

1. Course Title (Course Code)

Geographic Information System (2277)

2. Instructor

Kazuyo Hirose

3. Term

Fall 3

4. Outline and Objectives

In this class, student learns the fundamentals of remote sensing and GIS techniques, and the utilization of free satellite and GIS data with open source software “Quantum GIS (QGIS)”. Also student learns the basic technique for the field survey with GPS device through the short field trip.

5. Goals (Attainment Targets)

- (1). To understand the basics of remote sensing and GIS
- (2). To utilize and analyze satellite/ GIS datasets by open source software “QGIS”
- (3). To conduct field verification survey (i.e. to prepare a field map, to get coordinates by portable GPS device, to compare the field condition with satellite images and others)

6. Correspondence relationship between Educational goals and Course goals

Educational goals			Course goals
High level ICT skill	Basic academic skills		(1), (2)
	Specialized knowledge and literacy		(2), (3)
Human skill (Tankyu skill)	Ability to continually improve own strengths		(2), (3)
	Ability to discover and resolve the problem in society	Problem setting	
		Hypothesis planning	
		Hypothesis testing	
		Practice	(2), (3)
	Fundamental Competencies for Working Persons	Ability to step forward	
		Ability to think through	(2), (3)
		Ability to work in a team	
Professional ethics			

7. Course Requirements

Basic skills of Windows PowerPoint, Excel, Word and etc.

8. Textbooks

Tutorial manuals will be provided.

9. Reference Books

None.

10. Evaluation

Goals	Evaluation method & point					
	term-end exam	quiz	report	presentation	deliverable	other
(1)			○	○		
(2)			○	○		
(3)			○	○		
Allocation			50	50		

Course Schedule

(Notice) This schedule is a tentative plan; there might be changes, additions, and revisions etc. at the time of delivering the course.

Lesson 1: Fundamentals of remote sensing and GIS

(Lecture, 90 min.)

Student learns the fundamentals of remote sensing and GIS.

Lesson 2: Examples of remote sensing and GIS

(Lecture, 90 min.)

Student learns applications of remote sensing and GIS through case studies on mineral and oil gas resources, forestry, agriculture, climate changes and disasters.

Lesson 3: Installation of QGIS and download satellite / GIS datasets

(Exercise, 90 min.)

Student learns how to install QGIS, how to download various free satellite / GIS datasets.

Lesson 4 - 5: Basic manipulation of QGIS

(Exercise, 180 min.)

Student learns how to import satellite data, GIS datasets to QGIS. Also student learns to create vector data (Point, Line and Polygon).

Lesson 6: Topographic analysis

(Exercise, 90 min.)

Student creates various images of slope, aspect, hill-shade, relief by topographic analyses.

Lesson 7: Georeferencing

(Exercise, 90 min.)

Student learns to import scanned images to QGIS using geo-reference function so that printed or scanned images are superimposed on QGIS.

Lesson 8: Preparation of the map for short field trip

(Exercise, 90 min.)

Student prepares the map for the short field trip. It is composed of satellite image with grids, vector layers, legend, scale and etc.

Lesson 9 - 11: Field survey

(Exercise, 270 min.)

Student goes out to the field for obtaining coordinates, to observe ground conditions so that satellite images is verified with the field information.

Lesson 12 - 13: Integration of field data with various geospatial datasets

(Exercise, 180 min.)

Student learns how to import GPS data, an excel spread sheet and to summarize field survey data.

Lesson 14: Preparation of presentation material, question and answer

(Discussion, 90 min.)

Student prepares a presentation material to explain the achievement from the course, future plan and etc.

Lesson 15 - 16: Presentation and Summary

(Presentation, 180 min.)

Presentation material and explanation of the achievement are evaluated and future plan is discussed.