Master Course Syllabus

For additional course information, including prerequisites, corequisites, and course fees, please refer to the Catalog: https://catalog.uvu.edu/

Semester: Spring
Year: 2025
Course Prefix: MATH
Course and Section #: 2020 X02
Course Title: Mathematics for Elementary Teachers Two
Credits: 3

Course Description

Math 2020 is the second part of a two-semester sequence for elementary education majors. These two courses provide an overview of the mathematics curriculum in Grades 1 through 8. The topics in the second semester include descriptive statistics, probability, geometry, measurement, triangles, quadrilaterals, coordinate geometry and plane transformations.

Course Attributes

This course has the following attributes:

☐ General Education Requirements
☐ Global/Intercultural Graduation Requirements
☐ Writing Enriched Graduation Requirements
☒ Discipline Core Requirements in Program
☐ Elective Core Requirements in Program
☐ Open Elective

Other: *Click here to enter text.*

Instructor Information

Instructor Name: Fagan, J.

Student Learning Outcomes

Upon successful completion of this course, students will be able to:

- Convert measurements within a system of measurement and from one system of measurement to another
- Find the perimeter and area of plane figures and the surface area and volume of solids
- Identify basic geometric plane figures and solids and their properties including symmetries.
- Solve triangle problems involving the concepts of congruence, similarity, the Pythagorean Theorem, and the Triangle Inequality.
- Perform elementary geometric constructions and transformations of the plane using a variety of tools.
- Solve application problems of probability and simulations.
- Summarize data in bar graphs, picture graphs, dot plots, histograms, frequency distributions, box plots, scatter plots, and two-way tables.

- Find measures of central tendency (mean and median) and measures of dispersion (mean absolute deviation and interquartile range), outliers, and lines of best fit.
- Interpret lines of best fit, solutions to inequalities, and solutions to systems of equations.

Course Materials and Texts

Mathematics for Elementary School Teachers, by Ricardo D. Fierro; Cengage Learning, 2013.

Course Requirements

Course Assignments, Assessments, and Grading Policy

Hands-On Activities: Weeks 2, 4, 7, 9, and 10 will contain a hands-on assignment which will be assigned from Wednesday-Friday as a more creative lesson idea pre-service teachers can implement in a future classroom. They will relate to the material from that week. All told these are worth fifteen percent of your final grade. These assignments contain a video of the instructor explaining the activity and carrying it out. Attached will be a worksheet to follow along and fill out according to the instructions in the video. Then, record a brief 1-minute video reflecting on the activity. Feel free to do the activity on your own, but watching the video will suffice to be successful. The purpose of these is for additional practice and also to promote teaching ideas. A rubric is contained within each to show how these will be graded (based on effort and completion).

Discussions: Discussion boards will be available each week as part of that week's material, and are intended to be a space for students to ask each other questions, clarify anything necessary, reach out to the instructor for extra help, or anything else related to the material that week. This is not assessed (meaning there is not a minimum number of posts), but past students have found this section very helpful for succeeding in the course.

Assignments: Short homework assignments, dedicated to each section, will be assigned for each section of the week's chapter. They will be considered the conclusion of the week's bundle of material, following exercises videos, intro videos, and slide notes. Each assignment will vary in length, but half credit will automatically be given for completion, and the other half will be for accuracy. All told these are worth nineteen percent of your final grade. Most problems are taken straight from the related section in the textbook. Not only is homework counted toward the overall grade, but it is also essential to do well in the course. Please note that they are called "Quizzes" by Canvas settings, but in no way are they a quiz. Instead, feel free to use as much outside help and time (within the due date) to finish these assignments, completely unproctored.

Exams: Tests will be administered independently within Proctorio. Please make sure to have Proctorio downloaded and all settings adjusted so that the proctor can run smoothly as you take your exam within the time limit. All told these are worth forty-five percent of your final grade. Information including basic test review instructions and procedures will be available as exams come up throughout the semester. The three unit exams are open-response, partial credit written tests. There will be six questions on each, and the best five will be the ones that are graded for the overall score.

Lesson Idea: For many students, this many be the very first time approaching a lesson plan idea. Your goal is to choose an appropriate K-8 math topic covered in this course and explore a way of engaging students through teaching this topic creatively. A rubric is posted within this assignment. All told these are worth fifteen percent of your final grade. Format is intentionally loose, this is more of a way to think like a teacher and, following the rubric, make sure some essential pieces are present in the plan.

Participation: Students are still expected to participate fully in the class. Canvas is organized with a week-by-week schedule that will unlock as the course progresses. To be counted as "attending" class for the week, there will be a short video introducing the topics and ideas for the week which will also contain a "code word" that can be used to take a one-question quiz at least proving minimal participation

in the week's material. Attendance will count toward your overall grade, barring medical emergencies/situations. All told these are worth six percent of your final grade. Please let the instructor know in advance if a student cannot attend class. It is advised that immediately following this introduction video, students should begin at least some of the material immediately after, and get started on the homework soon after. There will be a Participation Quiz for each Chapter, for a total of 6 quizzes.
A = 93-100 B - = 80-82.9 D+ = 67-69.9
A - = 90-92.9 C+ = 77-79.9 D = 63-66.9
B+ = 87-89.9 C = 73-76.9 D - = 60-62.9
B = 83-86.9 C - = 70-72.9 F = 0-59.9

Required or Recommended Reading Assignments
Mathematics for Elementary School Teachers, by Ricardo D. Fierro; Cengage Learning, 2013.

