GIS 150  Introduction to GIS/GPS

03  
Tuesday: 1:30-4:00pm (CRN: 62200)

INSTRUCTOR:  Toshi Ikagawa, Ph.D.
OFFICE:  Na’auao 116
OFFICE HOURS:  MTWR: 11:30 a.m.–1:00 p.m.
TELEPHONE:  236-9216; ikagawa@hawaii.edu
EFFECTIVE DATE:  Fall 2009

WINDWARD COMMUNITY COLLEGE MISSION STATEMENT

Windward Community College is committed to excellence in the liberal arts and career development; we support and challenge individuals to develop skills, fulfill their potential, enrich their lives, and become contributing, culturally aware members of our community.

CATALOG DESCRIPTION

This is an introductory course in the applications of geographic information systems (GIS) with a special emphasis on using ArcView GIS. It includes database construction and techniques for spatial data manipulation, analysis and display. Students will also gain basic experience with the use of Global Positioning System (GPS). Applications will be cross disciplinary in nature, including such fields as the environmental sciences, business marketing, geopolitical demography, health/epidemic monitoring and real estate management.

Activities Required at Scheduled Times Other Than Class Times

None

STUDENT LEARNING OUTCOMES

At the completion of the course, the student should learn to:

1. Use basic ArcGIS desktop software functions such as displaying, modifying, and analyzing maps. (Knowledge & application; assessed by lab exercises and the capstone project)

2. Independently plan, organize, and present a GIS research project (Application, synthesis and analysis; assessed by the capstone project)

3. Use a GPS unit to find locations, and import obtained GPS data into ArcGIS for further investigations. (Knowledge and application; assessed by a quiz and lab exercises; and possibly assessed by the capstone project)
REQUIREMENTS COURSE SATISFIES

At WCC: Social Sciences
Academic Certificate: Bio-Resource & Technology (elective)
Certificate of Competence in GIS/GPS

At UHM: Meets Social Science general education requirements (DS).

PREREQUISITES/COREQUISITES

None, however, familiarity with basic computer operations and databases highly recommended.

RECOMMENDED BASIC SKILLS LEVEL

Familiarity with basic computer operations and databases

LEARNING RESOURCES

Textbooks:

(1) *Getting to know ArcGIS desktop*, 2nd Ed. (by ESRI Press)
   Required reading – available at the WCC Bookstore

   Required reading – available online

(3) *GPS: A Guide to the Next Utility* (by Jeff Hurn)
   Optional reading – available at the WCC Library

Data required:

(1) GIS 150 Class Data: http://www.wcc.hawaii.edu/facstaff/ikagawa-t/GIS150.zip

METHOD OF INSTRUCTION

Lecture and lab exercise

ASSESSMENT TASKS AND GRADING

Student Evaluation:

Evaluation will be based on a total of 150 points allocated as follows:

! Samples of a reading assignment, lab exercise report and semester project report are available on the GIS150 Examples page
They are also accessible from the Laulima (https://laulima.hawaii.edu/portal).

1. Lab Assignments (60 pts)

Twelve (12) computer assignments (5 pts each) will be distributed during this course. Each assignment must be completed by the due date (See GIS 150 Schedule below). A penalty loss of 1 point per day will be assessed for all late assignments.

See an example on Examples page.

Each completed assignments MUST be saved on the Laulima Assignments page indicated by the instructor. It is highly recommended that students also save a copy of each assignment on their own personal floppy disk/CR-RW.

2. Attendance/Participation (10 pts)

Attendance is mandatory and your participation will be also assessed by the instructor. Students missing class regularly (i.e. more than 10% of classes), thus missing lectures and lab exercises, cannot be assessed for SLO’s and therefore will not be able to pass the course.

3. Preparation (20 pts)

There are ten (10) reading assignments (2 points each) from the textbook (one to three chapters; see the schedule below). Before each class, a student must submit a word document that contains screenshot of each exercise’s final screen, as a proof of preparation (that is, s/he completed all the exercises of the assigned chapters).

