

TRUMBULL PUBLIC SCHOOLS
TRUMBULL, CONNECTICUT

Curriculum Committee of the
Trumbull Board of Education

Regular Meeting
Via Audio Conferencing*

Thursday, July 8, 2021, 8:15 a.m.

*For Public Access to the Regular Meeting via telephone at 11:00a.m.:
Phone Numbers (US)

+1 470-222-8427 PIN: 782 818 565

AGENDA

- I. Call to Order/Introduction
- II. Correspondence / Public Comment (The public can send comments via e-mail to siwanick@trumbullps.org; comments will be summarized as Correspondence received.)
- III. Approval/Minutes – Regular Meeting 05/20/2021
- IV. New Business
 - a. Report, Assistant Superintendent
 - b. UCONN Multivariable Calculus/Linear Algebra Curriculum Guide Update
 - c. Grade 1 Social Studies Curriculum Guide Update

TRUMBULL, CONNECTICUT

Curriculum Committee of the
Trumbull Board of Education

Regular Meeting
Via Audio Conferencing*

Thursday, May 20th, 2021, 8:00 a.m.

MINUTES

- V. Call to Order/Introduction. The meeting was called to order by Mr. Ward at 8:15am.

Members Present

M. Ward, Chair
L. Timpanelli
M. Petitti
S. Iwanicki, Ed.D., ex officio

Others Present

Adeline Marzialo
Kristen Kravecs
Katie Laird
Elizabeth Copabianco
Nancy Ciborowski
Mary Santilli

VI. Correspondence / Public Comment (The public can send comments via e-mail to siwanick@trumbullps.org; comments will be summarized as Correspondence received.) Mr. Ward and Dr. Iwanicki noted that the public was invited to send any comments via email, and that none had been received.

VII. Approval/Minutes – Regular Meeting 03/18/20201
Ms. Timpanelli moved to approve the Minutes as presented. Mrs. Petitti seconded. The motion was unanimously agreed to.

VIII. K/1 Elementary Mathematics Pilot—Mr. Ward motioned to add K/1 Elementary Mathematics Pilot to the agenda. Mrs. Petitti moved to add the item to the agenda and Ms. Timpanelli seconded. The motion was unanimously agreed to.

IX. New Business

d. Creative Writing Curriculum Guide— Mrs. Kravecs reviewed the ways in which our Creative Writing Curriculum has been revised to reflect more modern components creative writing skills, analyzing and creating nonfiction, as well as reading and observing as writer’s craft. The course now includes a digital portfolio component as well as other aspects that bring the curriculum up-to-date with the current NCTE and Common Core Standards while also engaging students as “life-long writers and lovers of the written word.” After discussion, Mrs. Timpanelli made a motion to pass the Creative Writing Curriculum Guide onto the Board, Mrs. Petitti seconded. The motion was unanimously agreed to.

e. Algebra B Curriculum Guide— Mrs. Laird introduced Elizabeth Capobianco who was a leader in formalizing the high-quality curriculum for the ACP Algebra 1-B course which has been in a pilot since its introduction in 2018, then called “Algebra I-B Extended Year Two.” She noted that Trumbull Public Schools is on track to complete all 14 units, including quadratic functions this school year. After discussion, Mr. Ward requests a motion to rename the title of the course to Algebra I-B. Mrs. Timpanelli moved to approve the change and Mrs. Petitti seconded. The motion was unanimously agreed to.

f. Math Workshop II Curriculum Guide— Mrs. Laird explained that new Math Workshop II Curriculum Guide was written to document the balanced approach being used to support students who take the class after being identified through a variety of testing data. Mrs. Timpanelli made motion was made to change the credit requirements on page 26 from one full credit to a half credit as the course is taken one class period every other day for a full year. Mrs. Petitti seconded. The motion was unanimously agreed to.

g. Modeling & Reasoning in Mathematics Curriculum Guide—This course prepares students for college level modeling and reasoning in mathematics. Mrs. Petitti motioned to

change the name of the course from Introduction to College Mathematics to Modeling and Reasoning in Mathematics. Mrs. Timpanelli seconded. The motion was unanimously agreed to.

h. Practical Applications in Mathematics Curriculum Guide—Practical Mathematics is designed to prepare students with an understanding of complex mathematics they will deal with in everyday life. Mrs. Petitti noted that each of the new guides were very well written in terms of their mathematical content. After discussion, a motion was made Mrs. Timpanelli to bring the present the Practical Applications in Mathematics Curriculum Guide for approval by the board. Ms. Petitti seconded. The motion was unanimously agreed to.

i. Elementary Math Update- Mary Santilli, the TPS Math Program Leader K-5 presented an update on current elementary Math Curriculum resources. She noted that in addition to continuing the Zearn/Eureka Math resources the district has been using in grades 2-5, TPS will be piloting Bridges Mathematics in Kindergarten and Grade 1 next year.

Mrs. Timpanelli made the motion to adjourn at 10:10. Mrs. Petitti seconded. The motion was unanimously agreed to.

TRUMBULL PUBLIC SCHOOLS
Trumbull, Connecticut

UCONN Multivariable Calculus/Linear Algebra
Mathematics Department
Trumbull High School

2021

Curriculum Writing Team

Katie Laird **Math Department Chairperson, Trumbull High School**

Elizabeth Capobianco **Math Teacher, Trumbull High School**
Susan Iwanicki, Ed.D. **Assistant Superintendent**

UCONN Multivariable Calculus/Linear Algebra Table of Contents

Core Values & Beliefs	2
Introduction.....	3
Philosophy.....	3
Course Goals	4
Course Enduring Understandings.....	6
Course Essential Questions.....	6
Course Knowledge & Skills.....	7
Course Syllabus.....	7
Unit 1: Vectors and the Geometry of Space.....	8
Unit 2: Functions of Several Variables.....	9
Unit 3: Multiple Integration.....	10
Unit 4: Vector Valued Functions.....	11
Unit 5: Vector Analysis.....	12
Unit 6: Linear Equations in Linear Algebra.....	13
Unit 7: Matrix Algebra.....	13
Unit 8: Determinants.....	14
Unit 9: Vector Spaces.....	15
Unit 10: Eigenvalues and Eigenvectors.....	16
Unit 11: Orthogonality and Least Squares.....	16
Course Credit.....	17
Prerequisites.....	17
Text.....	18
Supplementary Materials/Resources/Technology.....	18
Current References.....	18
Teacher Guide.....	18
Assured Student Performance Rubrics.....	20

The Trumbull Board of Education will continue to take Affirmative Action to ensure that no persons are discriminated against in its employment.

CORE VALUES AND BELIEFS

The Trumbull School Community engages in an environment conducive to learning which believes that all students will **read and write effectively**, therefore communicating in an articulate and coherent manner. All students will participate in activities **that present problem-solving through critical thinking**. Students will use technology as a tool applying it to decision making. We believe that by fostering self-confidence, self-directed and student-centered activities, we will promote **independent thinkers and learners**. We believe **ethical conduct** to be paramount in sustaining the welcoming school climate that we presently enjoy.

Approved 8/26/2011

INTRODUCTION

UCONN Multivariable Calculus/Linear Algebra is designed for the student who has successfully completed Advanced Placement / Early College Experience Calculus BC. The first semester is ECE Multivariable Calculus which is an extension of calculus in one variable to calculus with functions of several variables. In ECE Multivariable Calculus, students will become proficient with the differentiation and integration of functions involving multiple variables as well as applications in the real world such as volume and surface area. Students will be prepared to succeed on the Early College Experience Examination given by the University of Connecticut in January. The second semester is Linear Algebra which is a beautiful and important subject, rich in applications within mathematics and to many other disciplines. This is the first course to begin bridging the gap between concrete computations and abstract reasoning. Understanding the notions of vector spaces, linear (in)dependence, dimension, and linear transformations will help students make sense of matrix manipulations at a deeper level, clarifying the underlying structure.

PHILOSOPHY

Success in mathematics depends upon active involvement in a variety of interrelated experiences. When students participate in stimulating learning opportunities, they can reach their full potential.

The Trumbull Mathematics Program embraces these goals for all students.

The successful mathematician will:

- Acquire the factual knowledge necessary to solve problems
- Gain procedural proficiency in problem solving
- Demonstrate a perceptual understanding of problems posed
- Make meaningful mathematical connections to his or her world
- Solve problems utilizing a variety of strategies
- Utilize technology to improve the quality of the problem-solving process
- Communicate effectively using mathematical terminology, both independently and collaboratively

- Use sound mathematical reasoning by utilizing the power of conjecture and proof in his or her thinking
- Become a reflective thinker through continuous self-evaluation
- Become an independent, self-motivated, lifelong learner

The Trumbull Mathematics Program promotes the empowerment of students and encourages students to embrace the skills needed to become successful in the 21st century. Students expand their mathematical abilities by investigating real-world phenomena. Through such experiences, students can access the beauty and power of mathematics and truly appreciate the impact mathematics has on the world in which they live.

