

Geography 348

Location Analytics

Department of Geography and Geology
Syllabus Fall 2018



University of Wisconsin
Stevens Point

Instructor: Christine Koeller, GISP

Office location: Science Building, Room B329

Office hours: Tuesdays 9:30am to 10:30am, Thursdays 10:30am to 11:30am or by appointment (e-mail to schedule an appointment)

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Class meets:

- Tuesday/Thursday 2:00pm-3:15pm in SCI D326
- *Your instructor may schedule alternate meeting locations. Notifications will be sent by e-mail or announced in class.*

PART 1: COURSE INFORMATION

Course Description

Geospatial technologies are routinely used for economic, business, and marketing applications. Linking geospatial locations to data analytics allows us to extract knowledge that is otherwise hidden. This course explains and demonstrates examples of consumer lifestyles, competitor interactions, transportation logistics, and location-allocation to solve location-based problems. Learn how to acquire, create, and utilize data related to business analytics.

Required Text

[Harris, R., Sleight, P, and R. Webber. Geodemographics, GIS and Neighbourhood Targeting.](#)

ISBN-13: 978-0470864135

Other Readings: Supplemental reading materials are outlined in the lecture schedule and available on D2L.

Course Objectives

After successful completion of this course students will be able to:

- Describe how geospatial technologies spatially represent data used in location analytics.
- Create, encode and analyze geospatial data.
- Leverage geospatial technologies to solve location analytics problems such as competitor interactions, transportation logistics, neighborhood target marketing, and location-allocation.
- Describe the foundations of Geodemographics and its applications.
- Profile customers using geospatial technologies.
- Communicate results of location analytics class projects.

Student Evaluation: The grade you earn in this course will be based on participation, assignments, quizzes, exams, and class projects. Review the following for more information.

Participation:

Student participation during class and exercises are integral to this course; you will be evaluated based on your participation and attendance in class (10%). ***Attendance is required and includes attending the***



entire period. Classes are prepared to discuss the daily topic; it is expected you will complete assigned readings and homework assignments before attending. Be respectful to fellow students and your instructor. Disruption or other incivility during class time will result in a reduction of your participation grade. A positive learning environment will be maintained at all times during this course.

Attendance will be recorded according to the [UWSP attendance policy](#). **More than two unexcused absences from either lecture or lab time will result in a 5% reduction in your participation grade** (i.e. a reduction of 0.25 percent of your entire course grade for each unexcused absence). Review the attendance policy below for more information regarding attendance, absences due to military service, and religious beliefs accommodation.

Excused absences

To request an excused absence, **you must email your instructor prior to the start of class with a comprehensible explanation of your absence.** The following reasons may be excused:

- Required attendance of field trips or other academic activities for other classes.
- Academic or professional conference attendance.
- Required travel or activities for athletic events, theatre, dance, or other university-related activities you participate in.
- Serious or contagious illness (a doctor's note may be requested).
- Death of a family member.
- Excused lab attendance as stated prior.
- Military service as stated below.
- Other reasons discussed and approved in writing by your instructor.

Attending class will likely be the single most important factor in determining your performance and grade in the course. The relationship between attendance and achievement in education has been extensively documented in peer-reviewed research. **I am not able to re-teach the material to you in the event that you are absent, but you can ask a classmate to share notes.**

Attendance is 10% of your overall course grade.

Absences due to Military Service

- You will not be penalized for class absence due to unavoidable or legitimate required military obligations, or medical appointments at a VA facility, not to exceed two (2) weeks unless special permission is granted by the instructor. You are responsible for notifying faculty members of such circumstances as far in advance as possible and for providing documentation to the Office of the Dean of Students to verify the reason for the absence. The faculty member is responsible to provide reasonable accommodations or opportunities to make up exams or other course assignments that have an impact on the course grade. For absences due to being deployed for active duty, please refer to the Military Call-Up Instructions for Students.

Religious Beliefs Accommodation

- It is UW System policy to reasonably accommodate your sincerely held religious beliefs with respect to all examinations and other academic requirements. You will be permitted to make up an exam or other academic requirement at another time or by an alternative method, without any prejudicial effect, if:



- There is a scheduling conflict between your sincerely held religious beliefs and taking the exam or meeting the academic requirements; and
- You have notified your instructor within the first three weeks of the beginning of classes (first week of summer or interim courses) of the specific days or dates that you will request relief from an examination or academic requirement.
- Your instructor will accept the sincerity of your religious beliefs at face value and keep your request confidential.
- Your instructor will schedule a make-up exam or requirement before or after the regularly scheduled exam or requirement.
- You may file any complaints regarding compliance with this policy in the Equity and Affirmative Action Office.

Assignments: Assignments including hands-on learning activities and projects that use geographic information systems (GIS) software will also be required throughout the course. Due dates are given with each assignment and will be strictly enforced. Most assignments/exercises require you to submit work to a D2L dropbox for grading.

