



Syllabus: ***GEO 267 – Introduction to Geographic Information Systems (GIS)***

Course Information	
Course Prefix/Number: GEOG 267 Semester: Fall 2019 Class Days/Times: Tues. & Thurs. 3:30 – 5:45	Credit Hours: 3 credits Course Title: Introduction to Geographic Information Systems (GIS) Room: Computer Lab, Mural Building, West Campus/Wişag Koş Maşcamakuđ

Instructor Information: Name: Dr. Jason Post, PhD.	Phone/Voicemail: TBA E-mail: jpost@tocc.edu Office location: Computer Lab Office hours: Tues. & Thurs. 2:30 – 3:30 (and by appointment)
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<p>Course Description:</p> <p>This course teaches students ways to capture, store, retrieve, analyze and display geographic data in different formats and outputs. Includes the evolution of GIS technology, system components, database concepts, system integration and its application across a wide range of science, business, government and nonprofit agencies.</p> <p>Prerequisite: Basic computer skills recommended and instructor permission required.</p> <p>Credits: 3 cr. hrs. (5 pds: 2 lec, 3 lab)</p>

<p>Student Learning Outcomes:</p> <ul style="list-style-type: none"> • Demonstrate basic operation of, and familiarization with ArcGIS Pro software • Compare and contrast raster and vector data models, and explain their common uses within GIS • Explain what a GIS is, the capabilities of GIS, and the components of a Geographic Information System • Demonstrate an ability to think critically about maps and spatial data • Demonstrate an ability to solve issues with GIS and spatial thinking

- Demonstrate proficiency in basic spatial analysis such as buffer, overlay, nearest neighbor, and site suitability analysis
- Explain how to edit spatial data in an attribute table, and visually in a map
- Demonstrate an ability to produce a professional quality map
- Explain major applications of GIS in solving community issues
- Explain the importance of datums and projections to spatial data accuracy
- Demonstrate how to import vector, raster, and XY data into ArcGIS Pro
- Describe how Earth's geometry is approximated and modelled
- Compare and contrast different datums (ex. NAD 27, NAD 83, WGS 84), coordinate systems (DMS, DD, UTM, State Plane), their uses, and limitations
- Explain the core concepts of "scale" and "generalization"
- Explain types of error and distortion associated with cartographic projections
- Compare and contrast different methods of classifying spatial data
- Automate a process by constructing and running a geoprocessing model
- Explain and demonstrate how to join two spatial datasets based on a common attribute
- Explain different types of maps and their respective uses
- Utilize common standardized workflows
- Students will create, edit, manage, store, analyze, visualize, and share spatial data in ArcGIS Pro
- Explain requirements for jobs in the GIS field
- Explain current trends and issues facing the GIS community
- Explain different data formats commonly used in GIS
- Demonstrate how to make decisions based on interpreting maps

Course Structure:

Lab assignments and projects are designed to give you practical experience, develop core GIS skills, and experience course material firsthand. Exams and quizzes test your knowledge and subject mastery. Critical thinking questions (quizzes) require you to solve practical problems and apply what you have learned.

The class meetings will consist of lectures, hands-on labs, field exercises, and projects. Additional project papers, completion of labs and assigned readings will take place outside of the classroom.

Texts and Materials:

Bolstad, P. 2016. *GIS Fundamentals: A First Text on Geographic Information Systems 5th Ed.* Acton, MA: XanEdu Press. ISBN 978-1-50669-587-7

Law, M. and A. Collins. 2019. *Getting to Know: ArcGIS Pro 2nd Ed. – Updated for ArcGIS Pro 2.3.* Redlands, CA: ESRI Press. ISBN 978-158948-537-2

NOTE: If purchased new (excluding eBook), the text will include a 180-day evaluation license for ArcGIS Pro.

