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Course Information

This syllabus describes the requirements and procedures for **(GEOG 474/L) Introduction to Geographic Information Systems (GIS)**. You are responsible for knowing this material, so please read it carefully. Any changes will be announced via email and blackboard announcement. You will be responsible for any changes. Your continued enrollment in this course is your implicit agreement to abide by the requirements of this class.

About the Professor & Contact Information

Name: Jinwoo Park, Ph.D.

Phone: 701-777-3250 (Office)

Email: jinwoo.park@UND.edu

Office Location: UND O'Kelly Hall 158

Student Hours: Monday/Wednesday 10:00 am – 11:00 am or by making an appointment via email

Jinwoo Park, Ph.D., is an Assistant Professor in the Department of Geography & Geographic Information Science at University of North Dakota. Dr. Park's research revolves around Geographic Information Science (GIScience), with a strong emphasis on deriving policy implications for sustainable and inclusive urban landscapes through the exploration of spatial and temporal accessibility to urban infrastructure. His work delves into the intricate relationship between urban environments and the availability of essential resources, shedding light on how the dynamic nature of accessibility impacts various aspects of society. His research harnesses the power of data-rich environments and advanced cyberinfrastructure to capture and analyze the ever-changing phenomena within urban settings. Dr. Park's exploration encompasses diverse topics, including human mobility and transportation networks, as he strives to unravel their complexities and uncover insights that inform innovative solutions in Geography, GIScience, and Urban Planning.

Course Description & Objectives

The course, **Introduction to Geographic Information System (GIS),** is an introductory course that examines the digital representation, manipulation, and analysis of geographic data, with emphasis on the analytical capabilities that GIS brings to bear on the solution of geographic problems. To cultivate excellent learning outcomes from both theoretical and practical perspectives, the course consists of lecture (GEOG474; 2 credits) and lab (GEOG474L; 1 credit) portions. Based on the weekly lecture, students will participate in labs for hands-on application of theory and methods associated with digital spatial data representation, manipulation, and analysis. Students are expected to enroll in both classes in the same semester (i.e., corequisite).

After successfully completing this course, you should be able to:
- Understand the nature of spatial data and associated fundamentals (e.g., representation, data models, databases, and analysis tools)
- Create various geographical visualizations (e.g., 2D, 3D, static, and dynamic maps) that portray real-world features.
- Determine and conduct appropriate GIS analysis to identify real-world issues and provide solutions.

GEOG 474/L: Introduction to GIS (Fall 2023)
(Lecture) MW 11:15 AM – 12:05 PM, O'Kelly 116
(Lab) F 11:15 AM – 1:15 PM, O'Kelly 116

Materials – Text, Readings, & Supplementary Readings

Required:

Price, Maribeth. (2022). *Mastering ArcGIS Pro, 2nd Edition*. McGraw-Hill.
ISBN: 9781264091201.

Each student is responsible for securing the textbook. Various outlets carry the text, including UND Bookstore, McGraw Hill, but not limited to.
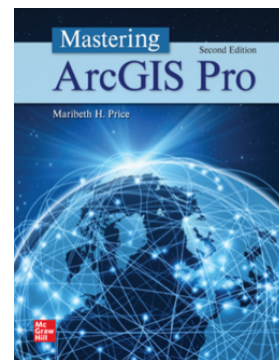
Supplementary:

University of Consortium for Geographic Information Science (UCGIS) Body of Knowledge (BoK): https://gistbok.ucgis.org/

Bolstad, Paul and Manson, Steven. (2022). *GIS Fundamentals: A First Text on Geographic Information Systems 7th Edition*. Eider Press: White Bear Lake, MN. ISBN: 9780971764750.

Technical Requirements & Assistance

Students will use "ArcGIS Pro" for conducting geospatial analysis during the lab and use "Microsoft Word" to complete assignments. All assignments should be submitted to the course blackboard as a Word or PDF file unless otherwise indicated.

Students can access ArcGIS Pro from computers at O'Kelly Hall, Room 116. At the beginning of the semester, the instructor will distribute ArcGIS Online accounts that students are required to use the software. If you want to use your own Windows laptop for this course, please consult with the instructor.