Developed by Trumbull K-12 Math Committee, June 2004; revised and approved April 2011
Mathematics instruction must:

- Blend the concrete with the abstract, the practical with the theoretical, and the routine with the non-routine.
- Teach students to search for, find, and represent patterns.
- Instill in students an appreciation for the intrinsic beauty of mathematics.
- Encourage students to reason, analyze, make connections, and self-assess.
- Immerse students in the learning process through questioning, technology, manipulatives, cooperative, and individual activities.

Information, Media And Technology Skills

- Use real-world digital and other research tools to access, evaluate and effectively apply information appropriate for authentic tasks.

Learning and Innovation Skills

- Work independently and collaboratively to solve problems and accomplish goals
- Communicate information clearly and effectively using a variety of tools/media in varied contexts for a variety of purposes.
- Demonstrate innovation, flexibility and adaptability in thinking patterns, work habits, and working/learning conditions.
- Effectively apply the analysis, synthesis, and evaluative processes that enable productive problem solving.

Life and Career Skills

- Value and demonstrate personal responsibility, character, cultural understanding, and ethical behavior.

COURSE GOALS

The Standards for Mathematical Practice describe varieties of expertise that all teachers of mathematics will develop in their students.

These practices rest on important “processes and proficiencies” that have long been valued in mathematics education.

1. Make sense of problems and persevere in solving them.

Mathematically proficient students start by explaining to themselves the meaning of a problem and looking for entry points to its solution. They analyze givens, constraints, relationships, and goals. They make conjectures about the form and meaning of the solution and plan a solution pathway rather than simply jumping into a solution attempt. They consider analogous problems, and try special cases and simpler forms of the original problem in order to gain insight into its solution. They monitor and evaluate their progress and change course if necessary.

2. Reason abstractly and quantitatively.

Mathematically proficient students make sense of quantities and their relationships in problem situations. They bring two complementary abilities to bear on problems involving quantitative relationships: the ability to decontextualize—to abstract a given situation and represent it symbolically and manipulate the representing symbols as if they have a life of their own, without necessarily attending to their referents—and the ability to contextualize, to pause as needed during the manipulation process in order to probe into the referents for the symbols involved. Quantitative reasoning entails habits of creating a coherent representation of the problem at hand; considering the units involved; attending to the meaning of quantities, not just how to compute them; and knowing and flexibly using different properties of operations and objects.

3. Construct viable arguments and critique the reasoning of others.

Mathematically proficient students understand and use stated assumptions, definitions, and previously established results in constructing arguments. They make conjectures and build a logical progression of statements to explore the truth of their conjectures. They are able to analyze situations by breaking them into cases, and can recognize and use counterexamples. They justify their conclusions, communicate them to others, and respond to the arguments of others. They reason inductively about data, making plausible arguments that take into account the context from which the data arose. Mathematically proficient students are also able to compare the effectiveness of two plausible arguments, distinguish correct logic or reasoning from that which is flawed, and—if there is a flaw in an argument—explain what it is.

4. Model with mathematics.

Mathematically proficient students can apply the mathematics they know to solve problems arising in everyday life, society, and the workplace.

Mathematically proficient students who can apply what they know are comfortable making assumptions and approximations to simplify a complicated situation, realizing that these may need revision later. They are able to identify important quantities in a practical situation and map their relationships using such tools as diagrams, two-way tables, graphs, flowcharts and formulas. They can analyze those relationships mathematically to draw conclusions. They routinely interpret their mathematical results in the context of the situation and reflect on whether the results make sense, possibly improving the model if it has not served its purpose.

5. Use appropriate tools strategically.

Mathematically proficient students consider the available tools when solving a mathematical problem. These tools might include pencil and paper, concrete models, a ruler, a protractor, a calculator, a spreadsheet, a computer algebra system, a statistical package, or dynamic geometry software. Proficient students are sufficiently familiar with tools appropriate for their grade or course to make sound decisions about when each of these tools might be helpful, recognizing both the insight to be gained and the tools' limitations. For example, mathematically proficient high school students analyze graphs of functions and solutions generated using a graphing calculator. They detect possible errors by strategically using estimation and other mathematical knowledge. When making mathematical models, they know that technology can enable them to visualize the results of varying assumptions, explore consequences, and compare predictions with data.

They are able to use technological tools to explore and deepen their understanding of concepts.

6. Attend to precision.

Mathematically proficient students try to communicate precisely to others. They try to use clear definitions in discussion with others and in their own reasoning. They state the meaning of the symbols they choose, including using the equal sign consistently and appropriately. They are careful about specifying units of measure, and labeling axes to clarify the correspondence with quantities in a problem. They calculate accurately and efficiently, expressing numerical answers with a degree of precision appropriate for the problem context. By the time they reach high school they have learned to examine claims and make explicit use of definitions.

7. Look for and make use of structure.

Mathematically proficient students look closely to discern a pattern or structure.

They also can step back for an overview and shift perspective. They can see complicated things, such as some algebraic expressions, as single objects or as being composed of several objects.

8. Look for and express regularity in repeated reasoning.

Mathematically proficient students notice if calculations are repeated, and look both for general methods and for shortcuts. As they work to solve a problem, mathematically proficient students maintain oversight of the process, while attending to the details. They continually evaluate the reasonableness of their intermediate results.

COURSE ENDURING UNDERSTANDINGS

Students will understand that we live in a three-dimensional world and understand that in this world, mathematicians need models that involve multivariables. Various functions will be explored and understood verbally, numerically, algebraically and visually. Students will be able to work with vector equations and operations, matrix equations and operations, subspaces. Students will understand how Linear Algebra relates to models in Economics and Engineering.

COURSE ESSENTIAL QUESTIONS

- How can the concepts of Multivariable Calculus and Linear Algebra help students understand the physical world around them?
- How can students use their previous knowledge of Single Variable Calculus to understand the concepts of Multivariable Calculus?
- How will the topics of Linear Algebra be applied to real life applications?

COURSE KNOWLEDGE & SKILLS

Students will understand . . .

- the applications of the derivative and the integral in Multivariable Calculus
- vector functions and tangent planes
- functions of two or more variables from verbal, numerical, visual and algebraic points of view
- the matrix equations and vector equations
- linear transformations

Students will be able to . . .

- perform vector operations and interpret the results geometrically
- use vector valued functions to analyze projectile motion
- find directional derivatives and gradients of functions
- find the volume of a solid region
- sketch a vector field, determine whether a vector field is conservative, find a potential function, find curl, and find divergence
- find solution sets of linear systems
- determine operations with matrices

COURSE SYLLABUS

Course Name

UCONN Multivariable Calculus/Linear Algebra

Level

Advanced Placement

Prerequisites

Completion of Advanced Placement / Early College Experience Calculus BC with a B or better and teacher recommendation.

Materials Required

Mymath lab

General Description of the Course

UCONN Multivariable Calculus/Linear Algebra follows the curriculum of the University of Connecticut's Math 2110Q (Multivariable Calculus) and 2210Q (Linear Algebra). The first semester of this course explores Multivariable Calculus. The topics include vectors, surfaces in space in rectangular, cylindrical, and spherical coordinates, partial derivatives, directional derivatives, gradients, optimization, double integrals, line integrals, Green's, Divergence, and Stokes Theorems. The second semester is devoted to the study of Linear Algebra. The topics include systems of linear equations, matrices, vector spaces, determinants, eigenvalues, eigenvectors, and linear transformations. Students should not only be able to work through problems similar to ones seen in the homework, but should also have the ability to go beyond, presenting their knowledge in a clear and coherent manner as well.

Assured Assessments

Students will be evaluated by their performance on tests, quizzes, homework, problem sets, other formative and summative assessments, and midterm and final examinations including questions required by the University of Connecticut.

Core Text

Larson, Ron, and Bruce H. Edwards. *Calculus: AP Edition*. 9th ed. Boston: Brooks/Cole, 2010. Print.

Lay, David C., Steven R. Lay, and Judi J. McDonald. *Linear Algebra and Its Applications*. 5th ed. Pearson 2016

Unit 1: Vectors and the Geometry of Space

Performance Standards

The following Performance Standards are TPS-created, and influenced by the Fairfield Public Schools Multivariable Curriculum Guide.

- Write vectors, perform basic vector operations, and represent vectors graphically
- Plot points in a three-dimensional coordinate system and analyze vectors in space
- Find the dot product of two vectors
- Find the cross product of two vectors
- Find equations of lines and planes in space
- Write and recognize equations of cylindrical and quadric surfaces
- Use cylindrical and spherical coordinates to represent surfaces in space

Essential Questions

- What is the dot product and how can it be used to measure the work done by a force?
- What is a cross product and what are its applications in physics and engineering?
- How do the rectangular, cylindrical and spherical coordinate systems relate to each other in three-space?