USB flash drive or external hard drive of 32 GB or greater

Evaluation and Grading & Assignments:

A = 900 - 1000
B = 800 - 890
C = 700 - 790
D = 600 - 690
F < 600

Your grade will be determined by the following:

Midterm Exam	100 pts
Final Exam	100 pts
Lab Practical Exam	100 pts
GIS Professional Interview Assignment	50 pts
*Participation	50 pts
Weekly Quiz/Critical Thinking Questions	200 pts
Lab Assignments	300 pts
<u>Final Project</u>	<u>100 pts</u>
TOTAL:	1000 pts

*Participation includes attendance, classroom interaction (asking and answering questions during class) and involvement in course discussions. I want the class to be interactive, fun, and rewarding experience for you.

Himdag Cultural Component:

GIS and spatial data are key tools to empower the Tohono O'odham Nation because they are used for solving community issues, managing cultural and natural resources, and uphold sovereignty by defining and managing Nation lands.

GIS transcends many aspects of Himdag and directly relates to Himdag through the following concepts:

Na:nko Ha'icu T-Na:toidag – Arts

Cartographic design, creative representation of traditional landscapes

T-Ki:dag – Community

Solving community issues, improving quality of life (emergency services, medicine, access to utilities, etc.), instilling a sense of belonging and “place” within communities, empowering communities to manage data and solve problems at a local scale, communicating important features within the community via maps

Ha'icu Huki Ga:gida – Harvesting and Hunting

Managing natural resources, healthy populations of plants and animals, preserving native habitat, managing water resources sustainably, mapping plant harvesting and hunting lands

T-Ni'oki – Language

Communicating place names, community names, and important cultural heritage sites in the O'odham language

Jewed c Jewed We:gac Ha'icu – Land and Environment

Mapping and managing natural resources, sustainably managing water resources and equitable access to utilities, finding suitable farming lands, species distribution models

Ha'icu Wusanig Kuklan – Medicinal Plants

Communicating locations and habitats of medicinal plants to future generations via maps, sustainably managing water and agricultural resources, identifying suitable habitats to grow and find medicinal plants

Na:nko Ha'icu T-A:gida – Storytelling

Using maps to tell traditional stories, explore ancestral lands, and family histories, establishing and identity of “place”

Policies and Expectations:

Grading Policy

I believe in fair and transparent grading. Student work is evaluated for completeness, accuracy and effort. All work must be submitted on time. You may discuss your grade and any concerns with me at any time. I do not curve grades in my classes. Please let me know of any major issues that may impact your course performance PRIOR to any deadlines. Emergencies happen, please communicate with me AS SOON AS POSSIBLE to discuss fair and reasonable accommodations. You may also discuss emergencies/personal issues affecting (or that may affect) your academic performance with your advisor or the Dean of Students. I am always flexible and willing to work with you, provided that you have documentation for your absence. If you feel that you have been graded unfairly, please discuss this with me. Your rights to contest a grade are stated in the Student Handbook.

NO LATE WORK WILL BE ACCEPTED WITHOUT DOCUMENTATION OF AN EXTENUATING CIRCUMSTANCE.

Attendance Policy

You are expected to arrive to class on time and be prepared to participate in each class period. Four unexcused absences may result in withdrawal and a "W" or "Y" will be recorded. You may request to be excused from class for religious observances and practices, for illness, for school or work-related travel or for personal or family emergency. If you will be absent, please notify the instructor as soon as possible (approved by Faculty Senate April 2014).

Incomplete Policy

Incomplete (I) grades are not awarded automatically. The student must request an "I" from the instructor who can choose to award an Incomplete only if all three of the following conditions are met:

1. The student must be in compliance with the attendance policy.
2. There must be an unavoidable circumstance that would prohibit the student from completing the course.
3. The student must have completed over 75% of the course requirements with at least a "C" grade.

Incompletes are not a substitute for incomplete work due to frequent absences or poor academic performance. Incomplete grades that are not made up by the end of the ninth week of the following semester will be automatically changed to an F if the agreed upon work, as stipulated on the written form signed by the instructor and the student when the I grade is awarded, is not completed.

Instructor Withdrawals

Students who have missed four consecutive classes (or the equivalent) not submitted any assignments nor taken any quizzes by the 45th day census report, due on **3 OCTOBER 2019** are assumed NOT to be participating in the class and may be withdrawn at the faculty member's discretion. [faculty members should be clear in their withdraw policy, if you do not withdraw students please note in appropriate sections].

