ENVS 420/520 GIS III: ANALYSIS AND MODELING

CREDITS: 4   TIME: 2:00-3:50 TR   ROOM: AH 16   CRN: 42050

INSTRUCTOR: Dr. Aquila Flower
    OFFICE: AH 209
    OFFICE HOURS: M 1:30-2:30, W 12:30-1:30, R 10:30-11:30
    HOW TO CONTACT ME: please use Canvas messages

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GIS SPECIALIST: Stefan Freelan, AH 201, Email: **stefan@wwu.edu.** 650-2949.

TEXT:
No required text. Readings will be distributed on Canvas.

COURSE DESCRIPTION:
The course will provide a brief reintroduction to GIS followed by an in-depth examination of spatial data formats, spatial data analysis, and geoprocessing. This course assumes each student has a working familiarity with GIS and ArcGIS software equivalent to one quarter of introductory GIS (ENVS 320) plus one quarter of Computer Cartography (ENVS 321). For GIS minors, this course is the starting point for the ENVS 420, 421, 422 series.

COURSE STRUCTURE:
Our classes will typically begin with a 5-minute quiz, followed by lecture during the next 30-50 minutes of each class. Remaining class time will be used for lab exercises. Labs will require additional work outside of our regularly scheduled class period.

Reading is moderate but expectations for class participation are high. This includes regular attendance (extremely important), active class participation in discussion (both in class and online), and the ability to work effectively with others in the lab.

ASSESSMENT:

My grading system is designed to reflect each student's mastery of the course material. The grades I assign represent how much of the material you understand, not how hard you worked or your standing relative to other students in the class. An A indicates knowledge beyond the requirements of the course; a B mastery of the material in the course; a C an average understanding; and anything less than this would indicate gaps in understanding. The final letter grades will be assigned on a straight percentage: 93% = A, 90% = A-, 87% = B+, 83% = B, 80% = B-, 77% = C+, 73% = C, 70% = C-, >60% = D, <60% = F.

Labs (62%): We will complete six hands-on lab activities. You will have three to four class periods to complete each lab. Labs are due before the beginning of class on the day listed in the syllabus. During the third class period devoted to each lab, you will bring a draft of one map and complete a peer review of another student's work. Late labs lose 10% each day they are late, including weekends.

Quizzes (10%): Daily 5-minute quizzes will be given in class, usually before the lecture begins. These quizzes are designed to encourage you to review your notes regularly and stay in the habit of continuously reflecting on the work we do in this class. No make-up quizzes will be offered, but I will drop your two lowest scores.

Application presentation (10%): Each student will select a single application of GIS and give a 5 minute presentation in class focused on recent applications of GIS within that field of research. Presentations should include a synthesis of at least two peer-reviewed journal articles and should be accompanied by a slideshow. Students will also submit written summaries of at least two articles.

Final exam (10%): We will have a 2-hour open-note, in-class final exam designed to test your ability to make quick decisions about the appropriate analysis and visualization techniques to address a specific question. No early or make-up exams will be available, so make your winter travel plans accordingly.

Participation (5%): Participation in our online and in-class learning communities. This includes asking and answering questions in class, posting questions and answers on our Canvas discussion board, and sharing interesting GIS-related articles/sites on our class Facebook page.

Map critiques (3%): Thoughtful, constructive critiques of your classmates' maps will be completed for each lab.

*For students enrolled in ENVS 520, assessment will be similar, but labs will be worth only 50% of your grade, and you will write a 5 page literature review focused on GIS applications in your area of research (i.e., for your thesis) worth 12% of your grade. Your Presentation will be 10 minutes long and will focus on the results of your literature review.

SCHEDULE

Date	Labs and Exercises	Subject
Sep 25	Pre-assessment, due Sep 30	Introduction to the course
Sep 30, Oct 2, 7	Lab 1 – Data Management & Model Builder, Due Oct. 9	Workspace Management Geoprocessing automation Data models, structures, & sources
Oct. 9, 14, 16	Lab 2 - Projections, Due Oct. 21	Projections Coordinate systems Scale
Oct 21, 23, 28	Lab 3 – Vector Analysis & Census Data, Due Oct 30	Geovisualization Data classification Vector analysis
Oct 30, Nov 4, 6	Lab 4 – Terrain Analysis, Due Nov 13	Raster operations, Surface analysis Cost path analysis No class on Nov 11 (Veteran's Day)
Nov 13, 18, 20	Lab5 – Spatial Pattern Analysis, Due Nov. 25	Geospatial statistics Interpolation Combined vector and raster analysis
Nov 25, Dec 2, 4	Lab 6 – Multi-Criteria Evaluation, Due Dec 4	Multi-Criteria Evaluation GIS Project Management No class on Nov 27 (Thanksgiving)
Dec 11	Final exam – 8:00 AM	

A note on expected student attitudes: Using GIS software inevitably involves some unexpected setbacks and glitches. Dealing with these challenges calmly and methodically is a key part of your work in this class. When you encounter a challenge, approach the situation humbly: blame yourself for the problem before you blame instructors, software, or the computer. Be patient, control frustration, and fix the problem (researching where necessary). Come to the instructor when you can't fix the problem. Remain positive and be part of a collective energy that makes Tuesday and Thursday afternoons something to look forward to. It will benefit all of us if we build a supportive community within this class.