**1. COURSE TITLE:** Math for the Educator II

**2. CATALOG – PREFIX/COURSE NUMBER/COURSE SECTION\*:** MATH 2238

**3. PREREQUISITE\*:** One of the following:

* Math 118 or Math 1118
* Current enrollment or successful completion of MATH 2237
* Three years of college preparatory math with a grade of C or

Above

**4. COURSE TIME/LOCATION/MODALITY: (Course Syllabus – Individual Instructor Specific)**

**5. CREDIT HOURS\*:** 3 **LECTURE HOURS\*:** 3

**LABORATORY HOURS\*:** 0 **OBSERVATION HOURS\*:** 0

**6. FACULTY CONTACT INFORMATION: (Course Syllabus – Individual Instructor Specific)**

**7. COURSE DESCRIPTION\*:**

This course includes math topics that are fundamental to elementary education. Topics include a review of statistics, probability, Euclidean geometry, measurement, and transformations, with an emphasis on the use of manipulatives and visual representations to teach elementary mathematics.

**8. LEARNING OUTCOMES\*:**

At the completion of this course the student will be able to:

1. Ratios, Proportional Relationships, and Functions (this has connections to Grades 6-8)

The successful Mathematics in Elementary Education student can:

1a. Reason about how quantities vary together in a proportional relationship, using tables, double number lines, and tape diagrams as supports. \*

1b. Distinguish proportional relationships from other relationships, such as additive relationships and inversely proportional relationships. \*

1c. Use unit rates to solve problems and to formulate equations for proportional relationships (see measurement). \*

1d. Recognize that unit rates make connections with prior learning by connecting ratios to fractions. \*

1e. View the concept of proportional relationship as an intellectual precursor and key example of a linear relationship. \*

1f. Examine and reason about functional relationships represented using tables, graphs, equations, and descriptions of functions in words. In particular, students can examine the way two quantities change together using a table, graph, and equation. \*

1g. Examine the patterns of change in proportional and linear relationships and the types of real-world situations these functions can model and contrast with nonlinear relationships. \*

1. Measurement

The successful Mathematics in Elementary Education student can:

2a. Explain the general principles of measurement, the process of iterations, and the central role of units (including nonstandard, U.S. customary, and metric units).

2b. Explain how the number line connects measurement with number through length. \*

2c. Understand and distinguish area and volume, giving rationales for area and volume formulas that can be obtained by finitely many compositions and decompositions of unit squares or unit cubes, including but not limited to formulas for the areas of rectangles, triangles, and parallelograms, and volumes of arbitrary right prisms. (This includes connections to grades 6–8 geometry, see the Geometric Measurement Progression.). \*

2d. Describe how length, area, and volume of figures change under scaling, focusing on areas of parallelograms and triangles, with counting-number scale factors. \*

2e. Informally develop the formulas for area and circumference of a circle and use them in solving real-world problems. \*

2f. Attend to precision in measurement with rounding guided by the context. \*

2g. Convert between different units both by reasoning about the meaning of multiplication and division and through dimensional analysis. \*

1. Geometry

The successful Mathematics in Elementary Education student can:

3a. Understand geometric concepts of angle, parallel, and perpendicular, and use them in describing and defining shapes. \*

3b. Describe and reason about spatial locations (including the coordinate plane). \*

3c. Informally prove and explain theorems about angles and solve problems about angle relationships. \*

3d. Classify shapes into categories and reason to explain relationships among the categories. \*

3e. Explain when and why the Pythagorean Theorem is valid and use the Pythagorean Theorem in a variety of contexts. \*

3f. Examine, predict, and identify translations, rotations, reflections, and dilations, and combinations of these. \*

3g. Understand congruence in terms of translations, rotations, and reflections; and similarity in terms of translations, rotations, reflections, and dilations and solve problems involving congruence and similarity. \*

3h. Understand symmetry as transformations that map a figure onto itself. \*

1. Statistics and Probability

The successful Mathematics in Elementary Education student can:

4a. Recognize and formulate a statistical question as one that anticipates variability and can be answered with data. \*

4b. Understand various ways to summarize, describe, and compare distributions of numerical data in terms of shape, center (e.g., mean, median), and spread (e.g., range, interquartile range). \*

4c. Use measures and data displays to ask and answer questions about data and to compare data sets. (This includes connections to grades 6–8 statistics.). \*

4d. Distinguish categorical from numerical data and select appropriate data displays. \*

4e. Use reasoning about proportional relationships to argue informally from a sample to a population. \*

4f. Calculate theoretical and experimental probabilities of simple and compound events, and understand why their values may differ for a given event in a particular experimental situation. \*

4g. Explore relationships between two variables by studying patterns in bivariate data. \*Understand and perform constructions using a compass.

9**. ADOPTED TEXT(S):**

*Contemporary Mathematics*

First Edition

Kirk, Donna et. al.

Download for free at <https://openstax.org/details/books/contemporary-mathematics>

**10. OTHER REQUIRED MATERIALS: (SEE APPENDIX C FOR TECHNOLOGY REQUEST FORM.)\*\***

A calculator that can perform basic arithmetic operations is required.