Content (Scope and Sequence)

- Component form of a vector
- Vector operations
- Three-dimensional rectangular coordinate system
- Dot product and cross product
- Projection and Vector Components
- Area of parallelogram using cross product
- Volume of parallelepiped
- Distance between points, lines and planes
- Equations of cylindrical and quadric surfaces
- Cylindrical coordinate system
- Spherical coordinate system

Assured Experiences

Problem Sets

Homework

Mid-Unit Quizzes

Tests

Time Allocation

Approximately 3 weeks

Unit 2: Functions of Several Variables

Performance Standards

The following Performance Standards are TPS-created, and influenced by the Fairfield Public Schools Multivariable Curriculum Guide.

- Various functions will be explored and understood verbally, numerically, algebraically and visually
- Students will investigate differentiation of functions of two independent variables; define and apply the gradient

Essential Questions

- What is a partial derivative and how is it interpreted?
- How is the chain rule applied when taking derivatives of functions of two variables?
- What is a directional derivative?
- What is a gradient vector and what meaning does it have?
- How does one calculate the minima and maxima values of a function of two variables?
- What are the applications of the maximum or minimum value of a function?

Content (Scope and Sequence)

- Sketch the graph of a function of two variables
- Sketch level curves for a function of two or three variables
- Find and use partial derivatives of a function of two or more variables
- Find higher-order partial derivatives of a function of two or three variables
- Extend the concept of differentiability to a function of two variables.
- Use the Chain Rules for functions of several variables
- Find partial derivatives implicitly
- Find and use directional derivatives of a function of two or more variables
- Find and use the gradient of a function in two or more variables
- Find equations of tangent planes and normal lines to surfaces
- Find the angle of inclination of a plane in space
- Find absolute and relative extrema of a function of two variables
- Use the Second Partials Test to find relative extrema of a function of two variables
- Solve optimization involving functions of several variables

Assured Experiences (Projects)

Problem Sets

Homework

Mid-Unit Quizzes

Tests

Time Allocation

Approximately 4 weeks

Unit 3: Multiple Integration

Performance Standard

The following Performance Standard is TPS-created, and influenced by the Fairfield Public Schools Multivariable Curriculum Guide.

- Know how to use double and triple integrals to compute volumes, and surface areas
- Write and evaluate triple integrals in cylindrical and spherical coordinates

Essential Questions

- What is a double integral and how can it be used to find the surface area and volume of a solid?
- How does one write a double integral as an iterated integral?
- How does one use polar coordinates to simplify the integrations of solids over circular regions?
- What is a triple integral?

Content (Scope and Sequence)

- Evaluate an iterated integral
- Use an iterated integral to find the area of a plane region
- Use a double integral to represent the volume of a solid region

- Evaluate a double integral as an iterated integral
- Find the average value of a function over a region
- Write and evaluate double integrals in polar coordinates
- Use a double integral to find the area of a surface
- Use a triple integral to find the volume of a solid region
- Write and evaluate a triple integral in cylindrical and spherical coordinates
- Use a Jacobian to change variable in a double integral
- Understand the Method of Lagrange Multipliers
- Use Lagrange Multipliers to solve constrained optimization problems

Assured Experiences (Projects)

Problem Sets

Homework

Mid-Unit Quizzes

Tests

Time Allocation

Approximately 4 weeks

Unit 4: Vector-Valued Functions

Performance Standards

The following Performance Standards are TPS-created, and influenced by the Fairfield Public Schools Multivariable Curriculum Guide.

- Know how to use vector-valued function to analyze projectile motion
- Apply to concepts of limits and continuity to vector-valued functions

Essential Questions

- What is a vector function?
- What is a derivative and integral of a vector function?
- What is a space curve and how do we measure its length and curvature?
- How can the ideas of a tangent and normal vectors and curvature be used in physics to study the motion of an object along a space curve?

Content (Scope and Sequence)

- Limits and continuity of vector valued functions
- Differentiate and integrate vector-valued functions
- Velocity and acceleration of vector-valued functions
- Unit tangent vectors
- Tangential and Normal components of acceleration
- Arc length of a space curve
- Curvature of a curve at a point on the curve

Assured Experiences (Projects)

Problem Sets
Homework
Mid-Unit Quizzes
Tests

Time Allocation

Approximately 2 weeks

Unit 5: Vector Analysis

Performance Standards

The following Performance Standards are TPS-created.

- Know how to sketch a vector field and determine whether the field is conservative and find a potential function, find curl and divergence
- Use the Fundamental Theorem of Line Integrals
- Understand and apply the theorems of Green, Stokes and Gauss

Essential Questions

- What are some important properties of divergence and curl?
- How are double integrals and line integrals related?
- How does the Divergence Theorem relate triple integrals over a solid region and a surface integral over a surface?

Content (Scope and Sequence)

- Determine whether a vector field is conservative
- Find the curl and divergence of a vector field
- Understand and use the concept of a piecewise smooth curve
- Write and evaluate a line integral of a vector field
- Understand and use the Fundamental Theorem of Line Integrals
- Use Green's Theorem to evaluate a line integral
- Understand the definition of a parametric surface
- Find a normal vector and tangent vector plane to a parametric surface
- Find the area of a parametric surface
- Evaluate a surface integral as a double integral and for a parametric surface
- Understand and use the Divergence Theorem to calculate flux
- Understand and use Stoke's Theorem

Assured Experiences (Projects)

Problem Sets
Homework
Mid-Unit Quizzes
Tests

Time Allocation

Approximately 4 weeks

Unit 6: Linear Equations in Linear Algebra

Performance Standards

The following Performance Standards are TPS-created, and influenced by the University of South Alabama by Professor Clontz.

- Systems as matrices: The student can translate back and forth between a system of linear equations and the corresponding augmented matrix.
- Row reduction: The student can put a matrix in reduced row echelon form.
- Systems of linear equations: The student can compute the solution set for a system of linear equations.

Essential Questions

- What are the methods we can use to solve system of linear equations?
- What is the relationship free variables and the solution of a homogeneous equation?

Content (Scope and Sequence)

- Solve systems of equations
- Find echelon form and reduced echelon form
- Solve the matrix equation $Ax=b$
- Understand homogeneous equations
- Determine if vectors are linearly independent or dependent
- Describe and understand linearly transformations

Assured Experiences (Projects)

Problem Sets
Homework
Mid-Unit Quizzes
Tests

Time Allocation

Approximately 4 weeks

Unit 7: Matrix Algebra

Performance Standards

The following Performance Standards are TPS-created, and influenced by the University of South Alabama by Professor Clontz.

- Matrix Multiplication: The student can multiply matrices.
- Invertible Matrices: The student can determine if a square matrix is invertible or not.
- Matrix inverses: The student can compute the inverse matrix of an invertible matrix.

Essential Questions

- What is the Invertible Matrix Theorem and how does it connect the concepts of Linear Algebra?
- How is the basis of a matrix relate to the span of a set?

Content (Scope and Sequence)

- Calculate matrix operations including multiplication, transpose, inverse, determinant
- Understand the Invertible Matrix Theorem
- Understand the three properties of subspaces
- Find bases for subspaces
- Find the dimension of subspaces
- Understand The Rank Theorem
- Understand The Basis Theorem

Assured Experiences (Projects)

- Problem Sets
- Homework
- Mid-Unit Quizzes
- Tests

Time Allocation

- Approximately 3 weeks

Unit 8: Determinants

Performance Standards

The following Performance Standards are TPS-created, and influenced by the University of South Alabama by Professor Clontz.

- Determinants: The student can compute the determinant of a 4 x 4 matrix.
- Row Operations: The student can describe how a row operation affects the determinant of a matrix, including composing two row operations.

Essential Questions

- What is criterion for a square matrix to be invertible?
- How does a linear transformation change the area of a figure?

Content (Scope and Sequence)

- Find the determinant using cofactor expansion
- Use row operations to calculate the determinant
- Use Cramer's Rule to find the solution of $A\mathbf{x}=\mathbf{b}$
- Understand the connection of matrices to area of parallelograms and volume of parallelepiped

Assured Experiences (Projects)

Problem Sets

Homework

Mid-Unit Quizzes

Tests

Time Allocation

Approximately 3 weeks

Unit 9: Vector Spaces

Performance Standards

The following Performance Standards are TPS-created, and influenced by the University of South Alabama by Professor Clontz.

- Linear combinations: The student can determine if a Euclidean vector can be written as a linear combination of a given set of Euclidean.
- Spanning sets: The student can determine if a set of Euclidean vectors spans R^n .
- Subspaces: The student can determine if a subset of R^n is a subspace or not.
- Polynomial basis computation: The student can find a basis for the solution set of a homogeneous system of equations.

