



**COURSE OUTLINE**

**GEOG 250**

**Introduction to  
Geographic Information  
Systems**

**45 HOURS  
3 CREDITS**

PREPARED BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
Simon Lapointe & Adam Roth, Instructor

APPROVED BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
Shelagh Rowles, Dean

**YUKON COLLEGE**

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Course Outline prepared by Dave Rogers 2010.

Yukon College  
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**GEOG 250: INTRODUCTION TO GEOGRAPHIC INFORMATION SYSTEMS (GIS)**

Instructors :

Simon Lapointe (Lecture)

[smnlapointe@gmail.com](mailto:smnlapointe@gmail.com)

Classes:

Monday

Time:

6:30-9:30 pm

Mobile: 335-2506

Room A2601

Adam Roth

[adamjohnroth@gmail.com](mailto:adamjohnroth@gmail.com)

Lab:

Wednesday

Time:

6:00-9:00 pm

Room:

A2702 (Computer Lab)

Tutorial:

Monday

Time:

5:00-6:30 pm

Room:

A2704 (Computer Lab)

**COURSE DESCRIPTION**

This course provides an introduction to the fundamental theories and concepts of Geographic Information Systems (GIS). The course content will include data input, storage and editing, spatial data structures, analytical functions of a GIS, data output, management of GIS, and applications of GIS. Laboratory exercises will complement the theory presented in the lectures. Participants will use a commercial GIS software product (ArcGIS) and gain a reasonable proficiency with that package.

**COURSE TRANSFER**

SFU GEOG 3XX (3)

UBC GEOG 200 level (3)

UNBC GEOG 300 (3)

UVIC GEOG 200 level (1.5)

TRU GEOG 275 (3)

TWU GEOG 390 (3)

For current information on course transferability see <http://www.bctransferguide.ca/>

**COURSE PREREQUISITES**

- Broad working experience with the Windows operation environment on PCs and regular use of Windows based software applications.
- Understanding of mapped data through course work or experience with geographically referenced data

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- Basic understanding of statistics

*Note: students are encouraged to discuss their preparedness for this course with either instructor, but they can select themselves into the course if this is the only course they will take.*

### **LEARNING OUTCOMES**

After successfully completing this course the student will:

- understand how spatial data is input and analyzed in the GIS environment
- have a basic understanding of the nature of spatial data
- gain proficiency with a commercial GIS software package
- be familiar with the issues related to implementing and managing GIS technology

### **COURSE FORMAT (3-3)**

The course will consist of 1 weekly lecture of 3 hours and 1 weekly lab (3 hours). Where appropriate, the lectures will be supplemented by videos, class discussions, and technical demonstrations.

Field trips to local GIS facilities may be scheduled during the term.

### **REQUIRED LAB**

There is a scheduled 3 hour lab period per week. The laboratory exercises will take up a considerable amount of time and will require work outside of the scheduled lab hours, particularly for those students without any experience with GIS software. ArcINFO software version 9.3 is used to complete all lab assignments.

### **TUTORIAL / OPTIONAL LAB**

A 2-hour optional lab time is scheduled each week in which students can continue to work on their weekly laboratory assignment with the assistance of a lab instructor.

### **ATTENDANCE**

Attendance of lectures and labs is mandatory. A student may be dismissed from the course after being absent for more than 10% of the scheduled hours. Unauthorized absence for a lab period will normally result in a zero mark for that lab.

### **EVALUATION**

Participants must pass BOTH the Lab and Lecture component in order to receive a passing grade for the course. There will be a two assignments and a final examination in the course. The laboratory mark will be based on participation and on weekly assignments (see the lab outline for more info). The course grade will be arrived at as follows:

<b>Mid Term</b>	<b>25%</b>
<b>Quiz</b>	<b>10%</b>
<b>Labs</b>	<b>35%</b>
<b>Final Exam</b>	<b>30%</b>

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### **REQUIRED TEXT & MATERIALS**

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- *Geographic Information Systems and Science, Second Edition*, Paul Longley, Michael Goodchild, David Maguire, David Rhind, John Wiley and Sons, 2005
  - *Getting to Know ArcGIS*, Ormsby *et al.* 2<sup>nd</sup> edition 2004
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- **Laboratory manual**

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- Additional Readings may be made available and assigned throughout the term.
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- Computer account: each student is required to have a computer account for the duration of the winter term (\$50 fee)
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**COURSE SYLLABUS**

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<b>WEEK</b>	<b>TOPIC</b>	<b>CHAPTER</b>
<b>1. Jan 10</b>	<b>Introduction</b>	
<b>2. Jan 17</b>	<b>Introduction</b> <i>What is GIS?</i>	1, 2
<b>3. Jan 24</b>	<b>Representing Geographic Phenomena</b> <i>Discrete Objects &amp; Fields, scale</i> <i>Attribute types</i> <b>Georeferencing</b> <i>Locating geographic phenomena</i> <i>Latitude, longitude</i> <i>UTM, North</i> <i>Projections, Coordinate Systems</i>	3, 4       4
<b>4. Jan 31</b>	<b>Geographic Data Models</b> <i>Raster/Vector Models</i> <i>GIS Software, Raster, Vector, Networks,</i> <i>Terrain Mapping (DEM/TIN), Topology</i>	7,8
<b>5. Feb 7</b>	<b>Data Collection</b> <i>Primary and secondary data</i> <i>GPS &amp; Data formats</i> <b>Database Management &amp; Metadata</b> <i>QUIZ</i>	9   10
<b>6. Feb 14</b>	<b>Map Design</b> <i>Cartography</i> <i>Map elements, figure-ground, type placement,</i> <i>design, colour theory</i>	12
<b>7. Feb 21</b>	<b>Statistical Mapping</b> <i>Multivariate, Daysimetric, Choropleth</i>	12
<b>8. Feb 28</b>	<b>GIS Analysis</b> <i>Buffers, Overlays, Queries, Measurements</i>	13, 14, 15
<b>9. Mar 7</b>	<b>Mid-Term Exam</b>	
<b>10. Mar 14</b>	<b>READING BREAK</b>	

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<b>11.</b>	<b>Mar 21</b>	<b>GIS &amp; Spatial Decision Support, &amp; Spatial Modeling with GIS</b> <i>Systems and Model Types</i>	16
<b>12.</b>	<b>Mar 28</b>	<b>GIS Project Design, Management &amp; Implementation</b> <i>Choosing &amp; Implementing a GIS</i>	17, 18
<b>13.</b>	<b>Apr 4</b>	<b>Uncertainty and Data Quality</b> <i>Precision and accuracy</i>	6
<b>14.</b>	<b>Apr 11</b>	<b>REVIEW</b>	
<b>FINAL EXAM – TO BE SCHEDULED</b>			