



Course Title: MATH 1115: Math for Teachers II

Credit Hours: 3 credit hrs.

Semester: Spring 2022 OL

Faculty: Dr. Henry Fowler

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Office:

Office Phone: 928-209-5557

Office Hours: M: 12 pm – 1 pm

Tuesday 9 am to 12 pm &

4 pm to 5 pm

& by appointment

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

Class Location: On-line/Blackboard

Zoom: January 24 and March 21

Class Meeting Times:

M: 9:00 am – 11:40 am

Required Materials:

Protractor

ruler

Suggested Textbook:

On-line resources

Tools:

Lab Fee (if applicable):

University 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, Nahat'á, Iiná, Sii Hasin.*

Course Description

Develops basic geometric concepts including rigid transformations and congruence; dilations and similarity; length, area, and volume; systems of measurement and unit conversions; and connections to coordinate geometry. Explanation and problem solving is emphasized throughout.

Student Learning Outcomes:

1. Apply arithmetic.

Component 1: Use and justify formulas relating to measurement.

Component 2: Recognize operations required by problems involving geometric figures.

2. Represent geometric concepts.

Component 1: Use tactile representations, such as pattern blocks, geoboards, and nets, to represent geometric problems.

Component 2: Use a compass, protractor, and ruler. Component 3: Create representations of 3-dimensional figures.

3. Communicate geometric concepts.

Component 1: Use correct terminology and notation.

Component 2: Describe geometric objects including shapes, transformations, and measurements using appropriate units.

Component 3: Create justifications for properties and procedures in geometric classification and in measurement.

4. Apply proportional reasoning when appropriate.

Component 1: Recognize growth factors in different dimensions.

Component 2: Solve problems involving congruent and similar objects.

Component 3: Convert between units of measurement in various dimensions.

Sa'ah Naaghái Bik'eh Hózhóón

Nítsáhákees

1. Expectations (“bik’eh” means according to it)
 - a. K’é: work together and assist each other
 - b. K’éí: know your environment and surrounding
 - c. Hózhó: nurture your wellness and mind
 - d. Kq’: flexible and adapt
 - e. Hooghan: **grow and mature** (Sa’ah)

Nahat’á

2. Communication (ahi[dahane’)
 - a. Navajo Technical University webpage
 - b. Emails
 - c. Phone, text and message
 - d. Regularly/continuously (**Naaghái**) check your email; “**hí**” refers to the idea of sequence and “**náá**” refers to repetition

Iná

3. Promote vigilant
 - a. Yéego hada'inołní
 - b. Sin dóó t'eesh bee nidakai

Sihasin

4. Achieve/assure
 K'é: work together and assist each other
 K'úi: know your environment and surrounding
 Hózhó: nurture your wellness and mind

Grading Plan

Homework	35%	A = 100-90%
		B = 89-80%
Project(s)	20%	C = 79-70%
Mid-term exam	20%	D = 69-60%
Final exam	25%	F = < 60%

Assignments:

Submit all assignments through Blackboard.

Week	Activities	Assignment
Week 1 Jan 17	Holiday	
Week 2 Jan 24	Read the common core standards on Geometry for grades K-8 and NMPED: http://www.corestandards.org/Math/Content/G/ https://webnew.ped.state.nm.us/bureaus/curriculum-instruction/nmis-mathematics/	Assignment 1 (10 points): Write a page about your thoughts in teaching the Common Core Geometry standards. Due: Monday, Jan 31
Week 3 Jan 31	Construct different types of Angles using a ruler and compass: https://www.cuemath.com/geometry/construction-of-angles/ And Google other sites how to construct Angles.	Assignment 2 (8 points): Construct the following angles and name types of angles: 74°; 162°; 90°; 180° Assignment 3 (5 points): Describe how

		<p>you would teach different types of angles to students.</p> <p>Assignment 4 (7 points): List 7 vocabulary words about constructing different types of angles and define each word.</p> <p>Assignments 2, 3 & 4</p> <p>Due Monday, Feb 7</p>
<p>Week 4 February 7</p>	<p>Basic Geometric Constructions: https://www.instructables.com/Fun-with-ruler-and-compasses-basic-geometric-con/</p>	<p>Assignment 5 (14 points): Construct basic geometric construction by constructing Construction 1-7 (from the website).</p> <p>Assignment 6 (7 points): List 7 vocabulary words about basic geometric constructions and define each word</p> <p>Assignment 5 & 6 due Monday Feb 14</p>
<p>Week 5 February 14</p>	<p>Solids and Nets Try the activity: https://www.nctm.org/Classroom-Resources/Illuminations/Interactives/Geometric-Solids/</p> <p>Read/ Do the activities https://www.geogebra.org/m/pCv2EwD</p>	<p>Assignment 7 (31 points): Exploration exercise (exploring geometric solids – see link) – complete the worksheet.</p>