Students are expected to use their official UND email in the course. Visit the Office 365 Email Webpage for information on your UND email and how to download/install a free version of Microsoft Office. For technical assistance, please contact UND Technical Support at 701.777.2222. Visit the University Information Technologies (UIT) Website for their hours, help documents, and other resources.

Minimum Technical Skills & Computer Requirements:

The instructor assumes that students are comfortable using the "Windows Operating System" to carry out basic tasks such as copying files, moving directories, opening documents, exploring folders, and editing text and word processing documents. But, most importantly, no previous GIS experience or training is necessary to take this course.

Visit the Knowledge Base for additional support and information about general tech requirements for students, including information about devices, operating systems, software, internet connection, and major-specific tech requirements.

Course Logistics

Access & Log in Information

This course was developed and will be facilitated utilizing Blackboard. To get started with the course, please go to: http://blackboard.UND.edu and log in with your NDUS.Identifier (Username and Password). If you do not know your NDUS Identifier or have forgotten your password, please visit Your NDUS Account Webpage on the UIT website.

Course Overview

The course is organized into 16 weeks, as listed in the tentative schedule at the end of this syllabus. The course format consists of lectures, hands-on lab exercises, and research projects. Each week, students will learn the fundamental theory of GIS, and apply it to practical operations using ESRI products (e.g., ArcPro and ArcGIS Online). At the end of the semester, students will present their research project, how the knowledge they learn from the class can be applied to a real-world issue, as a team (in-person students) or as an individual (remote students).

What Should Students Do First?

During the first week of class, please review the course blackboard site, ensure you have read the syllabus, and acquire any textbooks or materials needed.

Where Do I Find Information in Blackboard?

On the left side course menu in Blackboard, there is a "Lessons" tab. Inside "Lessons", you will find all the learning objectives, to-do list, required readings, videos, and assignments/activities for the week. An overview of each week can be found in Blackboard under the Schedule tab.

Resources

UND cares about your success as a student. For more information, visit the Student Resources Page for additional information. Students have access to assistance from the UND Writing Center, Tutoring and Learning Services, Testing Services, and more.

Students also have access to the UND Student Resource Site via Blackboard. It is recommended that you become familiar with the tools and tutorials within Blackboard to better equip you in navigating the course and Educational Technology including Yuja, VoiceThread, Discussion Boards, Riipen, Smart Thinking, Proctoring, etc.

Course Requirements & Expectations
- The student will review the syllabus and course schedule posted on Blackboard.
- The student will access and follow all course instructions found in the Blackboard course.
- The student will attend all lectures/watch all online lectures provided in the individual weekly folders.
- The student will complete and submit assignments, exams, quizzes, etc., by the date noted in Blackboard and on the course schedule. We will use Central Standard Time for due dates and times.
- The student will participate fully and promptly to get the benefit of learning from the instructor and/or peers.

Communication

Information will be communicated in class, via Blackboard announcements and UND email. Responses to email will be made within 48 hours. For more urgent messages, please call the instructor's office (701-777-3250) directly, and leave a message.

Always use professional language (no netspeak) in your assignments and emails. Please always be respectful of others, even if you disagree with their ideas or do not get along. Here are a few basic

points to remember when communicating in this course:

- ***Be scholarly.*** Use proper language, grammar, and spelling. Explain your thoughts, justify opinions, and credit the ideas of others by citing or linking to scholarly resources. Avoid misinforming others when you are unsure of the answer. When discussing something and supplying a guess, clearly state that.
- ***Be respectful.*** Respect the privacy of others. Do not share personal or professional information about others unless permission has been granted. Respect diversity and opinions that differ from their own. Be tactful when you communicate.
- ***Be professional.*** Everyone should strive to give their best impression online. Truthfulness, accuracy, and running a final spell check are appropriate expectations for university students. Writing in a legible font and limiting the use of emoticons is considered professional behavior. Profanity and participation in hostile interactions are unprofessional as well as disruptive.
- ***Be polite.*** Students should be addressing professors and instructors by the appropriate title or requested name. Students should interact online politely, just as they would be expected to do in a physical environment. Sarcasm, rudeness, and writing in all capital letters should be avoided.