- Chapters 8-13

General Description of the Subject Matter of Each Lecture or Discussion
Online Delivery:

- **Chapter 8:** Upon successful completion of this module, students will be able to:
  - Utilize measures of center to describe data
  - Distinguish between various types of graphs
  - Summarize data in frequency distributions
  - Analyze normally distributed bell curves
- **Chapter 9:** Upon successful completion of this module, students will be able to:
  - Investigate permutations and combinations
  - Calculate independent and dependent probabilities
  - Formulate strategies to determine expected value
  - Use tree diagrams to visualize probability
- **Chapter 10:** Upon successful completion of this module, students will be able to:
  - Define fundamental properties of geometry
  - Identify basic geometric figures and solids and their properties
- **Chapter 11:** Upon successful completion of this module, students will be able to:
  - Convert measurements within a system of measurement and from one system of measurement to another
  - Find the perimeter and area of plane figures
  - Apply the Pythagorean Theorem for application and triangle descriptions
  - Find the volume and surface area of solid figures
- **Chapter 12:** Upon successful completion of this module, students will be able to:
  - Construct elementary geometric constructions using a variety of tools
  - Prove triangle congruencies using postulates
  - Apply similarity principles to real world problems
- **Chapter 13:** Upon successful completion of this module, students will be able to:
  - Graph a linear equation in the Cartesian Coordinate system
  - Identify symmetries of plane figures
  - Draw and analyze tessellations based on various polygonal regions
  - Perform basic isometries of the plane
  - Utilize distance and area formulas within the coordinate plane

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Required Course Syllabus Statements

Generative AI
Use of AI: Use ChatGPT - and any AI - as a learning assistant, not as a crutch. In cases where you use such assistances make sure that you (1) cite that you used AI, and (2) check the work, wording, and solution that you get from AI. You are responsible to make sure that any math or content you submit does what it is supposed to do and says what you want it to say. Don't accept anything AI generates at face value without checking it critically. These days potential employers will expect you to know how to use tools like ChatGPT and the responsibilities that come along with generative AI, so these are skills we need to teach you. If it helps you learn some things faster, GREAT, just remember: If you REALLY want to be good, work for it.

Using Remote Testing Software
☐ This course does not use remote testing software.

☒ This course uses remote testing software. Remote test-takers may choose their remote testing locations. Please note, however, that the testing software used for this may conduct a brief scan of remote test-takers' immediate surroundings, may require use of a webcam while taking an exam, may require the microphone be on while taking an exam, or may require other practices to confirm academic honesty. Test-takers therefore shall have no expectation of privacy in their test-taking location during, or immediately preceding, remote testing. If a student strongly objects to using test-taking software, the student should contact the instructor at the beginning of the semester to determine whether alternative testing arrangements are feasible. Alternatives are not guaranteed.

Required University Syllabus Statements

Accommodations/Students with Disabilities
Students needing accommodations due to a permanent or temporary disability, pregnancy or pregnancy-related conditions may contact UVU Accessibility Services at accessibilityservices@uvu.edu or 801-863-8747.

Accessibility Services is located on the Orem Campus in BA 110.

Deaf/Hard of Hearing students requesting ASL interpreters or transcribers can contact Accessibility Services to set up accommodations. Deaf/Hard of Hearing services can be contacted at DHHservices@uvu.edu

DHH is located on the Orem Campus in BA 112.

Academic Integrity
At Utah Valley University, faculty and students operate in an atmosphere of mutual trust. Maintaining an atmosphere of academic integrity allows for free exchange of ideas and enables all members of the community to achieve their highest potential. Our goal is to foster an intellectual atmosphere that produces scholars of integrity and imaginative thought. In all academic work, the ideas and contributions of others must be appropriately acknowledged and UVU students are expected to produce their own original academic work.

Faculty and students share the responsibility of ensuring the honesty and fairness of the intellectual environment at UVU. Students have a responsibility to promote academic integrity at the university by not participating in or facilitating others' participation in any act of academic dishonesty. As members of

the academic community, students must become familiar with their rights and responsibilities. In each course, they are responsible for knowing the requirements and restrictions regarding research and writing, assessments, collaborative work, the use of study aids, the appropriateness of assistance, and other issues. Likewise, instructors are responsible to clearly state expectations and model best practices.

Further information on what constitutes academic dishonesty is detailed in UVU Policy 541: *Student Code of Conduct*.

Equity and Title IX

Utah Valley University does not discriminate on the basis of race, color, religion, national origin, sex, sexual orientation, gender identity, gender expression, age (40 and over), disability, veteran status, pregnancy, childbirth, or pregnancy-related conditions, citizenship, genetic information, or other basis protected by applicable law, including Title IX and 34 C.F.R. Part 106, in employment, treatment, admission, access to educational programs and activities, or other University benefits or services. Inquiries about nondiscrimination at UVU may be directed to the U.S. Department of Education's Office for Civil Rights or UVU's Title IX Coordinator at 801-863-7999 – TitleIX@uvu.edu – 800 W University Pkwy, Orem, 84058, Suite BA 203.

Religious Accommodation

UVU values and acknowledges the array of worldviews, faiths, and religions represented in our student body, and as such provides supportive accommodations for students. Religious belief or conscience broadly includes religious, non-religious, theistic, or non-theistic moral or ethical beliefs as well as participation in religious holidays, observances, or activities. Accommodations may include scheduling or due-date modifications or make-up assignments for missed class work.

To seek a religious accommodation, a student must provide written notice to the instructor and the Director of Accessibility Services at accessibilityservices@uvu.edu. If the accommodation relates to a scheduling conflict, the notice should include the date, time, and brief description of the difficulty posed by the conflict. Such requests should be made as soon as the student is aware of the prospective scheduling conflict.

While religious expression is welcome throughout campus, UVU also has a specially dedicated space for meditation, prayer, reflection, or other forms of religious expression.