SYLLABUS
PART I
EDISON STATE COMMUNITY COLLEGE
MTH 127S MATHEMATICAL FOUNDATIONS II
4 Credit Hours

COURSE DESCRIPTION
Second of a two course sequence designed for elementary education majors. Topics covered include ratios, measurement, geometry, and statistics and probability. Prerequisite: MTH 126S.

COURSE GOALS

The student will:

Bloom's Level		Gen Ed Outcomes
5	1. Explain how quantities vary together in a proportional relationship, using tables, double number lines, and tape diagrams as supports.	1,2,3,4,5,6
2	2. Distinguish proportional relationships from other relationships, such as additive relationships and inversely proportional relationships.	1,2,3,5,6
3	3. Use unit rates to solve problems and to formulate equations for proportional relationships.	1,2,3,4,5,6
4	4. Recognize that unit rates make connections with prior learning by connecting ratios to fractions.	1,2,3,5,6
4	5. Illustrate the concept of proportional relationships as an intellectual precursor and key example of a linear relationship.	1,2,3,5,6
5	6. Examine and reason about functional relationships represented using tables, graphs, equations, and descriptions of functions in words.	1,2,3,4,5,6
1	7. Examine the patterns of change in proportional and linear relationships and the types of real-world situation these functions can model and contrast with nonlinear relationships.	1,2,3,4,5,6
5	8. Explain the general principles of measurement, the process of iterations, and the central role of units (includes nonstandard, US Customary and Metric).	1,2,3,4,5,6
5	9. Explain how the number line connects measurement through length.	1,2,3,4,5,6
2	10. 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.	1,2,3,4,5,6
2	11. Describe how length, area, and volume of figures change under scaling, focusing on areas of parallelograms and triangles, with count number scale factors.	1,2,3,4,5,6
3	12. Develop informally the formulas for area and circumference of a circle and use them in solving real-world problems.	1,3
3	13. Use precision in measurement with rounding guided by the context.	1,2,3,5,6
2	14. Convert between different units both by reasoning about the meaning of multiplication and division and through dimensional analysis.	1,2,3,5,6
2	15. Explain geometric concepts of angle, parallel, and perpendicular, and use them in describing and defining shapes.	1,2,3,4,5,6
5	16. Describe and compose spatial locations, including the coordinate plane.	1,2,3,4,5,6

5	17.	Informally prove and explain theorems about angles and solve problems about angle relationships.	1,2,3,4,5,6
1	18.	Classify shapes into categories to explain relationships among the categories.	1,2,3,5,6
5	19.	Explain when and why the Pythagorean Theorem is valid and use the Pythagorean Theorem in a variety of contexts.	1,2,3,4,5,6
2	20.	Examine, predict, and identify translations, rotations, reflections, and dilations, and combinations of these.	1,2,3,5,6
5	21.	Justify 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.	1,2,3,5,6
5	22.	Justify symmetry as transformations that map a figure onto itself.	1,2,3,4,5,6
5	23.	Recognize and formulate a statistical question as one that anticipates variability and can be answered with data.	1,2,3,4,5,6
4	24.	Illustrate various ways to summarize, describe, and compare distributions of numerical data in terms of shape, center, and spread.	1,2,3,4,5,6
4	25.	Analyze measures and data displays to ask and answer questions about data and to compare data sets.	1,2,3,4,5,6
2	26.	Distinguish categorical from numerical data and select appropriate data displays.	1,2,3,5,6
4	27.	Use reasoning about proportional relationships to argue informally from a sample to a population.	1,2,3,4,5,6
2	28.	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.	1,2,3,4,5,6
2	29.	Interpret relationships between two variables by studying patterns in bivariate data.	1,2,3,4,5,6

CORE VALUES

The Core Values are a set of principles that guide in creating educational programs and environments at Edison State. They include communication, ethics, critical thinking, human diversity, inquiry/respect for learning, and interpersonal skills/teamwork. The goals, objectives, and activities in this course will incorporate and reinforce these Core Values frequently.

TOPIC OUTLINE

1. Ratios
2. Proportions
3. Functions
4. Measurement Systems
5. Geometry
6. Probability
7. Statistics