Essential Questions

- What is a vector space?

- How do other vector spaces resemble R^n ?

Content (Scope and Sequence)

- Find subspaces of R^n and P^n .
- Find column spaces and null spaces
- Find bases for column and null spaces
- Find vectors using the coordinate vector
- Find change-of-coordinates
- Understand the relationship between the dimensions of the null space, column space, and the row space

Assured Experiences (Projects)

Problem Sets

Homework

Mid-Unit Quizzes

Tests

Time Allocation

Approximately 3 weeks

Unit 10: Eigenvalues and Eigenvectors

Performance Standards

The following Performance Standards are TPS-created, and influenced by the University of South Alabama by Professor Clontz.

- The student can find the eigenvalues of a matrix.
- The student can find a basis for the eigenspace of a matrix associated with a given eigenvalue

Essential Questions

- What is the connection between eigenvalues and eigenvectors?
- How is a linear transformation related to a diagonal matrix?

Content (Scope and Sequence)

- Find eigenvalues of matrices
- Find eigenvectors of matrices
- Use the characteristic equation to find eigenvalues of a matrix
- Find the diagonalization of a matrix
- Compute linear transformations between two finite dimensional vector spaces

Assured Experiences (Projects)

Problem Sets
Homework
Mid-Unit Quizzes
Tests

Time Allocation

Approximately 3 weeks

Unit 11: Orthogonality and Least Squares

Performance Standards

The following Performance Standards are TPS-created, and influenced by the University of South Alabama by Professor Clontz.

- The student can calculate orthogonal and orthonormal sets.
- The student can determine if a set of Euclidean vectors is a basis of R^n

Essential Questions

- How can orthogonality be used to find the closest point within a subspace to a point outside of the subspace?
- What is the most efficient method to produce an orthogonal basis?

Content (Scope and Sequence)

- Calculate the inner product of two vectors
- Calculate the length of a vector
- Find the distance between two vectors
- Find an orthogonal basis for a subspace
- Find an orthonormal basis for a subspace
- Find an orthogonal projection
- Use the Gram-Schmidt process to produce an orthogonal basis

Assured Experiences (Projects)

Problem Sets
Homework
Mid-Unit Quizzes
Tests

Time Allocation

Approximately 3 weeks

Culminating Activity

Midterm Exam

The midterm exam is worth 10% of the student's Trumbull High School course grade and 90% of the student's UCONN Calculus 2110Q grade.

Final Exam

The final exam is worth 10% of the student's Trumbull High School course grade.

COURSE CREDIT

One THS credit in Mathematics
One class period daily for a full year

PREREQUISITES

Advanced Placement / Early College Experience Calculus BC with a B or better and teacher recommendation.

TEXTS

Larson, Ron, and Bruce H. Edwards. *Calculus: AP Edition*. 9th ed. Boston: Brooks/Cole, 2010. Print.

Lay, David C., Steven R. Lay, and Judi J. McDonald. *Linear Algebra and Its Applications*. 5th ed. Pearson 2016

SUPPLEMENTARY MATERIALS/RESOURCES/TECHNOLOGY

My Mathlab. Pearson

CURRENT REFERENCES

Fairfield Public Schools Multivariable Calculus

<http://cdn.fairfieldschools.org/curriculum/math-2014/Multivariable%20Calculus%2061.pdf>

TEACHER GUIDE

Multivariable Calculus

Unit 1: Vectors and the Geometry of Space

Sections:

- 11.2 Space Coordinates and Vectors in Space
- 11.1 Vectors in the Plane
- 11.6 Surfaces in Space
- 11.7 Cylindrical and Spherical Coordinates
- 11.3 The Dot product of Two Vectors
- 11.4 The Cross Product of Two Vectors in Space
- 11.5 Lines and Planes in Space

Unit 2: Functions of Several Variables

- 13.1 Introduction of Functions of Several Variables
- 13.3 Partial Derivatives
- 13.4 Differentials
- 13.5 Chain Rules for Functions of Several Variables
- 13.6 Directional Derivatives and Gradients
- 13.7 Tangent Lines and Normal Planes
- 13.8 Extrema of Functions of Two Variables
- 13.9 Applications of Extrema of Functions of Two Variables
- 13.10 Lagrange Multipliers

Unit 3: Multiple Integration

- 14.1 Iterated Integrals and Area in the Plane
- 14.2 Double Integrals and Volume
- 14.3 Change of Variables: Polar Coordinates
- 14.4 Center of Mass and Moments of Inertia
- 14.5 Surface Area
- 14.6 Triple Integrals and Applications
- 14.7 Triple Integrals in Cylindrical and Spherical Coordinates
- 14.8 Change of Variables: Jacobians

Unit 4: Vector-Valued Functions

- 12.1 Vector-Valued Functions
- 12.2 Differentiation and Integration of Vector-Valued Functions
- 12.4 Tangent Vectors and Normal Vectors

12.5 Arc Length and Curvature

Unit 5: Vector Analysis

- 15.1 Vector Fields
- 15.3 Conservative Vector Fields and Independence
- 15.2 Line Integrals
- 15.4 Green's Theorem
- 15.5 Parametric Surfaces
- 15.6 Surface Integrals
- 15.7 Divergence Theorem
- 15.8 Stoke's Theorem

LINEAR ALGEBRA

Unit 6: Linear Equations in Linear Algebra

- 1.1 Systems of Linear Equations
- 1.2 Row Reduction and Echelon Form
- 1.3 Vector Equations
- 1.4 The Matrix Equation $A\mathbf{x}=\mathbf{b}$
- 1.5 Solution Sets of Linear Systems
- 1.7 Linear Independence
- 1.8 Introduction to Linear Transformations
- 1.9 The Matrix of a Linear Transformation

Unit 7: Matrix Algebra

- 2.1 Matrix Operations
- 2.2 The Inverse of a Matrix
- 2.3 Characterizations of Invertible Matrices

Unit 8: Determinants

- 3.1 Introduction to Determinants
- 3.2 Properties of Determinants
- 3.3 Cramer's Rule, Volume, and Linear Transformations

Unit 9: Vector Spaces

- 4.1 Vector Spaces and Subspaces
- 4.2 Null Spaces, Column Spaces, and Linear Transformations
- 4.3 Linearly Independent Sets; Bases
- 4.4 Coordinate Systems
- 4.5 The Dimension of a Vector Space
- 4.6 Rank
- 4.7 Change of Basis

Unit 10: Eigenvalues and Eigenvectors

- 5.1 Eigenvalues and Eigenvectors
- 5.2 The Characteristic Equation
- 5.3 Diagonalization
- 5.4 Eigenvectors and Linear Transformations

Unit 11: Orthogonality and Least Squares and quadratic Forms

- 6.1 Inner product, Length, Orthogonality
- 6.2 Orthogonal Sets
- 6.3 Orthogonal Projections
- 6.4 The Gram-Schmidt Process

ASSURED STUDENT PERFORMANCE RUBRICS

- Trumbull High School School-Wide Writing Rubric
- Trumbull High School School-Wide Problem-Solving Rubric
- Trumbull High School School-Wide Independent Learning and Thinking Rubric

Rubric 2: Write Effectively

Category/ Weight	Exemplary 4 Student work:	Goal 3 Student work:	Working Toward Goal 2 Student work:	Needs Support 1-0 Student work:
Purpose X_____	<ul style="list-style-type: none"> • Establishes and maintains a clear purpose • Demonstrates an insightful understanding of audience and task 	<ul style="list-style-type: none"> • Establishes and maintains a purpose • Demonstrates an accurate awareness of audience and task 	<ul style="list-style-type: none"> • Establishes a purpose • Demonstrates an awareness of audience and task 	<ul style="list-style-type: none"> • Does not establish a clear purpose • Demonstrates limited/no awareness of audience and task
Organization X_____	<ul style="list-style-type: none"> • Reflects sophisticated organization throughout • Demonstrates logical progression of ideas • Maintains a clear focus • Utilizes effective transitions 	<ul style="list-style-type: none"> • Reflects organization throughout • Demonstrates logical progression of ideas • Maintains a focus • Utilizes transitions 	<ul style="list-style-type: none"> • Reflects some organization throughout • Demonstrates logical progression of ideas at times • Maintains a vague focus • May utilize some ineffective transitions 	<ul style="list-style-type: none"> • Reflects little/no organization • Lacks logical progression of ideas • Maintains little/no focus • Utilizes ineffective or no transitions
Content X_____	<ul style="list-style-type: none"> • Is accurate, explicit, and vivid • Exhibits ideas that are highly developed and enhanced by specific details and examples 	<ul style="list-style-type: none"> • Is accurate and relevant • Exhibits ideas that are developed and supported by details and examples 	<ul style="list-style-type: none"> • May contain some inaccuracies • Exhibits ideas that are partially supported by details and examples 	<ul style="list-style-type: none"> • Is inaccurate and unclear • Exhibits limited/no ideas supported by specific details and examples
Use of Language X_____	<ul style="list-style-type: none"> • Demonstrates excellent use of language • Demonstrates a highly effective use of standard writing that enhances communication • Contains few or no errors. Errors do not detract from meaning 	<ul style="list-style-type: none"> • Demonstrates competent use of language • Demonstrates effective use of standard writing conventions • Contains few errors. Most errors do not detract from meaning 	<ul style="list-style-type: none"> • Demonstrates use of language • Demonstrates use of standard writing conventions • Contains errors that detract from meaning 	<ul style="list-style-type: none"> • Demonstrates limited competency in use of language • Demonstrates limited use of standard writing conventions • Contains errors that make it difficult to determine meaning