- **Late Assignments:** Late assignments/exercises will receive a 10%-point deduction for each day the exercise is late. Only completed assignments will be graded. Late assignments will *only* be accepted for one week past the scheduled due date. You must communicate late assignments with your instructor.
- Instructor assistance is not available during weekends and evenings; plan accordingly when working on assignments/exercises!

Assignments using geospatial software are primarily conducted on a UWSP server. Each student is assigned a server folder located within the following server location referred to as the “Z: drive” (**z:\uwsp.edu\files\CLS\GEO\classes2**). Instructions on how to map the network drive are available in D2L. You should save all your progress in your folder on the Z: drive unless otherwise specified by your instructor. Assignments are generally uploaded to D2L for grading; follow assignment instructions.

- Assignments/exercises vary in length, expect to spend time outside of the classroom.
- Written composition along with spelling and grammar will be evaluated as part of your grade.
- Computers are to be used **ONLY** for class activities. No other software is permitted to be used during class including instant messaging, chat, texting, email, Facebook, etc.

Assignments count towards 40% of your overall course grade.

Quizzes: There will be required quizzes which will cover readings and class discussions. Quizzes are typically administered through D2L over a multiple day window; you will be notified when quizzes are assigned, available and due. You are expected to complete the quiz independently and you are not allowed to copy or share quiz questions or responses with other students. **Quizzes that are not completed before the due date and time will be given a score of zero, retakes are not allowed.**

Quizzes count towards 15% of your overall course grade.

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Exam: There will be one midterm examination in this course. A combination of multiple-choice, true/false, matching, ordering, problem-solving, short answer and long answer questions may be used. If you miss the exam without prior coordination with the instructor, you will be assigned zero points. The midterm exam counts towards 15% of your overall course grade.

Group Project/Final Presentation: A group project will be assigned to focus on a given location analysis problem. Groups will be assigned by the instructor and modifications to group membership will not be allowed without consent from the instructor. There will be a final group presentation at the end of the semester to communicate the results of your project. It is expected that each group member participates equally during assigned group work and presentations.

The final presentation will take place during final exam time on Monday, December 17 from 10:15am-12:15pm in SCI D326 (or alternate location that will be announced in class and through email). The group project and final presentation counts towards 20% of your overall course grade.

Course Grading

The table below shows the percentage of your grade designated to each graded item:

Graded Item	Percent of Grade (%)
Participation	10
Assignments	40
Quizzes	15
Midterm exam	15
Group Project/Final Presentation	20
Total	100%

Students will be evaluated during this course based on the following grading scheme:

Grade	Minimum Points Required	Percentage
A	93	93%
A-	90	90%
B+	87	87%
B	83	83%
B-	80	80%
C+	77	77%
C	73	73%
C-	70	70%
D+	67	67%
D	63	63%
F	<63	<63



D2L and Course Management:

This course uses the Desire2Learn (D2L) for course management and administration. Course information, grades, lecture information, quizzes, exams, due dates and additional reading materials will be accessed and circulated via D2L. D2L should be your primary source for course administration, announcements and communication outside of class. Additionally, course announcements may be communicated via your UWSP email. You are expected to check your UWSP email daily during this course.

Classroom policies:

- Mute the sound on all cell phones and electronic devices during class.
- Classes start promptly at the assigned time, please show up on time.
- Be prepared: Review the course schedule and complete the required readings before class.
- Be respectful with your classmates and instructor at all times. Be responsible for your actions.

Academic Misconduct: [UW-Stevens Point Chapter 14](#)

There is no tolerance for [Academic Misconduct](#) in this course. I expect everyone to work independently to complete assignments, labs, quizzes, and examinations. Academic misconduct is subject to Disciplinary Sanctions as outlined in Chapter 14.04 of the student academic standards and disciplinary procedures: <http://www.uwsp.edu/dos/Documents/CommunityRights.pdf#page=11>

UWSP 14.03 Academic Misconduct Subject to Disciplinary Action

(1) Academic misconduct is an act in which a student:

- (a) Seeks to claim credit for the work or efforts of another without authorization or citation;
 - (b) Uses unauthorized materials or fabricated data in any academic exercise;
 - (c) Forges or falsifies academic documents or records;
 - (d) Intentionally impedes or damages the academic work of others;
 - (e) Engages in conduct aimed at making false representation of a student's academic performance;
- or
- (f) Assists other students in any of these acts.

(2) Examples of academic misconduct include, but are not limited to: cheating on an examination; collaborating with others in work to be presented, contrary to the stated rules of the course; submitting a paper or assignment as one's own work when a part or all of the paper or assignment is the work of another; submitting a paper or assignment that contains ideas or research of others without appropriately identifying the sources of those ideas; stealing examinations or course materials; submitting, if contrary to the rules of a course, work previously presented in another course; tampering with the laboratory experiment or computer program of another student; knowingly and intentionally assisting another student in any of the above, including assistance in an arrangement whereby any work, classroom performance, examination or other activity is submitted or performed by a person other than the student under whose name the work is submitted or performed.