For more information, read the [Top 12 Be-Attitudes of Netiquette for Academicians](#).

Technology and Video Conferencing

In this class we will have a technology policy that is designed to support your attention to one another and to the course material. We will spend the majority of our time engaged in activities that depend upon you being present and attentive to one another, and the course content we will study. We are all challenged these days by the ways in which our digital devices—including laptops, tablets, phones, and watches—can steal our attention away from our immediate surroundings. Technology should be used for educational purposes only during scheduled class times.

For in-person students, most interaction will take place in the classroom, and for remote students, we will be using Zoom. When interacting with peers online or through video conferencing, it is important to consider your environment and interact professionally. Students should follow the Code of Student Life while interacting virtually or in person.

Announcements/ Questions

Announcements will be posted on Blackboard regularly. Be sure to check the class announcements regularly, as they will contain important information about class assignments and other class matters.

If you have any questions regarding the class, you are encouraged to post in the FAQs discussion board forum on the Blackboard site. This is an open forum in which you and your classmates are encouraged to answer each other's questions. But, if you need to contact the instructor directly, check the "Faculty" tab in Blackboard or the syllabus for the contact information. The instructor will respond to you within 48 hours during the week.

Assessment & Grading

Grading Scale

This course is designed to meet the needs of both in-person and remote students, so it has a different grading scale per class modality to assist you in achieving the course learning objectives/outcomes. Please review the following table and find the section that meets your condition.

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    A   90% to 100%
    B   80% to 89%
    C   70% to 79%
    D   60% to 69%
    F   0% to 59%

For more information on grading, review UND Grading Policies.

In this course, your learning will be assessed in the following ways:

	Lecture (GEOG474; 2 Credits)	Lab (GEOG474L; 1 Credits)
In-person course	Attendance / Participation: 20 % Midterm exam: 40 % Final exam: 40 %	Labs: 60 % (8 labs; each lab has 7.5 %) Team Project Presentation & Report: 40% • Instructor: 20 % (presentation & report) • Inter-team review: 10 % • Intra-team review: 10 %
Online course	Attendance / Participation: 0 % Midterm exam: 50 % Final exam: 50 %	Labs: 60 % (8 labs; each lab has 7.5 %) Individual Project Presentation & Report: 40% • Instructor: 20 % (presentation & report) • Inter-team review: 20 %

Assessment Category

Class Attendance / Participation (Lecture portion; in-person: 20 %, online: 0 %)

Participation and presence in class are paramount for students to learn the material and be successful. Students are required to log in regularly to the online class site. Students are also required to participate in all class activities. Throughout the semester, two absences or late without notice are allowed. However, more than those bumpers, an absence will take out 2 points, and being late more than 10 minutes will take out 1 point from your attendance/participation (20 points max).

Exams (Lecture portion; in-person: 40 % per exam, online: 50 % per exam)

This course has two exams (midterm and final). The midterm exam will take place on **October 18 (Wednesday), 11:15 AM – 12:05 PM,** and the final exam is scheduled on **December 13 (Wednesday), 10:15 AM – 12:15 PM**, in the same classroom (**O'Kelly Hall, Room 116**). To prepare for the exams, please make sure to have read all the assigned readings, reviewed lecture slides, and completed the provided study guide.

Hands-on Lab Exercises (Lab portion; in-person & online: 60 %)

Throughout the semester, students will complete 8 hands-on labs. Each lab will take 7.5 % of your GEOG474L (1 credit) grade. Each lab will introduce an important data editing and/or spatial analysis technique using ArcGIS Pro. The lab data will be provided on the class Blackboard site, and the final deliverables must be submitted back to Blackboard in either a Microsoft Word (*.docx) or a PDF (*.pdf) unless otherwise indicated. Students will have a week to finish. Late submission will take out a point per day.