Rubric 3: Problem Solving through Critical Thinking

Category/Weight	Exemplary 4	Goal 3	Working Toward Goal 2	Needs Support 1-0
Understanding X _____	Student demonstrates clear understanding of the problem and the complexities of the task	Student demonstrates sufficient understanding of the problem and most of the complexities of the task	Student demonstrates some understanding of the problem but requires assistance to complete the task	Student demonstrates limited or no understanding of the fundamental problem after assistance with the task
Research X _____	Student gathers compelling information from multiple sources including digital, print, and interpersonal	Student gathers sufficient information from multiple sources including digital, print, and interpersonal	Student gathers some information from few sources including digital, print, and interpersonal	Student gathers limited or no information
Reasoning and Strategies X _____	Student demonstrates strong critical thinking skills to develop a comprehensive plan integrating multiple strategies	Student demonstrates sufficient critical thinking skills to develop a cohesive plan integrating strategies	Student demonstrates some critical thinking skills to develop a plan integrating some strategies	Student demonstrates limited or no critical thinking skills and no plan
Final Product and/or Presentation X _____	Solution shows deep understanding of the problem and its components. Solution shows extensive use of 21st Century Technology Skills.	Solution shows sufficient understanding of the problem and its components. Solution shows sufficient use of 21st Century Technology Skills.	Solution shows some understanding of the problem and its components. Solution shows some use of 21st Century Technology Skills.	Solution shows limited or no understanding of the problem and its components. Solution shows limited or no use of 21st Century Technology Skills.

Rubric 5: Independent Learners and Thinkers

Category/Weight	Exemplary 4	Goal 3	Working Toward Goal 2	Needs Support 1-0
Proposal X _____	Student demonstrates a strong sense of initiative by generating compelling questions, creating uniquely original projects/work.	Student demonstrates initiative by generating appropriate questions, creating original projects/work.	Student demonstrates some initiative by generating questions, creating appropriate projects/work.	Student demonstrates limited or no initiative by generating few questions and creating projects/work.
Independent Research & Development X _____	Student is analytical, insightful, and works independently to reach a solution.	Student is analytical, and works productively to reach a solution.	Student reaches a solution with direction.	Student is unable to reach a solution without consistent assistance.
Presentation of Finished Product X _____	Presentation shows compelling evidence of an independent learner and thinker. Solution shows deep understanding of the problem and its components. Solution shows extensive and appropriate application of 21-Century Skills.	Presentation shows clear evidence of an independent learner and thinker. Solution shows adequate understanding of the problem and its components. Solution shows adequate application of 21-Century Skills.	Presentation shows some evidence of an independent learner and thinker. Solution shows some understanding of the problem and its components. Solution shows some application of 21-Century Skills.	Presentation shows limited or no evidence of an independent learner and thinker. Solution shows limited or no understanding of the problem. Solution shows limited or no application of 21-Century Skills.

TRUMBULL PUBLIC SCHOOLS
Trumbull, Connecticut

KINDERGARTEN SOCIAL STUDIES
2021

(Last revision date: 1997)

Curriculum Writing Team

Anthony Artese	Kindergarten Teacher
Beth Byers	Kindergarten Teacher
Mandy Cook	Kindergarten Teacher
Melissa Collins	Kindergarten Teacher
Jennifer Crawford	Kindergarten Teacher
Kimberly Moore	Kindergarten Teacher
Cara Logan	Kindergarten Teacher
Deirdre Sullivan	Kindergarten Teacher
Danielle Troy	Kindergarten Teacher

Susan C. Iwanicki, Ed.D., Assistant Superintendent

Kindergarten Social Studies Table of Contents

Core Values & Beliefs	31
Introduction & Philosophy	31
Course Goals.....	32
Course Enduring Understandings	32
Course Essential Questions	32
Course Knowledge & Skills	33
Social Studies Year at a Glance.....	34
Unit 1: I am a Citizen: Me and My School.....	35
Unit 2: My Family...The Past & Traditions.....	38
Unit 3: We are a Part of a Community: My Town	41
Unit 4: We are a Part of the World.....	43

The Trumbull Board of Education will continue to take Affirmative Action to ensure that no persons are discriminated against in its employment.

CORE VALUES AND BELIEFS

The Trumbull School Community engages in an environment conducive to learning which believes that all students will **read and write effectively**, therefore communicating in an articulate and coherent manner. All students will participate in activities **that present problems solving through critical thinking**. Students will use technology as a tool applying it to decision making. We believe that by fostering self-confidence, self-directed and student-centered activities, we will promote **independent thinkers and learners**. We believe **ethical conduct** to be paramount in sustaining the welcoming school climate that we presently enjoy.

Approved 8/26/2011

INTRODUCTION & PHILOSOPHY

The National Council for Social Studies states that "the primary purpose of social studies is to help young people make informed and reasoned decisions for the public good as citizens of a culturally diverse, democratic society in an interdependent world. " At Trumbull Public Schools, we recognize that elementary age students must be engaged in the learning process and make connections to their own lives regarding historical events and concepts that affect life today.

The Connecticut State Department of Education developed the 2015 *Connecticut Elementary and Secondary Studies Frameworks* in collaboration with a writing team which consisted of elementary, middle, high school and college/university faculty. This framework was founded primarily on the national *College, Career, and Civics Life Framework (C3)* as well as the *Common Core State Standards (CCSS)*.

The National Council for Social Studies' *C3* offers five principles to support high quality social studies education that informed the *Connecticut Elementary and Secondary Studies Framework* as well as this document:

1. Social studies prepares the nation's young people for college, careers, and civic life.
2. Inquiry is at the heart of social studies.
3. Social studies involves interdisciplinary applications and welcomes integration of the arts and humanities.
4. Social studies is composed of deep and enduring understandings, concepts, and skills from the disciplines. Social studies emphasizes skills and practices as preparation for democratic decision-making.
5. Social studies education should have direct and explicit connections to the Common Core State Standards for English Language Arts.

- C3 Framework

A full copy of the C3 framework can be accessed at <http://www.socialstudies.org/C3>

COURSE GOALS

The course goals are derived from *Connecticut Elementary and Secondary Studies Frameworks*. Prioritized standards are learning goals that have been identified as most essential to each grade level, content area, or course. Goals are listed specific to each unit in this curriculum guide, with the prioritized standards or goals bolded to show their importance. This curriculum aims to build the foundational skills needed in social studies and citizenship.

COURSE ENDURING UNDERSTANDINGS

Students will understand that . . .

- Good citizens demonstrate civic virtues by following rules and being kind to one another.
- Rules keep us safe and allow us to learn.
- Citizens use words, listen, and work together to solve problems.
- Families are made up of different people and roles, but they are all special.
- Experiences and traditions of the past shape who we are today.
- We ask questions, read/listen to stories, and look at pictures to learn about our past.
- Community members have different strengths and talents to help our community.
- Our community has rules to keep us safe and get us what we need.
- Community members use procedures to find solutions and address problems such as meetings, voting, listening, and talking.
- Maps are important because they can help us find places and determine locations.
- We can use maps to learn the types of physical features.
- Weather/climate affects how we live and interact with one another.

COURSE ESSENTIAL QUESTIONS

- What does it mean to be a good citizen?
- Why are rules important in our classroom and school?
- How can citizens at school solve problems?
- What makes a family?
- How do past experiences shape who we are today (family, home, school)?
- What sources can we use to learn about the past?
- Why do we have different roles for the members of our community?
- Why are rules important for our community?
- How do community members work together to take action to address problems?
- How do we use maps?
- Why are maps important?
- How does weather/climate influence our homes, our seasonal activities, and our community?

COURSE KNOWLEDGE & SKILLS

Students will understand, at an age-appropriate level, . . .