		Assignment 7 due Feb 22
Week 6 February 21	Holiday Review the weblink: https://education.theiet.org/primary/teaching-resources/3d-shape-nets-practical-activity/	Review downloads (four downloads)
Week 7 February 28	Continue: https://education.theiet.org/primary/teaching-resources/3d-shape-nets-practical-activity/	Assignment 8 (40 points): Create a math lesson Following the DOWNLOAD. Choose a geometry math topic and write a math lesson plan of your selection. Assignment 8 due Monday, March 7
Week 8 March 7 Mid-term exam week.	Assignment 8 due Monday, March 7.	
March 14-18	Spring Break	
Week 9 March 21	Read the following links and do the activities and quizzes. https://www.khanacademy.org/math Basic Geometry and Measurement High School Geometry (work each sections) <ul style="list-style-type: none"> • Performing transformation • Transformation properties and proof • Congruence • Similarity Read: (contains Warm-up Day 1 and Warm-up Day 2) https://www.wccusd.net/cms/lib/CA01001466/Centricity/doctype/main/60/lessons/geometry%20lessons/CongruentTransformations.pdf	Assignment 9 (16 points): See below Complete the exercises: Warm-up Day 1 and Warm-up Day 2 Assignment 9 due Monday, March 28 https://www.wccusd.net/cms/lib/CA01001466/Centricity/doctype/main/60/lessons/geometry%20lessons/CongruentTransformations.pdf

		<u>main/60/lessons/geometry%20lessons/CongruentTransformations.pdf</u>
Week 10 March 28	Tessellation art Read: <u>https://www.youtube.com/watch?v=CLojxExbMng</u> <u>https://www.youtube.com/watch?v=3gVT8zRSK_E</u> <u>https://www.youtube.com/watch?v=GtG4Jnbpomk</u> <u>https://www.nctm.org/Classroom-Resources/Illuminations/Interactives/Tessellation-Creator/</u> <u>http://math.sfsu.edu/cm2/papers/TiaTessellation.pdf</u>	
Week 11 April 4	Tessellation art	Assignment 10 (10 points) Create two tessellation arts using the entire paper. Assignment 10 due Monday, April 18
Week 12 April 11	Lesson plan format <u>http://math.sfsu.edu/cm2/papers/TiaTessellation.pdf</u>	Assignment 11 (40 points) Create tessellation lesson plan for a particular grade. Assignment 11 due Monday, April 25
Week 13 April 18	Justification <u>https://www.tesd.net/cms/lib/PA01001259/Centricity/Domain/1140/Properties%20Cheat%20Sheet.pdf</u> <u>https://www.cisd.org/site/handlers/filedownload.ashx?moduleinstanceid=16018&dataid=29349&FileName=Activity%206%20Notes.pdf</u>	Assignment 12 (42 points) <u>https://www.neshaminy.org/cms/lib/PA01000466/Centricity/Domain/240/notes_2_6.pdf</u> Worksheet Problems 1-20

		Assignment 12 due Monday, May 2
Week 14 April 25	<p>Parts of a circle Read each 8 lessons: https://mathbitsnotebook.com/Geometry/Circles/CRoutline.html https://caddellprep.com/subjects/common-core-geometry/arc-chord-relationships/#:~:text=When%20they%20are%20equal%20in,th at%20the%20arcs%20are%20congruent.&text=then%20we%20know%20that%20the,are%20of%20the%20same%20length.</p> <p>Pythagorean theorem https://www.mathsisfun.com/pythagoras.html https://www.mathplanet.com/education/pre-algebra/right-triangles-and-algebra/the-pythagorean-theorem</p> <p>Linear Equations https://www.google.com/search?q=solving+equations+with+two+variables+on+both+sides&ei=t836YZ_3AoLa0PEPhsaA6AI&oq=solving+two+variables+both+sides&gs_lcp=Cgdnd3Mtd2l6EAEYADIGCAAQFhAeMgYIABAWEB4yBggAEBYQHjIGCAAQFhAeMgYIABAWEB46BwgAEEcQsAM6BwgAELADEEM6BAgAEEM6BQgAEIAEOggIIRAWEB0QHkoECEEYAEoECEYYAFCoD1jmU2CSa2gBcAJ4AIABfogBohGSAQQxMy45mAEAoAEBYAEJwAEB&scient=gws-wiz#kpvalbx=_6M36YYfKC-XE0PEPx4WlcA15</p> <p>Perpendicular bisector https://www.mathopenref.com/bisectorperpendicular.html</p>	<p>Assignment 13: (30 points) Practice with Chords https://mathbitsnotebook.com/Geometry/Circles/CRChordPractice.html Show your work and include work when submitting your work. Each problem show how you had arrived at your answer. Assignment 13 due Thursday, May 5.</p>
Week 15 May 2	Continue assignment 13	
Week 16 May 9	<p>Final exam week 3-page Final reflection paper. Write a reflection paper about your experience of teaching geometry concepts and your interaction with your assignments in this course. Final reflection paper due Monday, May 9</p>	<p>Final Reflection paper (40 points) Due Monday, May 9</p>

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 Head Phone 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 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 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 class, a student is expected to spend two hours outside of class studying the course materials.

Study Time for Hybrid or Blended Courses

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

Study Time for Online Courses

For an online course of one credit hour, a student is expected to spend four hours 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 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, Nahat'á, Iiná and Sih 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 Early Childhood and Multicultural Education Program, 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.