



GEOG 105 – SYLLABUS and COURSE DEVELOPMENT

ENVIRONMENTAL
TECHNOLOGY

GEOG 105E

Introduction to Mapping, GPS, Remote Sensing and GIS
Winter 2014

3 CREDITS

3 HOURS LECTURE
3 HOURS LAB PER WEEK

INSTRUCTOR: James Hood

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OFFICE NUMBER: S209a

OFFICE HOURS:

Tuesday 6:00- 6:30pm and by appointment
Thursday 6:00- 6:30pm and by appointment

HOURS OF INSTRUCTION

Tuesday 6:30-9:30 pm Room 282
Thursday 6:30-9:30 pm Room 282

COURSE DESCRIPTION

GEOG 105 introduces students to science, technology, and applications of geographic information systems (GIS) using geospatial technologies (including data obtained via GPS and remote sensing). This course will provide students with an introduction to a wide variety of geospatial tools and techniques. Spatial analysis of environmental related datasets will be completed using the ESRI suite of software (ArcGIS Desktop). The use of GPS technology allows users to locate real world objects and positions accurately and efficiently. This course will examine how data is created using GPS, and subsequently used for mapping and analysis. The various data types commonly used in GIS will be discussed and used in lab work. This course also covers mapping and projection systems used universally, though emphasis will be placed on the Regional Municipality of Wood Buffalo and the Oil and Gas Sector. This course will concentrate on practical applications but some understanding of basic principals is essential. Lab work will cover a broad spectrum of GIS applications to provide a solid base of understanding for students entering the work force.

COURSE OUTCOMES:

The student will be able to:

- Understand and effectively use GIS technologies with emphasis on ESRI's ArcGIS Desktop.
- Understand topographic maps, map scales, symbols, and projection systems.
- Understand GPS and GIS data, and how to utilize it in analysis and in mapping.
- Understand and work with thematic maps and cartographic principles.
- Work directly with remotely sensed images, and create useable data.
- Understand the basic principles of remote sensing.
- Discuss GIS components and functionality,
- Understand GIS and its applications at work, as well as in everyday life.

REQUIRED RESOURCES:

The main text book required for this course is:

Geographic Information Systems and Science. Paul. A. Longley, Micheal F. Goodchild, David , Maguire and David W. Rhind, 3rd Edition.

There will be additional resources available through the public domain. These will be made available to the students in digital format as required.

TOPICS TO BE COVERED

Please note: This course outline may be modified to facilitate unforeseen circumstances or time constraints.

The date and time allotted to each topic is subject to change.

Week	Main Topic	Subtopics	References
1 Jan 7-9	Introduction to GIS and Geomatics	GI Systems, Science and Technologies. What is GIS. Nature of Information. History of GIS. Applications.	Longley et al. (2005). Chapter 1 and 2. Jian Guo Liu et al. (2009). Chapter 11.
2 Jan 14-16		Introduction to ESRI ArcGIS and GIS Data Management	What is ArcGIS? , ESRI 2001-2008 publications. Getting to Know ArcGIS Desktop by Tim Ormsby et al.2001
3 Jan 21-23		Representing Geography and Nature of Geographic Data,	Longley et al. (2005). Chapter 3, 4, 12
4 Jan 28-30	Geographic Concepts for GIS	Cartography as Related to GIS	TBD
5 Feb 4-6		Georeferencing, Ellipsoids and Reference Systems	Longley et al. (2005). Chapter 5
6 Feb11-13		GIS Data Collection and Capture	Longley et al. (2005). Chapter 9
7 Feb18-20		Global Positioning and Systems and Data	Longley et al. (2005). Chapter 5
8 Feb24-28		Reading Week	
9 Mar 4-6	GIS Database and SQL	Creating and Maintaining Geographic Database, Query, Data Analysis, Data Display	Longley et al. (2005). Chapter 10
10 Mar11-13	GIS Software and Data Mining	GIS software, Spatial Data Mining, Web based resources, and data online	Longley et al. (2005). Chapter 7
11 Mar18-20	GIS Data Models	Vector GIS and Capabilities	Longley et al. (2005). Chapter 8
12 Mar25-27		Raster GIS and Capabilities	Longley et al. (2005). Chapter 8
13 Apr1-3	Remote Sensing and Image Processing	Introduction to Remote Sensing and remotely sensed data Image processing and Operations	NRCAN Tutorial -Fundamentals of Remote Sensing. Jian Guo Liu et al. (2009). Chapter 19
14 Apr 8-10	Application of Geomatics	Case studies, applications and relevance to natural resources management. Future of GIS	TBD
15 Apr15-17	Review	Overall review of lectures, labs and concepts.	

