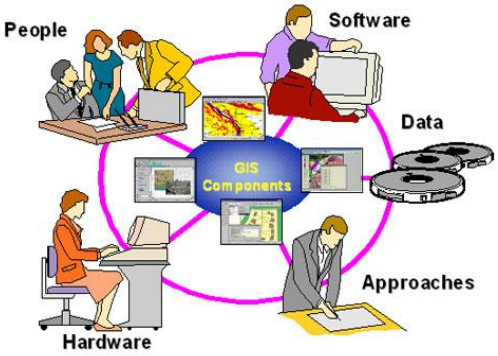
VANCOUVER ISLAND UNIVERSITY
SCIENCE & TECHNOLOGY
FORESTRY

Forest Resources Technology Program

FRST 328 – GIS for Natural Sciences

Course Outline

Term: Fall
Lecture: TBA
Lab: TBA
Instructor: TBA



COURSE DESCRIPTION

This course provides a practical introduction to GIS within the context of natural resources. The emphasis will be on spatial data issues, analytical operations, effective map layouts and how to utilize GIS to aid in better decision-making. In this course we will utilize a two-pronged approach to attain the learning outcomes:

- Labs will be hands-on with the goals of gaining a basic skill set in utilizing GIS software (ArcGIS) and applying an analytical approach to solve problems
- Lectures will provide the fundamental geographic concepts upon which GIS is based.

SCOPE AND CREDIT

This 3 credit course is specifically designed for the Forestry Resources Technology Program, but is also accepted as a third year elective for a Bachelor's degree. This course is equivalent to GEOG 328, credit cannot be granted for both courses.

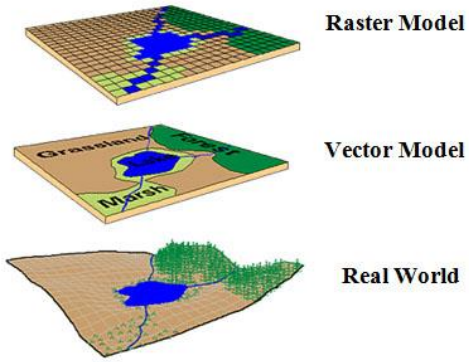
COURSE FORMAT

Learning will be achieved through lectures, class discussions and lab exercises. Course hours are 2:0:2.

TEXTS & SUPPLIES

Online Texts:
GIS Commons
GIS Primer

Note that the information contained in this course outline is subject to change.



LEARNING OUTCOMES
Upon successful completion of this course, students will be able to:

1. Define and use the technical terms applicable to GIS in conversation with peers and in technical reports;

2. Create spatial data by (heads-up) digitizing and importing geographic coordinates;

3. Describe and compare the methods for creating spatial data in a GIS (digitizing, scanning, COGO);

4. Determine and adjust the coordinate and projection systems for geographic data;

5. Edit attribute data entries, create new fields, relate data tables and conduct basic database operations (sort, query & summarize);

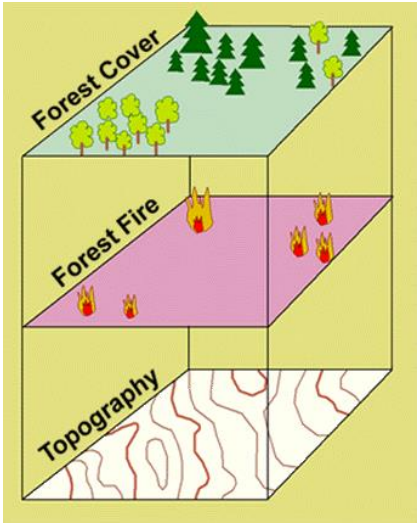
6. Describe and utilize cartographic principles to create plot layouts (maps) that effectively communicate geographic information;

7. Describe the need for and processes utilized in generalization of geographic features;

8. Determine appropriate spatial modeling options for real world phenomena (e.g. streams, roads and wetlands), including choice of conceptual model (discrete objects vs. continuous variable), spatial entity (point, line, area, network, surface) and logical model (raster and vector);

9. Describe metadata requirements and describe potential sources of error/ uncertainty regarding data quality;

10. Perform spatial analyses (feature generalization, attribute & spatial query, overlays, and distance operations) independently as well as create multi-step analytical models for solving geographic problems.



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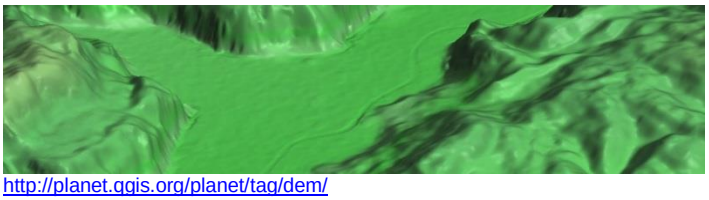
In addition to the subject-specific learning outcomes listed above, broad program learning outcomes will be covered. Upon successful completion of this course students will have furthered their ability to:

1. **Utilize digital resources** to solve problems, specifically to utilize ArcGIS and spatial datasets to conduct analyses to aid in forest management decision-making.

2. **Think creatively and flexibly** to solve problems – specifically consider a forest management issue that needs to be resolved (identify critical wildlife habitat), review the available data and determine an analytical approach to address the issue.

3. **Independent learning** - for topics not covered in lectures you will be encouraged to:
    a. independently determine and utilize appropriate sources of information
    b. engage in group discussions in class
    c. participate in online discussion groups

    in order to construct answers to specific questions posed in class.


http://planet.qgis.org/planet/tag/dem/

SAMPLE EVALUATION*

25% Assignments
15% Quizzes
20% Midterm
25% Final
20% Professionalism

Quizzes will consist of short answer questions that will cover recent course material and reading assignments. Any missed quizzes will receive a grade of zero.

Professionalism will consider demonstrated attitude and conduct, in particular:

- participation in group discussions in class
- leadership and helpfulness in the lab
- contributions to online discussions

* Course evaluation break-out is subject to change.

ACADEMIC POLICIES
For details regarding academic policies refer to the Forestry Portal

SCHEDULE (Sample)

Week	**Lecture**	**Lab**
1	Course Overview Prep for Sorghum lab	Lab – Sorghum
2	What is GIS Spatial data	Virtual Campus set-up – accounts **Virtual Campus** **- Mod. 1 Getting Started: 1-1, 1-2, 1-3 [1.5 hr]**
3	Data Input / Acquisition	**Virtual Campus** **- Mod. 2 Symbology: 2-1, 2-3 [1 hr]** **- Mod. 3 Datum & Projection: 3-1, 3-2 [1 hr]**
4	**Interior Field Trip**	**Interior Field Trip**
5	Cartography & Classification Schemes	**Virtual Campus** **- Mod. 8 Map Output: 8-1, 8-2 [1.25 hr]** **- Mod. 5 Create Data: 5-1, 5-3, 5-4 [1.5 hr]**
6	Database	Lab : Woodlot Start-up & Create geo-PDF
7	**Midterm 1**	Lab : Buffers & Merge
8	Vector Analysis	Lab : Overlays
9	Analytical Modeling Overlays	**Virtual Campus: Mod. 7 Analysis: 7-2 [0.5 hr]** Lab : Model Builder
10	Raster Analysis	Lab : Map Algebra
11	Spatial Data Models	Lab : Constraint Mapping
12	Data Quality	Lab : Constraint Mapping
13	Review	Lab : Constraint Mapping
	last day * study days *** Final Exams Dec**	

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