- Civic Virtues. Individual citizens can help communities by following rules and working cooperatively.
- Perspectives Change Over Time. People in the past may think differently than people today.
- The Past Shapes Us. Historical events and traditions have an effect on our lives today.
- Historical Sources. Historians use historical sources such as interviews, inquiry, books, digital sources, and pictures to study the past.
- Peoples' Roles in the Community. Roles of all people, not limited to those in authority, can play important parts in our town.
- Voting. Citizens can make decisions by following group procedures to make decisions such as voting for town officials or to make important decisions.
- Map Reading. People can use maps for various purposes to locate places and learn about our world and environment.
- Location & Culture. The relationship between location and weather can have an impact on peoples' culture and the way they live.

Students will be able to . . .

- Identify relationships and roles within their family, school, and town. [CIV]
- Compare and give examples of life in the past to life today. [HIS]
- Understand that decisions impact our resources and others. [CIV, ECO]
- Describe how geography and climate impact daily living and culture. [GEO]
- Develop questions, plan inquiry, use sources, and present an argument about a topic related to their lives. [INQ]

Social Studies Framework Standards Categories	
CIV-	Civics
ECO-	Economics
HIS-	History
GEO-	Geography
INQ-	Inquiry

SOCIAL STUDIES YEAR AT A GLANCE

September –October	<u>Unit 1</u> : I am a Citizen: Me and My School
November – January	<u>Unit 2</u> : My Family...The Past & Traditions
February–March	<u>Unit 3</u> : We are a Part of a Community: My Town
April–June	<u>Unit 4</u> : We are a Part of the World
* Units may be longer to allow for Science and/or ELA Interdisciplinary Teaching	

KINDERGARTEN- UNIT 1
I am a Citizen: Me and My School

At a grade-appropriate level, the student will:

- CIV K.4** Apply civic virtues when participating in school settings.
- CIV K.5** Follow agreed upon rules for discussions while responding attentively to others when addressing ideas and making decisions as a group.
- CIV K.6 Explain the need for and purposes of rules in various settings inside of school.
- CIV K.7** Explain how people can work together to make decision in the classroom.
- ECO K.1 Explain how scarcity necessitates decision-making.
- ECO K.2 Identify the benefits and costs of making various personal decisions.
- HIST K.1 Compare life in the past to life today.
- INQ K–2.1 Explain why the compelling question is important to the student.
- INQ K–2.2 Identify disciplinary ideas associated with a compelling question.
- INQ K–2.10 Construct an argument with reasons.
- INQ K–2.12 Present an oral summary of an argument.
- INQ K–2.13 Ask and answer questions about arguments.
- INQ K–2.17** Use listening, consensus-building, and voting procedures to decide on and take action in their classrooms.

Concepts: Need to know about:

Responsibilities of Citizens- Rules & Expectations in Classroom

- Agreed upon classroom rules and procedures (eg. Class promise, class constitution)
- Rules vary in settings (home, school, public)
- Rules and expectations have changed over time (eg. chalk/no computers in school).
- Working together to make decisions in the classroom (listening, consensus-building, voting, take actions)

How to Be a Good Citizen

- Good citizenship (civic virtues- eg. manners, sharing, listening, cooperating)
- Citizens affect one another
- Benefits and costs of making various personal decisions

- Scarcity necessitates decision-making (using classroom materials and tools responsibly)
- Conflict resolution (arguments- questioning, using reasons, summarizing)

Key Vocabulary: citizen, rule, classroom community, school community, responsibility, conflict, decision, argument, benefit, personal, procedure, consensus, vote, setting, civic virtues

Skills: Need to be able to do:

Responsibilities of Citizens- Rules & Expectations in Classroom

- Define citizen and civic virtues, and their roles as members of the classroom and school community.
- Demonstrate understanding by following classroom and school rules.
- Consider how some rules or expectations have changed over time (eg. chalk/using computers in school)
- Explain why we need rules (safety and fairness).
- Discuss how rules vary in different settings.
- Understand that it is a responsibility to follow rules in the classroom and school community.
- Collaborate and develop agreed upon classroom rules and procedures (eg. Class promise, class constitution)
- Work together to make decisions in the classroom (listening, consensus-building, voting, take actions)

How to Be a Good Citizen

- Demonstrate good citizenship (civic virtues- eg. manners, share, listen, cooperate, participate, allow personal space)
- Discuss how our personal decisions and actions can affect one another positively (benefits) and negatively (costs) (eg, kind words can lead to more friends, breaking the classroom crayons)
- Define a conflict and discuss classroom problems.
- Resolve conflicts through questioning, using reasons, summarizing.

Big Ideas

Student's statements of enduring ideas

- Good citizens demonstrate civic virtues by following rules and being kind to one another.
- Rules keep us safe and allow us to learn.
- Citizens use words, listen, and work together to solve problems.

Compelling or Essential Questions

Teacher's guiding questions

- What does it mean to be a good citizen?
- Why are rules important in our classroom and school?
- How can citizens at school solve problems?

Instructional Strategies

Based on our philosophy for student learning, teachers will:

1. Define and discuss with students the traits of a good citizen.
2. Model and provide students with expectations for classroom/school rules and procedures (eg. school-based PBIS curriculum).
3. Compare and contrast rules in different settings (school, home, public) to build understanding (eg. anchor chart, Venn diagram or other).
4. Lead students in a discussion of classroom rules, civic virtue, and their importance.
5. Provide students with the opportunity to consensus build, vote and take action to create classroom rules.
6. Create role playing scenarios in which students can exhibit good citizenship through respect for self, others, property, and rules.
7. Develop an anchor chart of problem-solving strategies with the class (eg. how to use kind words, finding materials, asking others).
8. Engage students with scenarios for discussion and role play about classroom problems and/or conflicts that involve lack of materials and/or other classroom issues.
9. Provide students with feedback and reinforce when they demonstrate civic virtues (eg. Catch them being good).
10. Introduce students to key vocabulary with opportunities for oral discussion-- *citizen, rule, classroom community, school community, responsibility, conflict, decision, argument, benefit, personal, procedure, consensus, vote, setting, civic virtues*

Assured Assessments

Through these assessments/experiences, students will demonstrate growth and/or mastery of the content and skills for this unit. Teachers will assess and provide feedback to students about the following:

Evaluation/ Assessment Methods

Formative

Student will:

- Listen, discuss, and use strategies (eg. consensus-building, and voting procedures) to create classroom rules.
- Verbalize and physically demonstrate understanding of classroom/school rules.
- Participate in discussions and role playing to identify tools to resolve conflicts.

Summative

Student will:

- Reflect, identify, and document their own positive citizenship through drawing with written or oral dictation of civic virtues.

Time Allotments/Pacing Guide

6 weeks

KINDERGARTEN- UNIT 2

My Family... The Past & Traditions

At a grade-appropriate level, the student will:

HIST K.1 Compare life in the past to life today.

HIST K.2 Generate questions about individuals and groups who have shaped a significant historical change.

HIST K.3 Compare perspectives of people in the past to those in the present.

HIST K.4 Identify different kinds of historical sources.

HIST K.5 Explain how historical sources can be used to study the past.

HIST K.6 Identify the maker, date, and place of origin for a historical source from information within the source itself.

HIST K.7 Generate questions about a particular historical source as it relates to a particular historical event or development

HIST K.8 Generate possible reasons for an event or development in the past.

INQ K–2.1 Explain why the compelling question is important to the student.

INQ K–2.2 Identify disciplinary ideas associated with a compelling question.

INQ K–2.3 Identify facts and concepts associated with a supporting question.

INQ K–2.4 Make connections between supporting questions and compelling questions.

INQ K–2.5 Determine the kinds of sources that will be helpful in answering compelling questions and supporting questions.

INQ K–2.11 Construct explanations using correct sequence and relevant information.

INQ K–2.12 Present an oral summary of an argument using a visual.

Concepts: Need to know about:

Families

- Family structures are not all the same.
- Members have different roles
- You within your family
- Vocabulary we use to describe family roles

The Past Shapes Us

- Sources help us learn (eg. pictures, stories, books about traditions, interviews).
- Historians ask questions and interview to learn.
- Traditions vary (by family, religion, culture) and can give us a sense of belonging.

Key Vocabulary: family, mother, father, sister, brother, grandmother, grandfather, niece, nephew, aunt, uncle, cousin, (as needed-- caregiver, guardian, foster parent, step-father/mother/sister/brother) the past, the present, tradition, compare

Skills: Need to be able to do:

Families

- Identify the relationship, roles, and titles of family members (eg. mother, father...)
- Compare their own role within their own family
- Discuss similarities and differences in family structures.

The Past Shapes Us

- Identify and explain how we can use sources to find out about the past.
- Compare life in the past to life today based on their families.
- Ask and find answers to questions about family and traditions (eg. interview).
- Referring to sources and dates, construct a comparison of a parent/caregiver’s childhood and their own (eg. “My mom was born in 1982 and her favorite book was The Velveteen Rabbit and my favorite book is Pete the Cat”).
- Present to classmate about their family’s/caregiver’s past and present as well as traditions (in pictures and in words).