Each completed preparation files MUST be saved on the Laulima Assignments page indicated by the instructor. It is highly recommended that students also save a copy of each assignment on their own personal computer or floppy disk, etc. A penalty loss of 1 point per day will be assessed for all late assignments.

4. Quiz (25 pts)

A quiz on “Basic GPS” will be given based on the required reading materials (http://www.trimble.com/gps/index.shtml).

5. Semester Project (35 pts)

Project Content and Product (25 pts): Evaluation will be based on the degree to which the project successfully addresses its goal(s), includes the prerequisite GIS/GPS elements (as defined below) and is displayed in an appropriate and esthetically viewable manner. A penalty loss of 1 point per day will be assessed for all late assignments.
See an example on Examples page.

**Class Presentation** (10 pts): Each project must be presented to the class on the WebCT (Student Homepage). Each student must complete a GIS project on a real world problem using the skills and tools presented in this course. Two (2) students working on a single project may be permitted by the instructor only under exceptional circumstances. For team projects, each student will be awarded the same team score.

Each project must:

- Be approved by the instructor and consist of one (1) or two (2) well-defined goals (Lab exercises are good examples).
- Contain a data frame (map display) with at least three (3) **layers**
- **Layout view**, with label(s), table(s), and appropriate text, scale, north arrow, etc., that includes all of the following five (5) GIS/GPS components:
  1) GPS data collection (simulated data acceptable with instructor approval)
  2) Appropriate attribute tables (including both numerical and string fields)
  3) Image (either scanned images or digital photos)
  4) Appropriate *Table of Contents* legends and symbols
  5) Graphics (chart)

**IMPORTANT NOTE:**

*Semester project* will be used to evaluate each student’s **comprehensive** achievement of course objectives listed above. Students who do not complete the semester project cannot be assessed for these objectives and therefore will NOT be able to pass the course.

**SUMMARY OF ASSIGNMENT TASKS**

<table>
<thead>
<tr>
<th>Subject</th>
<th>Evaluation</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Attendance/Participation</strong></td>
<td>Attendance is mandatory and your participation will be also assessed by the instructor.</td>
<td>1 pt x 10 = 10 pts</td>
</tr>
<tr>
<td><strong>Preparation:</strong> Complete the assigned reading of the textbook and turn in your results (<em>Laulima</em> submission)</td>
<td>Screenshots of all exercises</td>
<td>2 pts x 10 = 20 pts</td>
</tr>
<tr>
<td><strong>Lab Assignments:</strong> Complete the lab assignment, and submit the Lab Report (<em>Laulima</em> submission)</td>
<td>Answer all report questions.</td>
<td>5 pts x 12 = 60 pts</td>
</tr>
<tr>
<td><strong>GPS Quiz</strong></td>
<td>Go to a testing center, and take the quiz. Not accessible at home.</td>
<td>25 pts</td>
</tr>
<tr>
<td>Semester Project Presentation:</td>
<td>In class presentation</td>
<td>10 pts</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>-----------------------</td>
<td>--------</td>
</tr>
<tr>
<td>Present the semester project</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Semester Project Report:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Complete the Semester Project</td>
<td>Completed semester</td>
<td>25 pts</td>
</tr>
<tr>
<td>Report (Laulima submission)</td>
<td>project and self-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>evaluation</td>
<td></td>
</tr>
<tr>
<td><strong>Total points possible</strong></td>
<td></td>
<td>150 pts</td>
</tr>
</tbody>
</table>

**Course Grading Method:**

Each letter grade and its respective level of achievement is provided in the following table:

**Letter GradeDefinition**

- **A** .......... 90 – 100% of cumulative points possible
- **B** .......... 80-89% of cumulative points possible
- **C** .......... 70-79% of cumulative points possible
- **D** .......... 60-69% of cumulative points possible
- **F** .......... <60% of cumulative points possible
- **I** .......... Incomplete is a temporary grade given at the instructor’s discretion when a student has failed to complete a small portion of a course because of circumstances beyond the student’s control. All required work must be completed by the last day of instruction of the succeeding semester.
- **Cr** .......... Achievement of objectives at the C level or higher
- **NC** .......... Achievement of objectives at less than C level or higher (formal administrative grade)
- **N** .......... N grade will not be granted in this class
- **W** .......... Official withdrawal occurs after the 3rd week of a 16 week course and prior to the end of the 10th week. If a student officially withdraws by the end of the 3rd week of a 16 week course, the record of registration in this course does not appear on the student’s transcript.

