Fond du Lac Tribal and Community College

COURSE OUTLINE

I. Catalog Information

A. Title of Course: Introduction to Global Positioning Systems (GPS)

B. Course Designator: GEOG/PE 1054

Additionally cross-listed as PE course/credit

C. Number of Credits: Lecture Lab 1

D. Control Number: 20

E. Catalog/Course description:
This course will give students knowledge of the Global Positioning System (GPS), with both conceptual and hands-on applications. GIS software and real-world applications will also be introduced.

F. Course prerequisites: None

G. Date Approved: 01/25/08

Date Revised: 03/06/09, 08/17/10

II. Course Materials (Recommended course materials and resources. List all that apply, e.g. textbooks, workbooks, study guides, lab manuals, videos, guest lecturers)

Please note: All resources listed are subject to change on a semester basis based on the availability of up-to-date and applicable resources. Please check with instructor to verify resources listed herein.

Textbook:

Additional Resources:
Supplemental articles available via D2L
Hand-held GPS receivers (Supplied by Geography Department – Garmin Map 76S model)
PC Lab (Room 208) with MN DNR Garmin software installed
Outdoor activities locally and within Jay Cooke State Park

III. Learning Goals, Outcomes, and Assessment

Minimum of one goal and two learning outcomes in each competency. If your course does not meet one of the Competencies Across the Curriculum, please justify your rationale. Minimum of two assessment measures for each learning outcome. Add other goals and outcomes as needed. If this course is part of the Minnesota Transfer Curriculum (MnTC), attach the MnTC goals, outcomes, and your assessment measures to this form; if possible, use them to complete the information below.

A. Information Literacy (the ability to use print and/or non-print tools effectively for the discovery, acquisition, and evaluation of information as well as core computer tools for the manipulation and presentation of information.)

1. Learning Goals:
   Goal: To successfully navigate the D2L interface and take advantage of its functionality
   Goal: To successfully operate a hand-held GPS receiver
   Goal: To successfully integrate GPS data into a GIS

2. Learning Outcomes and Assessments:
   Outcome: Demonstrate the ability to upload assignments
   Assessments: Laboratory exercises and project
   Outcome: Demonstrate the ability to find course information and assignments
   Assessments: Attendance and laboratory exercises
   Outcome: Demonstrate the ability to complete online tasks
   Assessment: Quiz and article evaluation
Outcome: Demonstrate the ability to navigate to and from coordinates
Assessments: Laboratory exercises and field exam
Outcome: Demonstrate the ability to access functions and change settings on the receiver, such as the datum
Assessments: Laboratory exercises and field exam
Outcome: Demonstrate the ability to download data from a hand-held GPS receiver
Assessments: Laboratory exercises and project
Outcome: Demonstrate the ability to upload positional data into a GIS
Assessments: Laboratory exercises and project

B. Ability to Communicate (the ability to listen, read, comprehend, and/or deliver information in a variety of formats.)

1. Learning Goals:
   Goal: To read maps

2. Learning Outcomes and Assessments:
   Outcome: Demonstrate the ability to locate things using maps
     Assessments: Laboratory exercises and field exam
   Outcome: Demonstrate the ability to navigate using a map
     Assessments: Laboratory exercises and field exam

C. Problem Solving (the ability to conceptualize, apply, analyze, synthesize, and/or evaluate information to formulate and solve problems.)

1. Learning Goals:
   Goal: Combine locational awareness with navigational obstacles

2. Learning Outcomes and Assessments:
   Outcome: Calculate tangible distance units from coordinates provided
     Assessments: Laboratory exercises and field exam
   Outcome: Demonstrate the ability to navigate safely around physical obstacles present
     Assessments: Laboratory exercises and field exam

D. Culture (knowledge of Anishinaabe traditions and culture, knowledge of one’s own traditions and culture, knowledge of others’ traditions and cultures, and/or respect for global diversity.)

1. Learning Goals:
   Goal: Understand and respect different perspectives on land and its use

2. Learning Outcomes and Assessments:
   Outcome: Identify the property ownership boundaries and respect them
     Assessments: Laboratory exercises and exam
   Outcome: Demonstrate the ability to examine the physical landscape from different perspectives
     Assessments: Laboratory exercises and Reflection Journal

E. Spatial Thinking (the ability to visualize and analyze the spatial relationships between objects using one or more of the eight fundamental spatial thinking skills: analogy, association, aura, comparison, hierarchy, pattern, region, transition.)

1. Learning Goals:
   Goal: To build awareness of the nature of the place being traversed

2. Learning Outcomes and Assessments:
   Outcome: Demonstrate the ability to relate physical activity limitations to that of the terrain being traversed
Assessments: Laboratory exercises and field exam
Outcome: Recognize the presence of sensitive physical environments and avoid traversing through them
Assessments: Laboratory exercises and field exam

Documentation for MnTC - None

IV. Course Content (Outline the major topics covered in this course.)
1. GPS Concepts-Satellites and the Department of Defense
2. GPS Positioning Modes
3. Differential Corrections-Accuracy
4. Selective Availability-Accuracy
5. Pros and Cons of GPS
6. Datums, Coordinate Systems, and Map Projections
7. Who uses GPS and what are they using it for? (GPS Applications)
8. Hands-on operation of a GPS unit
9. Integrate position data collected with a GPS unit with GIS software

(revised October 2009)