 701-228-5493

E-mail: kenneth.cabarle@dakotacollege.edu

Lecture/Lab Schedule: 3:30 - 4:20 pm on MWF

Textbook(s):

1) Getting to Know ArcGIS 10 Desktop (new copy required) ISBN: 9781589482609
   Software – ArcGIS 10 (included)

2) Geographic Information Systems Applications in Natural Resource Management. Second
   Edition. Michael Wing and Pete Bettinger. Oxford University Press. ISBN:
   9780195426106

Course Requirements: Students are required to complete in class assignments, answer questions from the text, complete lab assignments where they develop maps and answer questions regarding GIS applications in the real world.

Grading Scale: The grading scale is listed below.

Percentage Grade

90 - 100 A
80 - 89 B
70 - 79 C
60 - 69 D
< 60 F

Tentative Grade Allocation:

Homework   ~200

Projects   ~400

Midterm Exam   ~50

Final Exam   ~100

Tentative Course Outline:
1. An overview of Geographic Information Systems (GIS)
2. GIS and GPS hardware
3. GIS terminology
4. Planning and implementing a GIS project
5. Comparison of Geographic Information Systems
6. Map classifications and design
7. Map projections, datums, coordinate systems, structures and scale
8. Review of current GIS & GPS issues and events
9. Legal issues concerning GIS digital data bases
10. Data collection; sources, accuracy and error propagation
11. Integration of Global Positioning Systems (GPS) field measurements into
    GIS databases
12. Data transfer/exchange among GIS platforms
13. Databases and Database Management Systems (DBMS)

14. Data structure, and file management

Student E-mail Policy:
Dakota College is increasingly dependent upon e-mail as an official form of communication. A student's campus assigned e-mail address will be the only one recognized by the campus for official mailings. The liability for missing or not acting upon important information conveyed via campus e-mail rests with the student.

Relationship to Campus Theme:
This course addresses the campus theme by incorporating GIS computer technologies, applied natural resource management and GPS data collection technologies that are used to develop natural resource management plans.

Classroom Policies
1) Cell phones, iPods, and related technology are prohibited in the classroom at all times. It is recommended that you do not bring your cell phone into the classroom or, at the very least, turn it off.
2) Food and beverages are permitted in accordance with IVN classroom policy.
3) Be respectful of other students, technicians, instructors, and guests.

Academic Integrity
All students are expected to adhere to the highest standards of academic integrity. Dishonesty in the classroom or laboratory and with assignments, quizzes and exams is a serious offense and is subject to disciplinary action by the instructor and college administration. For more information, refer to the Student Handbook.

Disabilities and Special Needs
If you have a disability for which you are or may be requesting an accommodation, you are encouraged to contact your instructor and Jan Nahinurk in the Learning Center (228-5479) as early as possible during the beginning of the semester.