



**Navajo Technical University**

<http://navajotech.edu>

P.O. Box 849, Crownpoint, NM  
87313-0849

Tel: (505) 786-4100 Fax: (505) 786-5644

**Course Title: Geographic Information System II**  
**Course #: GIT 111-1**

**Credit Hours: 3.0**  
**Semester: Spring 2022**  
**Cap: 10**

**Faculty:** Nsalambi V. Nkongolo, PhD

**E-mail:** [nkongolo@navajotech.edu](mailto:nkongolo@navajotech.edu)

**Office: Tech 325**

**Office Phone:** (505) 786-4194

**Office Hours:** MW 9:00-11:00 am; TR: 10:00-12:00 pm Cell (573) 292-7783

**Preferred Communication** (email and/or text; will respond within 24 hours)

**Class Location:** face to face

**Class Meeting Times:** MW 3:30-4:50 pm

**Required Materials:**

**Laptop:** Every student is required to have a laptop

**Textbooks:**

**Tools:** Jump drive (to save your work)

**Lab Fee (if applicable): None**

**Mission Statement**

Navajo Technical University's mission is to provide University readiness programs, certificates, associate, baccalaureate, and graduate degrees. Students, faculty, and staff will provide value to the Diné community through research, community engagement, service learning, and activities designed to foster cultural and environmental preservation and sustainable economic development. The University is committed to a high quality, student-oriented, hands-on-learning environment based on the Diné cultural principles: *Nitsáhákees, Nahátá, İna, Siihasin.*

**Course Description**

In this course, the study of spatial analysis, raster processing, digital terrain modeling, map arithmetic, and advanced GIS structures will be studied through hands-on laboratory assignments designed to provide time for students to master these skills. Practical application of ESRI ArcGIS (Arc/Info) software will be utilized. Prerequisite: GIT-110.

<b>Course Outcomes</b>	<b>Course Measurements</b>
A strong understanding of the fundamental concepts of geographic information, and use those concepts to explain the core data models and procedures of GIS.	Complete reading assignments, homework assignments, exams, projects, and quizzes.
A strong understanding of GIS <b>lifelong learning nature (Keep up with</b> new skills, technologies, and	Lab assignments and projects are designed to give you practical experience, develop core GIS skills, and experience course

techniques on your own, using a variety of GIS learning resources	material firsthand. Exams and quizzes test your knowledge and subject mastery. Critical thinking questions require you to solve practical problems and apply what you have learned.
A strong understanding of new concepts and technologies as needed to solve novel GIS management problems, with minimal supervision, using a variety of information resources	
A strong understanding of GIS job market and its requirements	
A strong ability to create continuous surfaces from a set of points, analyze spatial patterns using geostatistical methods	
A strong ability to analyze surface terrain characteristics and derived properties (i.e. slope, hydrology, curvature),	
A strong ability to use ARGIS Extensions (Spatial Analyst, Geostatistical Analyst, 3D-Analyst)	
A strong ability to implement effective, efficient and responsive GIS project management skills	
A strong knowledge on advanced cartographic techniques for the effective display of geospatial data	
An ability to communicate effectively, and spatially through maps and models	

**Connections to Program Assessment (course-embedded measures)**

**List program outcomes to be measured**

**General Education Assessment**

**List general education Outcomes to be measured**

**Course Activities**

Week	Date	Chapters	Assignments	Quizzes
1	Jan 19	Review		
	Jan 24			
2	Jan 26	Vector Data Analysis: Buffering, Overlay, Distance measurements	Lab 1: Vector Data Analysis	
	Feb 2			
3		Raster Data Analysis: Acquisition, local / zonal operations, raster operations	Lab 2: Raster Data Analysis	
	Feb 7			Quiz1
4	Feb 9			