Inclusivity Statement

It is my intent that students from all diverse backgrounds and perspectives be well-served by this course, that students' learning needs be addressed both in and out of class, and that the diversity that



the students bring to this class be viewed as a resource, strength and benefit. It is my intent to present materials and activities that are respectful of diversity: gender identity, sexuality, disability, age, socioeconomic status, ethnicity, race, nationality, religion, and culture. Your suggestions are encouraged and appreciated.

Disability Services:

UW-Stevens Point is committed to providing students with disabilities the academic accommodations and auxiliary aids necessary to ensure access to all university services, programs and activities. If you require classroom accommodations, you must notify me of your registration with the Disability and Assistive Technology Center within a reasonable timeframe and I will make every effort to accommodate you. See <http://www.uwsp.edu/disability/Pages/faculty/accomodations.aspx> for additional information.

The Disability and Assistive Technology Center is located in 609 Albertson Hall and can be contacted by phone at (715) 346-3365 (Voice) (715) 346-3362 (TDD only) or via email at datctr@uwsp.edu.

UW-Stevens Point will modify academic program requirements as necessary to ensure that they do not discriminate against qualified applicants or students with disabilities. The modifications should not affect the substance of educational programs or compromise academic standards; nor should they intrude upon academic freedom. Examinations or other procedures used for evaluating students' academic achievements may be adapted. The results of such evaluation must demonstrate the student's achievement in the academic activity, rather than describe his/her disability.

UW-Stevens Point Emergency Procedures:

- *Medical Emergency:* In the event of a medical emergency call 9-1-1 or use Red Emergency Phone (if available). Offer assistance if trained and willing to do so. Guide emergency responders to victim.
- *Tornado Warning:* In the event of a tornado warning, proceed to the lowest level interior room without window exposure at [e.g. second floor hallways, SCI A224/225]. See www.uwsp.edu/rmgt/Pages/em/procedures/other/floor-plans.aspx for floor plans showing severe weather shelters on campus. Avoid wide-span structures (gyms, pools or large classrooms).
- *Fire:* In the event of a fire alarm, evacuate the building in a calm manner. Meet at Parking Lot T. Notify instructor or emergency command personnel of any missing individuals. For more information on fire emergency procedures, review the following: <http://www.uwsp.edu/rmgt/Pages/em/procedures/grounds/fire-explosion.aspx>.
- *Active Shooter/Code React:* Run/Escape, Hide, Fight. If possible, your best option is to run away from the attacker to safety. If trapped hide, lock doors, turn off lights, spread out and remain quiet. Call 9-1-1 when it is safe to do so. Follow instructions of emergency responders. If you are unable to escape, use your best judgment. Review the Active Shooter/CODE REACT procedures on campus at <http://www.uwsp.edu/rmgt/Pages/em/procedures/violence/active-shooter.aspx>.

See UW-Stevens Point Emergency Procedures at www.uwsp.edu/rmgt/Pages/em/procedures for details on all emergency response at UW-Stevens Point.



PART 2: COURSE TOPICS

Topics are not listed in any particular order. Topics may be added, modified or deleted depending on actual course progress.

- **Geographic Information Systems (GIS)**
 - Definition of GIS
 - Functions and Applications of GIS
 - GIS Components
 - The Geospatial Revolution

- **Representation and Creation of Geospatial Data**
 - Geographic representations
 - Vector data models: points, lines and polygons
 - Raster data model
 - Attribute data tables
 - Geodatabase creation
 - Components of the geodatabase
 - Database rules (domains)
 - Data Creation
 - Digitizing
 - Geocoding
 - GPS/Mobile data collection

- **Geocoding**
 - Creating address locators
 - Geocoding address and assessing results

- **Introduction to Location Analytics**
 - Business intelligence
 - Location analysis: Four components of location problems
 - Location problems vs. Layout problems
 - Drive time
 - Euclidean distance

- **Location-Allocation**
 - Trade vs. Service areas
 - Spatial Interactions
 - Gravity Model
 - Reilly's Law
 - Huff Model
 - Accessibility of services
 - Allocation of facilities
 - Weighted distance
 - Spider plot



- **Introduction to Geodemographics**
 - Applications of Geodemographics
 - Market Segmentation/Classification: Methods and Examples
 - The US Census
 - Esri Tapestry
 - Social Explorer
 - Mosaic USA (Experian)
 - Tobler's first law of Geography
 - Spatial Autocorrelation

- **Origins of Geodemographics**
 - London to Chicago
 - Charles Booth: Life and Labour of the People of London
 - Measuring deprivation

- **Geodemographics and GIS**
 - Representing data with choropleth maps
 - Spatial Interaction Models
 - Information Systems and Analysis

- **Networks and Transportation Logistics**
 - Transportation networks
 - Components and structure of transportation networks
 - Routing
 - Applications in transportation logistics
 - Transportation logistics analysis

- **Economic Development and GIS**
 - Transportation costs
 - Scale economies
 - NAICS classification codes
 - GIS best practices in economic development analysis
 - Projects: Parcel revenue analyses

Please Note: The instructor maintains the right to change this syllabus and course proceedings as necessary for the course.