Research Project (Lab portion; in-person & online: 40 %)

Throughout the semester, you will work analyzing real-world issues related to GIS as a small group (in-person students) or individually (online students). Detailed information on this project will be provided

during the class as it depends on the formation of students (e.g., majors and seniority). Tentatively speaking, graduate students (or undergraduates who volunteer) are expected to give a project pitch their broad research idea to their classmates to form a research team. Pitchers are encouraged to make your project idea interesting and solid to grasp more people's attention and possibly have more candidates for your project. Then, the team formation and initial research drawing will proceed in the first half of the semester. At the end of the semester, each team will present their work for 10 minutes with a 5-minute Q&A. The evaluation of this work comes from three parties: instructor, classmates, and teammates.

Course Evaluation

Near the end of the semester, you will be asked to complete an online course evaluation form (SELFI). Your feedback on the course is extremely valuable to the instructor. The instructor will consider students' comments carefully and use them to improve the course the next time he teaches it.

- When the time comes, please let the instructor know which aspects of the course helped you learn—and which aspects might be modified to help future students learn more effectively.
- Please note that the course evaluations are anonymous and that the instructor will not see the results until after the grades for the course are submitted, allowing you to provide honest and constructive feedback.
- Throughout the semester, if you have concerns or feedback, please reach out to schedule a time to discuss issues.

Course Policies

Assignment and Late Work Policy

Due dates for each assignment or activity will be posted in Blackboard. All assignments must be submitted by the due date and time posted in the course. All times are posted in the Central Time Zone. The acceptance of late assignments is at the discretion of the instructor. If extenuating circumstances arise, it is your responsibility to you contact the instructor prior the due date and request an extension. All requirements for this course must be completed during the course dates.

Artificial Intelligence (AI)

The use of AI-generated content, including text, images, code, figures, and other materials, is allowed in this class unless otherwise noted in the specific assignment. However, any use of this content must be explicitly disclosed in all academic work. In addition, students must ensure the originality of their own work. You may use AI-generated tools to aid content generation, and revision is allowed within these guidelines. The use of basic word processing AI systems, such as grammar and spelling checkers, need not be disclosed in this class. All work must comply with UND's policy on academic honesty. For more information on AI Policies, please visit [Artificial Intelligence Resources.](#)

Incompletes

It is expected that students will complete all requirements for a course during the time frame of the course. For reasons beyond a student's control, and upon request by the student or on behalf of the student, an incomplete grade may be assigned by the instructor when there is reasonable certainty the student will successfully complete the course without retaking it. The mark "I," Incomplete, will be assigned only to the student who has been in attendance and has done satisfactory work up to a time within four weeks of the close of the semester, including the examination period, and whose work is incomplete for reasons satisfactory to his or her instructor. More information regarding UND's

Incomplete policy can be found on The Grading System Webpage.

University of North Dakota Policies & Resources

Academic Integrity

Academic integrity is a serious matter, and any deviations from appropriate behavior will be dealt with strongly. At the discretion of the professor, situations of concern may be dealt with as a scholastic matter or a disciplinary matter.

As a scholastic matter, the professor has the discretion to determine appropriate penalties for the student's workload or grade, but the situation may be resolved without involving many individuals. An alternative is to treat the situation as a disciplinary matter, which can result in suspension from the University, or have lesser penalties. Be aware that the instructor views this as a very serious matter and will have little tolerance and/or sympathy for questionable practices. A student who attempts to obtain credit for work that is not their own (whether that be on a paper, quiz, homework assignment, exam, etc.) will likely receive a failing grade for that item of work, and at the professor's discretion, may also receive a failing grade in the course. For more information read the Code of Student Life.

Access and Opportunity, Disability Support, & Medical Services

The University of North Dakota is committed to providing equal access to students with documented disabilities. To ensure access to this class and your program, please contact DSS to engage in a confidential discussion about accommodations for the classroom and clinical settings. Accommodations are not provided retroactively. Students are encouraged to register with DSS at the start of their program. More information can be obtained by email UND.dss@UND.edu or by phone at 701.777.2664.

