DATE SUBMITTED
DATE DICC APPROVED  12/15/09  DATE LAST REVIEWED  Oct. 7, 2009

CATALOG INFORMATION FORM

DISCIPLINE
Geography

COURSE TITLE
GIS Database and Design

CR. HR.  3  LECT HR.  3  LAB HR.  CLIN/INTERN HR.  CLOCK HR.

CATALOG DESCRIPTION

Concepts of geo-database design and management in geographic information systems (GIS), SQL statements, geographic data types and functions, data entry, techniques of geographic information structure in indexing, querying techniques, searches, and spatial analysis, creation, and use of metadata real-world applications.

PREREQUISITES

GEOG 120

EXPECTED STUDENT OUTCOMES IN THE COURSE (ESO)

Upon completion of this course, the student will be able to:

1. Develop a geodatabase schema.
2. Identify relevant data for entry.
3. Use a structured query language methodology.
4. Employ appropriate geographic data types and functions.
5. Apply geographic information structure, indexing, and relational techniques.
6. Utilize proper data collection, verification, entry, editing, and maintenance procedures.
7. Demonstrate querying techniques, searches, and spatial analysis.
8. Create and use metadata.
GENERAL EDUCATION OUTCOMES (ESO)

Specify which general education outcomes, if any, are substantially addressed by the course. Numbers in parentheses identify the Expected Student Outcomes linked to the specific General Education Outcome.
PROGRAM-LEVEL OUTCOMES

CAREER AND TECHNICAL EDUCATION PROGRAM OUTCOMES
Specify which Career and Technical program outcomes, if any, are substantially addressed by the course by completing the “Career and Technical Education template” to show the relationship between course and program outcomes to assessment measures.

1. Demonstrate the ability to learn and apply required GIS software to solve problems or analyze geospatial data.
2. Demonstrate critical thinking skills and recognize issues related to GIS applications.
3. Acquire, modify, organize, and apply geospatial data sets.

CLASS-LEVEL ASSESSMENT MEASURES
Student accomplishment of expected student outcomes will be assessed using the following measures. (Identify which measures are used to assess which outcomes.)

1. Written tests and/or quizzes (1-8)
2. Class activities (4-8)
3. Projects (1-8)
COURSE OUTLINE FORM

DISCIPLINE: Geography
COURSE TITLE: GIS Database and Design

Individual instructors may order this outline as fits the needs of their individual courses. In addition, they may place more emphasis on some areas than on others. What is assured is that this particular list is covered in the course. Other topics may be added to a course as the instructor sees fit, and as time and interest allow. An *asterisk can be used to mark an item as optional.

I. Review elements of GIS
   A. Applications of GIS
   B. Sources of information on GIS
   C. Features

II. The geodatabase
    A. Geographic data formats
    B. Evaluating quality of data
    C. Loading and serving geographical data
    D. Query language

III. Field-based databases
    A. Raster data formats
    B. Representing geographic space
    C. Attributes
    D. Raster compression techniques

IV. Object-based databases
    A. Identification of objects and classes
    B. Representing geographic space
    C. Vector modeling
    D. Topology

V. Relational databases
    A. Tables
    B. Joins and relationships
    C. Analyzing geographic problems

VI. Metadata
    A. Major features of the US federal geographical data committee’s content for digital geospatial metadata and other standards
    B. Collection-level metadata
C. Editing metadata
D. Importing and exporting metadata
E. Creating metadata

VII. Querying techniques
A. Searches by attribute
B. Searches by geography
C. Spatial analysis
D. Choosing the appropriate GIS software

VIII. Database design
A. Conceptual stage
B. Logical stage
C. Physical

IX. Geodatabase management
A. Accuracy and uncertainty tolerance
B. Editing
C. Indexing
D. Transactions

I. X. Practical application of design principles