Student Withdrawals

Students may withdraw from class at any time during the first 2/3 of the semester without instructor permission and without incurring any grade penalty. Please be sure to withdraw yourself by **4 NOVEMBER 2019** if you do not expect to complete the class, otherwise you may receive an "F" grade.

Special Withdrawal (Y) Grade

The “Y” grade is an administrative withdrawal given at the instructor’s option when no other grade is deemed appropriate. Your instructor must file a form stating the specific rationale for awarding this grade. “Y” grades are discouraged since they often affect students negatively. Your instructor will not award a "Y" grade without a strong reason.

Classroom Behavior Policy

- Possession or consumption of drugs, alcohol and/or firearms on college property is illegal
- **Food and beverages are NOT allowed in the computer lab.** Water will be allowed if it is in a sealed container
- Pets, cellphones and other electronic devices that distract students are not allowed
- Vaping and electronic cigarettes are prohibited in the classroom
- Students who are intoxicated or who are creating disturbances that interfere with the conduct of the class and the learning environment will be asked to leave
- Students sleeping or wearing headphones in class will be marked absent

Official service animals and use of technology for an approved disability accommodation are exempt – see ADA Statement below

Students are expected to adhere to the **T-so:son** (core values). Students should ensure they:

Are respectful	T-Pi:k Elida
Are cooperative	T-I-We:mta
Consider the group well-being	T-Apedag
Honor core beliefs	T-Wohocudadag

You will be expected to conduct yourself in a respectful, professional manner at all times. Violations of the Student Code of Conduct (SEE STUDENT HANDBOOK), will be referred to the Dean of Students for disciplinary action.

Reasonable Disability Accommodations (Americans with Disabilities Act):

ADA Compliance:

Tohono O'odham Community College strives to comply with the provisions of the Americans with Disabilities Act and Section 504 of the Rehabilitation Act. If you have a learning problem, physical disability, or medical illness that requires you to have any special arrangements, please inform your instructor at the beginning of the semester so your academic performance will not suffer because of the condition, or disability.

ADA Statement:

Reasonable Disability Accommodations: Tohono O'odham Community College seeks to provide reasonable accommodations for all qualified individuals with disabilities. The College will comply with all applicable federal, state and local laws, regulations, and guidelines with respect to providing reasonable accommodations as required to provide an equal educational opportunity. It is the student's responsibility to make known to the instructor his or her specific needs in order to determine reasonable accommodations. We will work together in order to develop an Accommodation Plan specifically designed to meet the individual student's requirements.

Title IX

Tohono O'odham Community College faculty and all staff are dedicated to creating a safe and supportive AND INCLUSIVE campus. Title IX and our school policy prohibit discrimination on the basis of sex- this includes sexual misconduct; harassment, stalking, domestic and dating violence and sexual assault. Sexual discrimination and sexual violence can undermine students' academic success and quality of life on campus and beyond. We encourage students who have experienced any form of sexual misconduct to talk about their experience and seek the support they need. Confidential support and academic advocacy can be found with the Director of Human Resources (Stacy Owsley) or the Director of Student Life (Sylvia Hendricks).

Title IX Statement:

It is the policy of the College to comply with Title IX of the Education Amendments of 1972 and its implementing regulations, which prohibit discrimination based on sex in the College's educational programs and activities. Title IX and its implementing regulations also prohibit retaliation for asserting claims of sex discrimination. The College has designated the following Title IX Coordinator to coordinate its compliance with Title IX and to receive inquiries regarding Title IX, including complaints of sex discrimination:

Title IX Coordinator Sylvia Hendricks, Primary; Stacy Owsley, Secondary. Sylvia Hendricks, Director of Student Life and Title IX Coordinator; Stacy Owsley, HR Director and Backup title IX Coordinator Tohono O'odham Community College P.O. Box 3129 Sells, AZ 85634 Phone: Sylvia Hendricks: (520) 383-0011; Stacy Owsley: 520-383-0050 Email: shendricks@tocc.edu; sowsley@tocc.edu A person may also file a complaint of sex discrimination with the United States Department of Education's Office for Civil Rights regarding an alleged violation of Title IX by visiting www2.ed.gov/about/offices/list/ocr/complaintintro.html or by calling 1-800-421-3481

Please bring any instances of harassment, discrimination, bullying, hate speech, violence, or any other concerns that occur in the classroom to my attention immediately. These behaviors are not tolerated. All students in my classroom are welcome regardless of race, ethnicity, religion, creed, gender identity or expression, sexuality, disability, income, employment, veteran's status, age, or beliefs. Let me know if you have any questions or concerns about inclusivity in my classroom. If you feel unsafe for any reason, let me know.