Big Ideas

Student’s statements of enduring ideas

- Families are made up of different people and roles, but they are all special.
- Experiences and traditions of the past shape who we are today.
- We ask questions, read/listen to stories, and look at pictures to learn about our past.

Compelling or Essential Questions

Teacher’s guiding questions

- What makes a family?
- How do past experiences shape who we are today (family, home, school)?

- What sources can we use to learn about the past?

Instructional Strategies

Based on our philosophy for student learning, teachers will:

1. Define and discuss with students the relationships, roles, and titles of family members.
2. Model and provide students with a graphic organizer to represent their family and members (eg. picture, modern family tree, list)
3. Compare and contrast the roles members play within a family through class discussion.
4. Provide models of various sources that can be used to learn about the past in one's family.
5. Conduct an interactive read aloud that provides an example of family tradition and conduct a discussion of traditions students celebrate in their families.
6. Record a class list of traditions shared during discussion.
7. Brainstorm with students and supply interview questions for the family member interview about life in the past and family traditions.
8. Role play and/or model how to interview a family member (eg. questioning- in person, Zoom and recording responses- writing/taking notes or recording).
9. Supply students and families with directions and supports (rubric) for the Family/Caregiver Interview and presentation.
10. Differentiate for students who do not have access to family/caregiver sources (eg. teacher interview, PebbleGo).
11. Lead the class in a discussion of how to present (model sentence starters, loud voice, eye contact).
12. Use a rubric to provide presentation feedback on student mastery of standards (using sources, comparing life in past to life today, presenting).
13. Introduce students to key vocabulary with opportunities for oral discussion-- family, mother, father, sister, brother, grandmother, grandfather, niece, nephew, aunt, uncle, cousin, (as needed-- caregiver, guardian, foster parent, step-father/mother/sister/brother) tradition, compare

Assured Assessments

Through these assessments/experiences, students will demonstrate growth and/or mastery of the content and skills for this unit. Teachers will assess and provide feedback to students about the following:

Evaluation/ Assessment Methods

Formative

Student will:

- Listen, reflect and discuss the concepts around family, life in the past and present, and traditions using key vocabulary.

- Complete a representation of their own family members through drawing and labeling with written or oral dictation.

Summative

Student will:

- Prepare and present about their own family using sources about life in the past and the present, as well as family traditions.

Time Allotments/Pacing Guide

6 weeks

KINDERGARTEN UNIT 3

We are a Part of a Community: My Town

At a grade-appropriate level, the student will:

- CIV K.1 Describe roles and responsibilities of people in authority (local/state/national e.g., judge, mayor, governor, police).**
- CIV K.2 Explain how all people, not just official leaders, play an important role in a community.**
- CIV K.3 Describe how communities work to accomplish common tasks, establish responsibilities, and fulfill roles of authority.
- CIV K.6 Explain the need for and purposes of rules in various settings inside and outside of school.**
- CIV K.8 Identify and explain how rules function in public.
- INQ K–2.15 Identify and explain a range of local problems, and some ways in which people are trying to address these problems.
- INQ K–2.16 Identify ways to take action to help address local, ~~regional, and global~~ problems.**

Concepts: Need to know about:

Community Helpers

- Community – definition and members
- Roles of members- town’s people, volunteers, town service people (eg. police, fire, medical, teachers, facilities), and town officials (eg. judge, 1st Select person, Board of Education members)
- How people become helpers or town service/officials- volunteering, applying, elections, and voting
- Student roles in the community

Working Together

- Need and purpose for rules in the community
- Examples of town problems (eg. accident, snow storms, building schools)
- Ways members use procedures (check-lists, meetings, voting, listening and talking) to take action

Key Vocabulary: community, community helpers, volunteers, town service people, town officials, election, vote, procedures

Skills: Need to be able to do:

Community Helpers

- Identify the relationship, roles, and titles of community members (eg. town's people, service people, officials, etc.)
- Discuss how people become a specific role within the community (eg. volunteering, applying, elections, and voting)
- Compare and contrast roles within the community and how students play a part.

Working Together

- Provide examples of rules in public/the town community and their purpose (eg. to keep us safe, to keep our community clean).
- Brainstorm and share examples of how community members work together to address problems (eg. accident, snow storms, building schools)
- Demonstrate understanding of community members and roles through a poster, letter, or page in a class book.

Big Ideas

Student's statements of enduring ideas

- Community members have different strengths and talents to help our community.
- Our community has rules to keep us safe and get us what we need.
- Community members use procedures to find solutions and address problems such as meetings, voting, listening, and talking.

Compelling or Essential Questions

Teacher's guiding questions

- Why do we have different roles for the members of our community?
- Why are rules important for our community?
- How do community members work together to take action to address problems?

Instructional Strategies

Based on our philosophy for student learning, teachers will:

1. Define, discuss, and create an anchor chart with students showing the relationships, roles, and titles of community helpers.

2. Conduct various interactive read alouds that provides examples of community members and their roles/responsibilities.
3. Compare and contrast the roles members play within a community.
4. Incorporate guest speakers from the community as is possible (eg. Board Members, fire department, veterans).
5. Supply students with directions and guide them in creating a poster, letter, or page in a class book that demonstrates understanding of community helpers and their role in our town.
6. Brainstorm and discuss rules in the community and their importance.
7. Provide scenarios of community problems and lead the class to decide which community members would be the best to take actions to address the problem.
8. Introduce students to key vocabulary with opportunities for oral discussion-- community, community helpers, volunteers, town service people, town officials, election, vote, procedures

Assured Assessments

Through these assessments/experiences, students will demonstrate growth and/or mastery of the content and skills for this unit. Teachers will assess and provide feedback to students about the following:

Evaluation/ Assessment Methods

Formative

Student will:

- Compare and contrast the roles and responsibilities of community helpers.
- Consider and discuss community rules and why we need them.
- Participate in discussions and scenarios/role playing to identify procedures that community helpers follow to take action to address problems.

Summative

Student will:

- Demonstrate understanding of community helpers and their role in our town by creating a poster, letter, or page in a class book.

Time Allotments/Pacing Guide

8 weeks

KINDERGARTEN UNIT 4 ***We are a Part of the World***

At a grade-appropriate level, the student will:

GEO K.1 Construct maps, graphs and other representations of familiar places.

- GEO K.2 Use maps, graphs, photographs and other representations to describe places and the relationships and interactions that shape them.**
- GEO K.3 Use maps, globes, and other simple geographic models to identify cultural and environmental characteristics of places.
- GEO K.4 Explain how weather, climate, and other environmental characteristics affect people’s lives in places or regions.**
- INQ K–2.6 Gather relevant information from one or two sources while using the origin and structure to guide the selection.
- INQ K–2.7 Evaluate a source by distinguishing between facts and opinion.**
- INQ K–2.10 Construct an argument with reasons.
- INQ K–2.12 Present a summary of an argument using print, oral, and digital technologies.
- INQ K–2.13 Ask and answer questions about arguments.
- INQ K–2.14 Ask and answer questions about explanations.
- INQ K–2.15 Identify and explain a range of local, regional, and global problems, and some ways in which people are trying to address these problems.**
- INQ K–2.16 Identify ways to take action to help address local, regional, and global problems.**

Concepts: Need to know about

Discovering Our World Through Maps & Globes

- Purpose of a map and map types (eg. Town, State, Country, World or paper, digital, globe)
- Important features of a map and map key (eg. compass rose, cardinal directions, symbols, longitude and latitude lines, land and water)
- Digital map technology purposes (eg. directions, to explore pictures of places, determine weather)

Ways Places and Regions Affect Our Weather & Culture

- Types of climate and environmental characteristics
- Regional weather and seasons
- Impact of weather on how people live (culture)

Key Vocabulary: location, town, state, country, world, map, globe, land, water, map key, compass rose, cardinal directions (North, South, East, West), symbols, longitude and latitude lines, land and water, climate, season, culture

Skills: Need to be able to do:

Discovering Our World Through Maps & Globes

- Identify and locate the important features of the map (eg. map key, compass rose, North, South, East, West)
- Discuss how people use maps and how they might use maps in their family
- Find their own location or the location of others on the map (eg. *This is where I live. This is where Disney World is.*)
- Compare and contrast types of geographic features on a map (land, water, ocean, mountains, rivers)
- Use digital map technology to explore pictures of places in the world (google earth)

Ways Places and Regions Affect Our Weather & Culture

- Compare and contrast types of climate, weather, and seasons.
- Brainstorm and discuss how weather impacts how people live (their culture).
- Demonstrate understanding of the way weather impacts how people live through a digital presentation about local weather (At my house in the summer, we.... At my house in the fall, we...).
- Argue, using evidence about weather, why a chosen activity fits best in a particular season and why.

