9-2014

GPHY 588.01: Vector GIS

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UNIVERSITY OF MONTANA
DEPARTMENT OF GEOGRAPHY

GPHY 588: VECTOR GIS

FALL 2014

Instructor:	Dr. Diep Dao
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Email:	diep.dao@mso.umt.edu
Office hours:	Tue 11:00AM-1:00 PM or by appointment via email
Class days/time:	Tue & Thu 9:40-11AM
Classroom:	Stone Hall 217
Lab days/time:	Mon 10:10-12AM or 1:10-3PM
Lab room:	Stone Hall 218
Class website:	On Moodle
Prerequisites:	Students are expected be familiar with GIS & Cartography fundamentals.
Credit Units	4

Course description: The course addresses entity-based spatial problem solving by focusing on both the theoretical/conceptual and practical aspects of vector GIS spatial analysis and modeling.

Recommended Books:
O'Sullivan, D. and Unwin, D. (2010, 2nd ed) Geographic Information Analysis, Wiley.

Mitchell, A. (2009) The ESRI Guide to GIS Analysis, Volume 2: Spatial Measurements and Statistics.

Additional readings will be available on Moodle.

Online resources: Lecture ppts, lab assignments, and additions/modifications to the class schedule will be posted on Moodle class site and it is your responsibility to check it weekly! Additional required and recommended readings that supplement the course material will also be posted on Moodle.

Grading Policies:
Final grades will be calculated using the following thresholds: 90.0 (A), 80.0 (B), 70.0 (C), 60.0 (D), below 60.0 (F). The "+/-" grading system will be used. There will be no extra credit of any kind.

Task Percentage of Final Grade

Task	Final Grade
Labs	40%
Mid-term Exam	20%
Final project	
Presentation	15%
Paper	15%
Class interaction	10%

Extra Course Guidelines

1. Lab: Lab reports are due one week after the last scheduled lab time devoted to them. Submit before lecture time on Moodle. Word format electronic submission.
2. Exam: Cover the lecture materials. It may have multiple choice, matching, definitions, and short-answer questions.
3. Project: Individual. Topics are to be chosen by the student and approved by the instructor.
   - Proposal: more instruction will be provided.
   - Presentation: Individual formal 15-min presentation. Briefly state your research question(s), literature, methodology, and results. PowerPoint is recommended.
   - Paper: more instruction will be provided.
4. If you want the full credit possible for assignments:
   - SHOW YOUR CONCEPTUAL UNDERSTANDING
   - BE WELL-PLANNED, WELL-ILLUSTRATED, NEAT, AND CLEAR!
   - WHEN IN DOUBT - ASK!

UM Policy Statements

Academic Dishonesty: The university policy for cheating is clearly addressed on the website http://www.umt.edu/studentaffairs/sccacademicconduct.htm. Students cheating will be reported to the proper offices and receive a failing grade for the course.

Reasonable Accommodation: The university policy on students with disabilities is clearly addressed on the website http://www.umt.edu/dss/default.htm. Students who need assistance should contact the instructor immediately so that appropriate forms and procedures can be completed.

Course Schedule

Week	Date	Topics	Reading
1	8/26 &28	Class overview; Introduction of geographical information analysis and entity-based spatial data model Pitfalls/potential of spatial data	 Ch. 1 Ch. 2
2	**9/1**	**Labor day: No lab**	
	9/02&04	Pitfalls/potential of spatial data (cont.) Mapping with spatial patterns and processes	Ch. 2 Ch. 4
3	9/08	Lab 1	
	9/9&11	Point pattern analysis Statistical tests, cluster detections, kriging	Ch. 5
4	9/15	Lab 2	
	9/16&18	Point pattern analysis (cont.)	Ch. 6, 9, 10
5	9/22	Lab 3	
	9/23&25	Area objects and spatial autocorrelation analysis	Ch. 7
6	9/29	Lab 4	
	9/30&10/2	Global vs. local statistics for autocorrelation analysis	Ch. 8
7	10/7	**EXAM**	
	10/9	Spatial regression	On Moodle
8	10/13	Lab 5	
	10/14&16	Spatial regression (cont.) **Project Proposal due**	On Moodle
9	10/20	Lab 6	
	10/21 10/23	Spatial regression (cont.) Network fundamentals	On Moodle
10	10/27	Lab 7	
	10/28 & 30	Network analysis **Updated project proposal due with data details and proposed methods**	On Moodle
11	11/3	Lab 8	
	11/4 11/6	**No class – Election Day** Network analysis **(cont.)** Implementing models in GIS	On Moodle

		Wrap-up, practical applications of spatial analysis	
12	11/10 **11/11** 11/13	Work on final project: Q&A within assigned time slot **No class - Veterans Day** Wrap-up, spatial analysis & big data	
13	11/17,18&20	Work on final project: Q&A within assigned time slot	
14	11/24&25	Work on final project: Q&A within assigned time slot *Thanks giving week – safe travel!*	
15	12/1	Work on final project: Q&A within assigned time slot	
	12/2&4	**Student presentations**	
	12/8	**Paper due @ 11:59PM electronic submission**	

This syllabus may be modified as necessary during the course. Last updated on Aug 22, 2014