EVALUATION:

Please note: It is a requirement that all assignments and tests must be submitted as a condition to passing this course.

Evaluation Method	Percentage	Due Date
Lab Assignments	50% (10% each)	End of Weeks 2, 5, 9, 11, 14
Mid Term	20%	End of Week 7
Final Exam	30%	Tuesday April 22

GRADING SYSTEM:

Letter Grade	Description	Grade Points
A+		4
A	Excellent	4
A-		3.7
B+		3.3
B	Good	3
B-		2.7
C+		2.3
C	Satisfactory	2
C-		1.7
D+		1.3
D	Minimal Pass	1
F	Failure	0

If all assignments are not completed the student will receive a grade of F.

Students should consult:

<http://www.keyano.ca/Academics/Examinations>

IMPORTANT DATES:

January 10, 2014	Courses dropped after this date will be designated "W". (A withdrawal (W) is not reflected in your GPA)
TBA	Mid-term examination
March 7, 2014	Courses dropped after this date will be designated "WF". (A withdrawal failure (WF) counts as a 0 in your GPA calculation)
April 17, 2014	Last day of classes
April 22, 2014	Final Exams

COLLEGE POLICIES

Equality, Equity and Respect

The Keyano College is committed to providing an environment of equality, equity and respect for all people within the College community. All members of this community are considered partners in developing teaching and learning contexts that are welcoming to all. Faculty, staff, and students are encouraged to use inclusive language to create a classroom atmosphere in which students' experiences and views are treated with equal respect and valued in relation to their gender, ethnic and cultural background, and sexual orientation.

Students should consult:

<http://www.keyano.ca/StudentLife/StudentConduct/IndividualRightsPolicy>

Plagiarism and Cheating

Every student expects to be treated and evaluated fairly in a course. Plagiarism and cheating robs everyone of this right.

No student may submit words, ideas or data of another student or person as his or her own in any writing, project, assignment, quiz, electronic presentation, exam etc. Any work used that is not the student's own must be clearly cited as belonging to someone else. There are penalties for using other's work and not citing it. The Student's Rights & Responsibilities document clearly outlines these penalties and the appeal process.

- No learner can obtain information from another student during an exam.
- No learner can bring unauthorized information (paper or electronic) into an exam or quiz.
- No student can submit work done in another course for grading in this course without the written prior approval of the course instructor.
- No student can submit copyright protected or commercially produced materials as part or all of an assignment without proper citation & permission.

Student Rights & Responsibilities

Students should consult the Keyano College Credit Calendar or online at:

<http://www.keyano.ca/Academics/CreditCalendar>

Specialized Supports and Duty to Accommodate

Disability Support Services: Learner Assistance Program

If you have a documented disability or you think that you would benefit from some assistance from a Disabilities Counsellor, please call or visit the Disability Supports Office 780-792-5608 to book an appointment (across from the library). Services and accommodations are intended to assist you in your program of study, while maintaining the academic standards of Keyano College. We can be of assistance to you in disclosing your disability to your instructor, providing accommodations, and supporting your overall success at Keyano College.

Specialized Supports and Duty to Accommodate

Specialized Support and Duty to Accommodate are aligned with the office of Disability Support Services: Learner Assistance Program (LAP) guided by federal and provincial human rights legislation, and defined by a number of Keyano College policies. Keyano College is obligated by legislation to provide disability-related accommodations to students with identified disabilities to the point of undue hardship.



Course Outline

**ENVIRONMENTAL
TECHNOLOGY**

GEOG 105E

**Introduction to Mapping, GPS, Remote Sensing and GIS
Winter 2014**

3 CREDITS

**3 HOURS LECTURE
3 HOURS LAB PER WEEK**

3 CREDITS

6 HOURS PER WEEK

James Hood, Instructor

Date

Reviewed and approved by:

Louis Dingley, Chairperson

Date

Guy Harmer, Dean

Date