Resolution of Problems

Should a problem occur, you should speak to your instructor first. If the problem is not resolved, consult with Dr, Vandeberg, Geography & GISc. Department Head (gregory.vandeberg@UND.edu). If the problem continues to be unresolved, you have the right to go to the college dean, the provost, and then the president.

Notice of Nondiscrimination

It is the policy of the University of North Dakota that no person shall be discriminated against because of race, religion, age, color, gender, disability, national origin, creed, sexual orientation, gender identity, genetic information, marital status, veteran's status, or political belief or affiliation and the equal opportunity and access to facilities shall be available to all. Concerns regarding Title IX, Title VI, Title VII, ADA, and Section 504 may be addressed to Donna Smith, Director of Equal Employment Opportunity/Affirmative Action and Title IX Coordinator, 401 Twamley Hall, 701.777.4171, UND.affirmativeactionoffice@UND.edu or the Office for Civil Rights, U.S. Dept. of Education, 500 West Madison, Suite 1475, Chicago, IL 60611 or any other federal agency.

Reporting of Sexual Violence

If you or a friend has experienced sexual violence, such as sexual assault, domestic violence, dating violence or stalking, or sex-based harassment, please contact UND's Title IX Coordinator, Donna Smith, for assistance: 701.777.4171; donna.smith@UND.edu; or visit the Title IX webpage.

Faculty Reporting Obligations Regarding Sexual Violence

It is important for students to understand that faculty are required to share with UND's Title IX Coordinator any incidents of sexual violence they become aware of, even if those incidents occurred in the past or are disclosed as part of a class assignment. This does not mean an investigation will occur if the student does not want that, but it does allow UND to provide resources to help the student continue to be successful at UND. If you have been a victim of sexual violence, you can find information about confidential support services on the Title IX webpage.

UND Cares Program

How to Seek Help When in Distress

We know that while college is a wonderful time for most students, however, some students may struggle or have issues that arise. You may experience students in distress on campus, in your classroom, in your home, and within residence halls. Distressed students may initially seek assistance from faculty, staff members, their parents, and other students. In addition to the support we can provide to each other, there are also professional support services available to students through the Dean of Students and University Counseling Center. Both staffs are available to consult with you about getting help or providing a friend with the help that he or she may need. For more additional information, please visit the UND Cares Program Webpage.

How to Recognize When a Student is in Distress

The term "distressed" can mean any of the following:
- Student has significant changes in eating, sleeping, grooming, spending, or other daily activities.
- Student has cut off or minimized contact with family or friends.
- Student has significant changes in performance or involvement in academics, sports, extracurricular, or social activities.
- Student describes problems (missing class, not remembering, destructive behavior) that result from experiences with drinking or drugs.
- Student is acting withdrawn, volatile, tearful, etc.
- Student is acting out of character or different than usual.
- Student is talking explicitly about hopelessness or suicide.
- Student has difficulty concentrating or difficulty carrying on a normal conversation.
- Student has excessive dependence on others for company or support.
- Student reports feeling out of control of one's emotions, thoughts, or behaviors.

Land Acknowledgement Statement

Today, the University of North Dakota rests on the ancestral lands of the Pembina and Red Lake Bands of Ojibwe and the Dakota Oyate – presently existing as composite parts of the Red Lake, Turtle Mountain, White Earth Bands, and the Dakota Tribes of Minnesota and North Dakota. We acknowledge the people who resided here for generations and recognize that the spirit of the Ojibwe and Oyate people permeate this land. As a university community, we will continue to build upon our relations with the First Nations of the State of North Dakota – the Mandan, Hidatsa, and Arikara Nation, Sisseton-Wahpeton Oyate Nation, Spirit Lake Nation, Standing Rock Sioux Tribe, and Turtle Mountain Band of Chippewa Indians.

Additional Resources

It is the instructor's goal to foster an environment of mutual respect in which everyone feels comfortable voicing their opinions, sharing their stories, and learning about potentially heavy or personally relevant material. If, at any point, you feel like the information covered in this class elicits thoughts, feelings, or concerns that you would like to discuss further, don't hesitate to reach out to me, or the UND Counseling Center (701-777-2127).