Big Ideas

Student's statements of enduring ideas

- Maps are important because they can help us find places and determine locations.
- We can use maps to learn the types of physical features.
- Weather/climate affects how we live and interact with one another.

Compelling or Essential Questions

Teacher's guiding questions

- How do we use maps?
- Why are maps important?
- How does weather/climate influence our homes, our seasonal activities, and our community?

Concepts: Need to know about

Discovering Our World Through Maps & Globes

- Purpose of a map and map types (eg. Town, State, Country, World or paper, digital, globe)
- Important features of a map and map key (eg. compass rose, cardinal directions, symbols, longitude and latitude lines, land and water)
- Digital map technology purposes (eg. directions, to explore pictures of places, determine weather)

Ways Places and Regions Affect Our Weather & Culture

- Types of climate and environmental characteristics
- Regional weather and seasons
- Impact of weather on how people live (culture)

Key Vocabulary: location, town, state, country, world, map, globe, land, water, map key, compass rose, cardinal directions (North, South, East, West), symbols, longitude and latitude lines, land and water, climate, season, culture

Instructional Strategies

Based on our philosophy for student learning, teachers will:

1. Introduce the concept of a maps by sharing with different types of maps (eg. map of the zoo, globe, paper map, treasure map).
2. Reinforce concepts using an interactive read aloud that provides an example maps and how we use them (eg. *Me on the Map* by Joan Sweeney).
3. Lead the class in a discussion of where they have been by demonstrating map use with the SMART Board (eg. places they have been or heard of—locating them on the digital map).
4. Create an anchor chart of key features of a map; use book, songs, and videos to reinforce map features as is possible. (eg. PebbleGo – Maps)
5. Model for students how to create their own map.
6. Provide supports for students to create their own individual map with a key (eg use teacher provided shapes and labels to cut/paste and create a map).
7. Brainstorm types of weather/climate and how people live in those climates. Create anchor charts naming specific features.
8. Using digital technology (eg. PebbleGo – People and the Environment) lead students in exploration of different regions and their weather/climate (culture).
9. Provide scenarios of seasonal activities and lead the class to decide which activity best matches specific seasons in Trumbull, CT. (eg. sledding = winter, apple picking = fall)
10. Model and provide supports for students to argue using evidence about the weather why a chosen activity fits best in a particular season.
11. Introduce students to key vocabulary with opportunities for oral discussion-- location, town, state, country, world, map, globe, land, water, map key, compass rose, cardinal directions (North, South, East, West), symbols, longitude and latitude lines, land and water, climate, season, culture

Assured Assessments

Through these assessments/experiences, students will demonstrate growth and/or mastery of the content and skills for this unit. Teachers will assess and provide feedback to students about the following:

Evaluation/ Assessment Methods

Formative

Student will:

- Find features on a map using a matching activity.
- Create their own map with a map key.
- Discuss how weather affects the way people live.

Summative

Student will:

- Write about and prepare a digital presentation (eg. pictures from PebbleGo, Flipgrid/Seesaw) about how local weather/climate impacts how they live (eg. At my house in the summer, we.... because...At my house in the fall, we...because...). In the conclusion, they will argue, using evidence about which season/weather is best and why.

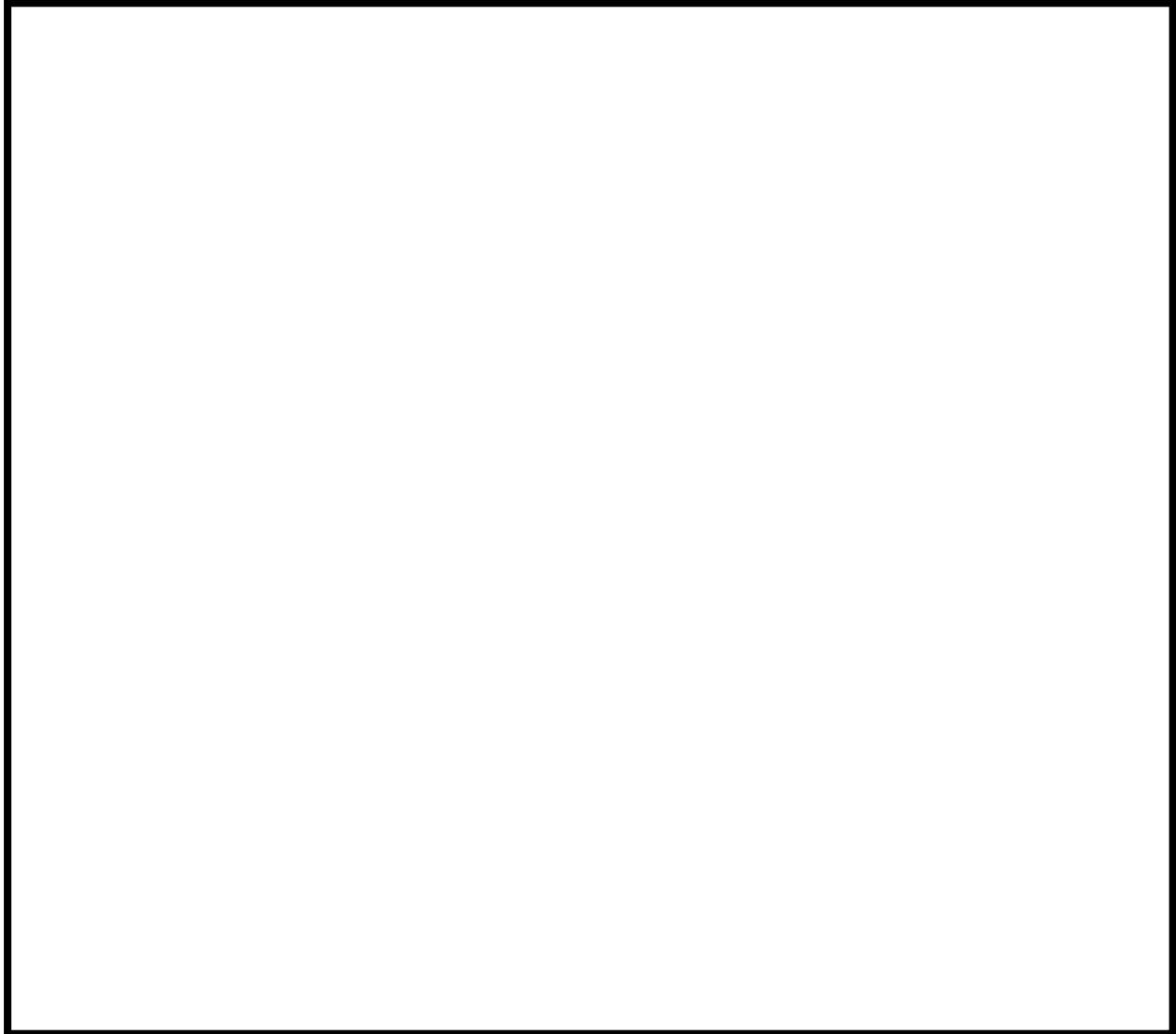
Time Allotments/Pacing Guide

10 weeks (Note: Coordinate planning around the *Science Life Cycles Unit*)

ASSURED STUDENT PERFORMANCE TEMPLATES & RUBRICS
UNIT ONE

Name _____

This is how I am a good citizen:



UNIT TWO
INTERVIEW ASSIGNMENT & QUESTION SHEET

Name _____

Dear _____,

We have been talking about families; and how our families connect to the past via history and traditions...

Assignment: Your child will interview a family member or caregiver. They will record the answers of the below questions using pictures or words. A family member or caregiver can record these responses under the student's picture for clarification, but the student will be responsible for presenting this interview / information to the class. Students will bring in a picture of the interviewed family member.

Please find the attached rubric. As students present, they will address the three tasks on the attached rubric.

Question Family Member / Caregiver Interview Questions:

What was your favorite book, toy or TV show when you were a child?

My favorite book, toy or TV show is

_____ because _____

Describe a tradition in our family? (holiday, food, birthday) What do we do?
What do we eat? What do we share? Is there a special song or music that
we play?

Rubric For Family Presentation

I said the source/s in my presentation:



I compared past to present:



I used my presentation skills (clear voice, eye contact)





Community Helpers



My community helper is:

Draw a detailed picture of your Community Helper.

A large rectangular area defined by a dashed black border, intended for the student to draw a detailed picture of their chosen community helper.

What does your community helper do?

Rubric - Local Weather & Life Presentation

I wrote and presented using digital media:



I shared how weather affects the way we live:



I used my presentation skills (clear voice, eye contact)



I stated my opinion with facts about what season is the best and why.