**Academic dishonesty:** (SERIOUS WARNING!!)

Academic dishonesty such as cheating and plagiarism that may occur in this class will be severely punished. It most likely will result in immediate dismissal from the class. In other words, “DON’T DO IT” even if you have noble reasons to do so. It is NOT worth a try it in this class.

**NOTE:**

1. There is NO extra credit work.
2. There will be no makeup exams.
COURSE CONTENT

GIS 150 Schedule (13-week schedule)

<table>
<thead>
<tr>
<th>WK</th>
<th>Lecture Topic</th>
<th>HW</th>
<th>Textbook (Chapter)</th>
<th>Lab</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Introduction/syllabus</td>
<td>1</td>
<td>1 &amp; 2</td>
<td></td>
<td>9/8</td>
</tr>
<tr>
<td>2.</td>
<td>Display data</td>
<td>2</td>
<td>3 &amp; 4</td>
<td>1</td>
<td>9/15</td>
</tr>
<tr>
<td>3.</td>
<td>Getting Information</td>
<td>3</td>
<td>5, 6 &amp; 7</td>
<td>2</td>
<td>9/22</td>
</tr>
<tr>
<td>4.</td>
<td>GPS Exercise</td>
<td>4</td>
<td>8 &amp; 9</td>
<td>(GPS/GIS)</td>
<td>9/29</td>
</tr>
<tr>
<td></td>
<td>GPS (Trimble)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Georeferencing</td>
<td>5</td>
<td>10 &amp; 11</td>
<td>3</td>
<td>10/6</td>
</tr>
<tr>
<td>6.</td>
<td>Geocoding (Address Locator)</td>
<td>6</td>
<td>12 &amp; 13</td>
<td>4</td>
<td>10/13</td>
</tr>
<tr>
<td>7.</td>
<td>Editing Data</td>
<td>7</td>
<td>14 &amp; 15</td>
<td>6</td>
<td>10/20</td>
</tr>
<tr>
<td></td>
<td>Quiz: GPS (Starts)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>X-Y data</td>
<td>8</td>
<td>16 &amp; 17</td>
<td>7</td>
<td>10/27</td>
</tr>
<tr>
<td>9.</td>
<td>Analyzing and Presenting</td>
<td>9</td>
<td>18 &amp; 19</td>
<td>8</td>
<td>11/3</td>
</tr>
<tr>
<td>10.</td>
<td>Quiz: GPS (Ends)</td>
<td>10</td>
<td>20</td>
<td>9</td>
<td>11/10</td>
</tr>
<tr>
<td>11.</td>
<td>Summary</td>
<td></td>
<td></td>
<td>10</td>
<td>11/17</td>
</tr>
<tr>
<td>12.</td>
<td>Your own project (Thanks Giving)</td>
<td></td>
<td></td>
<td>11</td>
<td>11/24</td>
</tr>
<tr>
<td>13.</td>
<td>Semester project Presentation</td>
<td></td>
<td></td>
<td>12</td>
<td>12/1</td>
</tr>
<tr>
<td></td>
<td>Semester Project Due</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

NOTE: Schedule/subjects may change without prior notice.

WCC DISABILITIES ACCOMMODATION STATEMENT

If you have a physical, sensory, health, cognitive, or mental health disability that could limit your ability to fully participate in this class, you are encouraged to contact the Disability Specialist Counselor to discuss reasonable accommodations that will help you succeed in this class. Ann Lemke can be reached at 235-7448, lemke@hawaii.edu or you may stop by Hale 'Akoakoa 213 for more information.

ADDITIONAL INFORMATION

Legal assumptions:

It is hereby assumed that you will strictly follow all and any reasonable procedures/ethics, etc. that are enforced in this academic institution.