		Terrain Mapping and Analysis: Data, terrain mapping, slope, aspect	Lab 3: Terrain Mapping and Analysis	
5	Feb 14	Spatial Interpolations: Elements, global methods, local methods	Lab 4: Spatial Interpolations	Quiz2
	Feb 16			
6	Feb 23	Spatial Interpolations: Regression models, kriging	Lab 5: Spatial Interpolations	
	Feb 28			
7	March 2	Geocoding and Dynamic Segmentation	Lab 6: Geocoding and Dynamic Segmentation	Quiz3
<b>8</b>	<b>March 7</b>	<b>Mid-Term Review</b>		
	<b>March 11</b>	<b>Mid-Term Exam</b>		
<b>9</b>	<b>March 14</b>	<b>Spring Break</b>		
	<b>March 18</b>	<b>Spring Break</b>		
			Lab 7: Network Analysis	
10	March 21	Network Analysis		
	March 23			
11	March 28	GIS Models and Modeling	Lab 8: GIS Modeling	Quiz4
	March 30			
12	April 4	Project/Field visit		
	April 6	Project/Field visit		
13	April 11	Project/Field visit		
	April 13	Project/Field visit		
14	April 18	Project/Field visit		
	April 20	Project/Field visit		
15	April 25	Project/Field visit		
	April 27	Project/Field visit		
<b>16</b>	<b>May 2</b>	<b>Project Presentation</b>		
	<b>May 4</b>	<b>Review</b>		
<b>17</b>	<b>May 10</b>	<b>Final Exam</b>		
	<b>May 12</b>	<b>Final Grades Due</b>		

### Grading Plan

Homework	20%	A = 100 - 90%
Mid-term	20%	
Final Exam	25%	B = 89 - 80%
Project	10%	
Quizzes	20%	C = 79 - 70%
Class Participation	3%	D = 69 - 60%
Portfolio:	2%	F < 60%

### Grading 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.

### Participation

Students are expected to attend and participate in all class activities- as listed above, as it **is 3% of the grade**. Points will be given to students who actively participate in class activities including field trips, laboratories, and ask questions of guest speakers and other presenters.

Cell phone and headphone use

Please turn cell phones off or place them on silence or vibrate mode **before** coming to class. Also, answer cell phones **outside of class** (not in the classroom). Exercising cell phone use courtesy is appreciated by both the instructor and classmates. Headphones are to be removed before coming to class.

### Attendance Policy

Students are expected to regularly attend all classes for which they are registered. A percentage of the student's grade will be based on class attendance and participation. Absence from class, regardless of the reason, does not relieve the student of his/her responsibility to complete all course work by the required deadlines. Furthermore, it is the student's responsibility to obtain notes, handouts, and any other information covered when absent from class and to arrange to make up any in-class assignments or tests if permitted by the instructor. Incomplete or missing assignments will necessarily affect the student's grades. Instructors will report excessive and/or unexplained absences to the Counseling Department for investigation and potential intervention. **Instructors may drop students from the class after three (3) absences unless prior arrangements are made with the instructor to make up work and the instructor deems any excuse acceptable.**

### Study Time Outside of Class for Face-to-Face Courses

**For every credit hour spent in a class, a student is expected to spend two hours (2) outside of class studying the course materials.**

### Study Time for Hybrid or Blended Courses

**For a hybrid or blended course of one (1) credit hour, a student is expected to spend three (3) hours per week studying the course materials.**

**Study Time for Online Courses**

**For an online course of one (1) credit hour, a student is expected to spend four hours (4) per week studying the course materials.**

**Academic Integrity**

Integrity (honesty) is expected of every student in all academic work. The guiding principle of academic integrity is that a student's submitted work must be the student's own. Students who engage in academic dishonesty diminish their education and bring discredit to the University community. Avoid situations likely to compromise academic integrity such as: cheating, facilitating academic dishonesty, and plagiarism; modifying academic work to obtain additional credit in the same class unless approved in advance by the instructor, failure to observe rules of academic integrity established by the instructor. **The use of another person's ideas or work claimed as your own without acknowledging the original source is known as plagiarism and is prohibited.**

**Diné Philosophy of Education**

The Diné Philosophy of Education (DPE) is incorporated into every class for students to become aware of and to understand the significance of the four Diné philosophical elements, including its affiliation with the four directions, four sacred mountains, the four set of thought processes and so forth: Nitsáhákees, Nahát'á, Íina and Siih Hasin which are essential and relevant to self-identity, respect and wisdom to achieve career goals successfully.

**Students with Disabilities**

The Navajo Technical University and the School of Science are committed to serving all enrolled students in a non-discriminatory and accommodating manner. Any student who feels he/she may need an accommodation based on the impact of disability or needs special accommodations should inform NTU in accordance with the procedures of the subsection entitled "Students with Disabilities" under Section 7: Student Support Programs, NTU Student Handbook.

**Final Exam Date: May 10, 2021**