Further, if you experience extenuating circumstances, sexual violence, identity-based harm, or any other personal crisis during the semester, don't hesitate to reach out to the instructor so we can provide academic assistance and help you in this course, and put you in contact with the appropriate resources and services (if needed).

- UND Care Team: 701-777-2664 (8:00 AM to 4:30 PM M-F) or 701-777-3491 (evenings and weekends)
- UND Campus Police: 701-777-3491·UND Student Health: 701-777-4500
- UND Title IX Resources
- Abuse and Rape Crisis Hotline (CVIC): 701-746-8900 (24 hours)
- Grand Forks Police Department: 701-787-8000 (24 hours)
- Emergency Room: 701-780-5280
- UND Student Diversity and Inclusion: 701-777-6985
- Food For Thought Pantry: (Wilkerson Commons Room 169; 701-777-4200)
- National Suicide Prevention Lifeline: (1-800-273-8255)

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Tentative Class Schedule

(The instructor has the right to change the syllabus as needed to make the course more informative.)

Weeks	Date	Topics	Note
Week 1	08/23/23	Course introduction	
	08/25/23	ArcGIS Pro setup / ArcGIS Pro Introduction	Lab 0
Week 2	08/28/23	Overview of GIS	
	08/30/23	Overview of GIS	
	09/01/23	Overview of GIS	Lab 1
Week 3	09/04/23	Labor Day	No Class
	09/06/23	Mapping & Presenting GIS Data	
	09/08/23	Project Pitch	Required for In-person Graduate Students
Week 4	09/11/23	Mapping & Presenting GIS Data	
	09/13/23	Mapping & Presenting GIS Data	
	09/15/23	Mapping & Presenting GIS Data	Lab 2 / Project team formation
Week 5	09/18/23	Coordinate Systems	
	09/20/23	Coordinate Systems	
	09/22/23	Coordinate Systems	Lab 3
Week 6	09/25/23	Spatial Data – Vector	
	09/27/23	Spatial Data – Vector	
	09/29/23	Spatial Data – Vector	Lab 4 – Vector Data
Week 7	10/02/23	Spatial Data – Vector	
	10/04/23	No in-person section / Recording will be provided	Minnesota GIS/LIS Conference
	10/06/23	Cancelled	Minnesota GIS/LIS Conference
Week 8	10/09/23	Non-spatial Data (Attribute Data)	
	10/11/23	Non-spatial Data (Attribute Data)	
	10/13/23	Non-spatial Data (Attribute Data)	Lab 5 – Attribute Data
Week 9	10/16/23	Review session	

	10/18/23	Midterm	11:15 AM – 12:05 PM (O'Kelly 116)
	10/20/23	Research Proposal	Online students will submit recordings.
Week 10	10/23/23	Spatial Data – Raster	
	10/25/23	Spatial Data – Raster	
	10/27/23	Spatial Data – Raster	Lab 6 – Raster Data
Week 11	10/30/23	Spatial Analysis – Vector	
	11/01/23	Spatial Analysis – Vector	
	11/03/23	Spatial Analysis – Vector	Lab 7 – Vector Data Analysis
Week 12	11/06/23	Spatial Analysis – Raster	
	11/08/23	Spatial Analysis – Raster	
	11/10/23	Veteran Day Observed	No Class
Week 13	11/13/23	Advanced Spatial Analysis	Spatial Statistics / Network Analysis
	11/15/23	Advanced Spatial Analysis	Spatial Statistics / Network Analysis
	11/17/23	Spatial Analysis – Raster	Lab 8 – Raster Data Analysis
Week 14	11/20/23	Final Project Preparation	Project Consulting
	11/22/23	Thanksgiving Break	No Class
	11/24/23	Thanksgiving Break	No Class
Week 15	11/27/23	Final Project Presentation	In-person Students
	11/29/23	Final Project Presentation	In-person Students
	12/01/23	Final Project Presentation	Online Students
Week 16	12/04/23	New Trends of GIS / Closing remarks	
	12/06/23	Review session	
Week 17	12/13/23	Final Exam	10:15 AM – 12:15 PM, O'Kelly 116