CLACKAMAS
COMMUNITY COLLEGE

COURSE OUTLINE

Course Number:	MTH-098
Title:	College Math Foundations
Approval Date:	February 2015

Credits:	5
Length of Course:	55 lecture hours 0 lecture/lab hours 0 lab hours

For each credit, the student will be expected to spend, on average, 3 hours per week in combination of in-class and out-of-class activity.

Grading Method:	A-F or Pass/No Pass
Prerequisites:	Pass MTH-020 with a C or better or placement in MTH-050, MTH-060, or MTH-098 or instructor consent
Co-requisites:	None
Recommended:	None
Required:	None

Certified General Education Area(s):	None
Related Instruction Area:	Computation
Uses library resources:	Yes

Department:	Mathematics
Outline Developed by:	Bruce Simmons
Course Approved as:	Developmental Education

Course Description:

Students in this course will solve realistic problems in order to improve their critical-thinking abilities, number sense, and estimation skills. The course covers such topics as proportional reasoning, creating and analyzing visual representations in mathematics and statistics, problem-solving strategies, properties of numerical operations, linear functions, and calculator computations. Emphasis will be placed on relevance, context, and technical communication, including written descriptions of concepts and procedures.

Student Learning Outcomes:

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

1. utilize problem-solving techniques to engage problems without being provided with a template,
2. collaborate effectively within a group to communicate mathematics,
3. read and interpret mathematical information,
4. communicate mathematical information in lay-language,
5. determine solutions to realistic problems using ratios and scaling, basic algebra, dimensional analysis, and a variety of different graphic displays.

Major Topic Outline:

1. Focus Problem: A medical error in calculating liquid medicine dosage

Problem-solving strategies and techniques. Effective group dynamics. Venn diagrams, the Cartesian plane, and other visual displays of information. Fraction review. Rounding versus truncating. Ratios, rates, scaling, and equivalent units. Unit conversions. Number sets. Concept of a function. Percents and percent change. Equations, expressions, and variables. Inequality notation. Independent and dependent variables. Linear versus exponential growth. Concept of slope. Assessing the medical error in the focus problem.

2. Focus Problem: Baseball Standings and "Magic Numbers"
Atoms, ions, and other models for signed integers. Geometric formulas with units as applications of exponent rules. Like terms. Order of operations. Commutative, associative, and distributive properties. Sigma notation and sums. Pythagorean formula. Slope and scaling revisited. Pendulums and the pendulum formula. Calculator evaluation of other formulas from science and statistics. Calculating and interpreting "magic numbers" in baseball standings.

3. Focus Problem: Comparing pricing plans for e-readers
Means, weighted means, and measures of center. Geometric interpretations of measures of center. Solving multi-step equations with pictures and algebra. Comparing gasoline pricing plans algebraically and graphically. Dimensional analysis and unit conversions. Determining the amount of time worked to pay for a tank of gas. Deciding when algebra is useful and when it is not needed. Resolve the focus problem about e-reader pricing plans.

4. Focus Problem: How can the national debt be visualized and understood?
Dimensional analysis and unit conversions. Scientific notation. Pareto charts. Solving scaling and proportion problems algebraically. Apportionment. Linear models in chemistry. Developing temperature formulas. Size and scale. Finding ways to visualize the national debt.

AAOT/ASOT GENERAL EDUCATION OUTCOMES
COURSE OUTLINE MAPPING CHART

Mark outcomes addressed by the course:

- Mark "C" if this course completely addresses the outcome. Students who successfully complete this course are likely to have attained this learning outcome.
- Mark "S" if this course substantially addresses the outcome. More than one course is required for the outcome to be completely addressed. Students who successfully complete all of the required courses are likely to have attained this learning outcome.
- Mark "P" if this course partially addresses the outcome. Students will have been exposed to the outcome as part of the class, but the class is not a primary means for attaining the outcome and assessment for general education purposes may not be necessary.

This course does not include assessable General Education outcomes.

As a result of completing the AAOT/ASOT general education requirements, students will be able to:

WR: Writing Outcomes

_____ 1. Read actively, think critically, and write purposefully and capably for academic and, in some cases, professional audiences.
_____ 2. Locate, evaluate, and ethically utilize information to communicate effectively.
_____ 3. Demonstrate appropriate reasoning in response to complex issues.

SP: Speech/Oral Communication Outcomes

_____ 1. Engage in ethical communication processes that accomplish goals.
_____ 2. Respond to the needs of diverse audiences and contexts.
_____ 3. Build and manage relationships.

MA: Mathematics Outcomes:

_____ 1. Use appropriate mathematics to solve problems.
_____ 2. Recognize which mathematical concepts are applicable to a scenario, apply appropriate mathematics and technology in its analysis, and then accurately interpret, validate, and communicate the results.

AL: Arts and Letters Outcomes

_____ 1. Interpret and engage in the Arts & Letters, making use of the creative process to enrich the quality of life.
_____ 2. Critically analyze values and ethics within range of human experience and expression to engage more fully in local and global issues.

SS: Social Science Outcomes

_____ 1. Apply analytical skills to social phenomena in order to understand human behavior.
_____ 2. Apply knowledge and experience to foster personal growth and better appreciate the diverse social world in which we live.

SC: Science or Computer Science Outcomes

_____ 1. Gather, comprehend, and communicate scientific and technical information in order to explore ideas, models, and solutions and generate further questions.
_____ 2. Apply scientific and technical modes of inquiry, individually, and collaboratively, to critically examine the influence of scientific and technical knowledge on human society and the environment.
_____ 3. Assess the strengths and weaknesses of scientific studies and critically examine the influence of scientific and technical knowledge on human society and the environment.