Academic Integrity Policy

Each student must do his or her own homework and case studies. Discussion among students on homework and cases is encouraged for clarification of assignments, technical details of using software, and structuring major steps of solutions - especially on the course's Web site. Students must do their own work on the homework and exam. Cheating and Plagiarism are strictly forbidden. Cheating includes but is not limited to: plagiarism, submission of work that is not the student's own, submission or use of falsified data, unauthorized access to exam or assignment, use of unauthorized material during an exam, supplying or communicating unauthorized information for an assignment or exam. Plagiarism includes the failure to properly citing data or material that you did not collect or create yourself. When in doubt, CITE IT! Any issues of academic dishonesty will be referred to the Dean of Students for disciplinary action. A finding that a student violated the student code of conduct, or was responsible for an act of plagiarism or cheating, will be given a grade of F for the course. SEE STUDENT HANDBOOK FOR FURTHER INFORMATION AND STUDENT CONDUCT POLICY.

Disclaimer

This syllabus is designed to evolve and change throughout the semester based on class progress and interests. You will be notified of any changes as they occur.

Course Outline:

Week	Date	Topics	Assignments	Projects	Exams
1	AUG 19 - AUG 23	What is a GIS?, Location Systems, Introduction to Maps, Everything is Spatial	LAB 1 - Make a map	GIS Professional Interview Assignment Introduced	
2	AUG 26 - AUG 30	Scale and Generalizations	LAB 2 - Map formatting		
	SEP 2	Labor Day – College Closed			
	SEP 3	Last day to drop (with full refund)			
3	SEP 2 - SEP 6	Thematic Maps, Data Classification	LAB 3 - Explore data classification methods	GIS Professional Interview Assignment Due	
4	SEP 9 - SEP 13	Geographic Grid, Ellipsoids, Horizontal Datums	LAB 4 - Working with LAT/LON data		
5	SEP 16 - SEP 20	Map Projections and Geodesy	LAB 5 - Projecting data		
	SEP 27	O’odham Tas – College Closed			
6	SEP 23 - SEP 27	UTM and State Plane	NO LAB ASSIGNMENT - REVIEW SESSION		MIDTERM EXAM
	OCT 4	St. Francis Day – College Closed			
	SEP 30 - OCT 3	Fall Break – College Closed			
7	OCT 7 - OCT 11	Data Models and Representation	LAB 6 - Querying and editing attribute tables		
8	OCT 14 - OCT 18	Vector Data	LAB 7 - Editing features		
9	OCT 21 - OCT 25	Raster Data	LAB 8 - Working with elevation data		
10	OCT 28 - NOV 1	GIS Data Sources	LAB 9 - Finding data ArcToolBox Extensions		
	NOV 4	Last day to withdraw “W”			
11	NOV 4 - NOV 8	Spatial Analysis	LAB 10 - Proximity / Site Suitability Analysis		

	NOV 11	Veteran's Day – College Closed			
12	NOV 11 - NOV 15	Automation/Model Builder, Coding	Open lab block		
13	NOV 18 - NOV 22	Geospatial Technologies and GIS Applications	Final Project	Final Project Introduced	LAB PRACTICAL EXAM
	NOV 28 - NOV 29	Thanksgiving – College Closed			
14	NOV 25 - NOV 29	ArcCatalog / GIS Databases	Final Project		
15	DEC 2 - DEC 6	Sharing Data Map Design and Cartography	Final Project		
16	DEC 9 - DEC 13	FINAL EXAMS		Final Project Due	FINAL EXAM
	DEC 17	Final grades are due			

TOPICS AND SCHEDULE SUBJECT TO CHANGE

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