**11. GRADING\*\*\*:**

Grading will follow the policy in the catalog. The scale is as follows:

 A: 90 – 100

 B: 80 – 89

 C: 70 – 79

 D: 60 – 69

 F: Below 60

**12.** **GRADING PROCEDURES OR ASSESSMENTS: *(Course Syllabus- Individual Instructor Specific)***

**EXAMPLES BELOW:**

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| --- |
| *Example 1 - By Percent* |
|  Homework 10% Quizzes/Tests 65% Project 15% Presentation 10% Total 100% |

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| --- |
| *Example 2*  |
| *Category* | *By Total Points* | *% of Grade* |
| Homework (20x10) | 200 | 10% |
| Quizzes/Tests (5x360) | 1800 | 90% |
| Total | 2000 | 100% |

|  |
| --- |
| *Example 3* |
| *Category* | *By Total Points* | *% of Grade* |
| Online Quizzes | 400 | 10% |
| Online Tests (6x100) | 600 | 15% |
| Notebook (2x500) | 1000 | 25% |
| Midterm | 1000 | 25% |
| Final | 1000 | 25% |
| Total | 4000 | 100% |

**13. COURSE METHODOLOGY: *(Course Syllabus – Individual Instructor Specific)***

The course design provides instruction and materials to support the course objectives. Classes may consist of a variety of means to accomplish this including but not limiting to: lectures, class discussions, small group projects, supplemental materials, and outside assignments. Practice is an important part of the learning process. For every one hour of class time, two additional hours of study time should be expected.

**14. COURSE OUTLINE:** ***(Course Syllabus – Individual Instructor Specific)***

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| Week | Topic | Learning Outcomes |
| 1 | Course intro, review of Math for Educators I (fractions, operations, ratios) | Preview |
| 2 |

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| --- |
| Ratios, unit rates, proportional vs. additive/inverse relationships |

 | 1a, 1b, 1c, 1d |
| 3 | Proportional relationships → linear thinking; functional relationships (tables, graphs, equations, words) | 1e, 1f |
| 4 |

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| Linear vs. nonlinear patterns; modeling real situations |

 | 1g |
| 5 | Measurement principles, unit iteration, number line & length | 2a, 2b |
| 6 | Area & volume reasoning; scaling effects | 2c, 2d |
| 7 | Circles: area & circumference, precision/rounding, unit conversions | 2e, 2f, 2g |
| 8 | Geometry basics: angles, parallel, perpendicular; coordinate plane | 3a, 3b |
| 9 | Triangles, angle theorems, shape classification, Pythagorean theorem | 3c, 3d, 3e |
| 10 | Transformations: translations, rotations, reflections, dilations; congruence, similarity, symmetry | 3f, 3g, 3h |
| 11 | Statistics: posing statistical questions; categorical vs numerical data | 4a, 4d |
| 12 | Summarizing and comparing distributions (shape, center, spread) | 4b, 4c |
| 13 | Probability: theoretical vs experimental, sample → population reasoning | 4e, 4f |
| 14 | Bivariate data: scatterplots, relationships between two variables | 4g |
| 15 | Integration & application: unit plan workshop | 1 – 4  |
| 16 | Final Project: Mini-Unit Plan presentations; reflection | 1 – 4  |

**15. SPECIFIC MANAGEMENT REQUIREMENTS\*\*\*:**

This course is delivered fully online and asynchronously through Canvas, SSCC's learning management system. It is designed to support flexible, independent learning while promoting deep engagement with course materials, peers, and real-world applications.

The instructional approach is project-based and discussion-driven, encouraging students to apply concepts to practical, relevant scenarios. The course methodology includes the following components:

· Video Lectures: Instructor-created video presentations introduce key concepts, frameworks, and theories. These are designed for self-paced learning and are typically 10–20 minutes in length to support focus and retention.

· Curated Multimedia Resources: Students will engage with a range of high-quality, curated video content, podcasts, and visual explainers from trusted industry sources to gain multiple perspectives on the subject matter.

· Industry Blogs and Articles: Weekly readings include current blogs and articles from practitioners and thought leaders. These readings aim to connect academic concepts with real-world trends and professional discourse.

· Discussion Forums: Asynchronous discussion forums will be used for peer interaction, knowledge sharing, and critical reflection. Students are expected to post and respond to prompts, supporting a collaborative online learning environment.

· Project-Based Assessments: Students will complete individual or team-based projects that require the application of course concepts to realistic scenarios. These projects are scaffolded throughout the term to support deeper learning. The first three people to send me a Canvas Inbox message by September 1, with the subject silver monkey, will be given a free 5 bonus points (excludes projects and final week assignments).

· Live Chat Sessions: Optional real-time chat sessions can be scheduled periodically to provide additional support, clarify course content, and foster a sense of community. Participation is encouraged but not required due to the asynchronous nature of the course.

· Canvas Tools: All course content, announcements, deadlines, and communications will be managed through Canvas. Modules are released on a weekly basis, and students are expected to follow the schedule for maximum success.

This methodology is intended to provide a balance of flexibility, autonomy, and meaningful interaction to support learning in a fully online environment.

**16. FERPA:\***

Students need to understand that your work may be seen by others. Others may see your work when being distributed, during group project work, or if it is chosen for demonstration purposes. Students also need to know that there is a strong possibility that your work may be submitted to other entities for the purpose of plagiarism checks.

**17. DISABILITIES:\***

Students requesting accommodations may contact Ryan Hall, Accessibility Coordinator at rhall21@sscc.edu or 937-393-3431, X 2604.

Students seeking a religious accommodation for absences permitted under Ohio’s Testing Your Faith Act must provide the instructor and the Academic Affairs office with written notice of the specific dates for which the student requires an accommodation and must do so no later than fourteen (14) days after the first day of instruction or fourteen (14) days before the dates of absence, whichever comes first. For more information about Religious Accommodations, contact Ryan Hall, Accessibility Coordinator at rhall21@sscc.edu or 937-393-3431 X 2604.

**18. OTHER INFORMATION\*\*\*:**

**SYLLABUS TEMPLATE KEY**

**\*** Item cannot be altered from that which is included in the master syllabus approved by the Curriculum Committee.

**\*\*** Any alteration or addition must be approved by the Curriculum Committee

**\*\*\*** Item should begin with language as approved in the master syllabus but may be added to at the discretion of the faculty member.