SUFFOLK COUNTY COMMUNITY COLLEGE
COLLEGE-WIDE COURSE SYLLABUS
MAT009

I. COURSE TITLE:

Mathematical Literacy

II. CATALOG DESCRIPTION:

This course integrates fluency with numbers, proportional reasoning, data interpretation, probability, algebraic reasoning, graphing lines, modeling, and communicating quantitative information. Mathematical concepts are investigated through group problem-solving, individual research, and class discussions in the context of real-life topics such as: personal finances, population growth and density, government, economics, and health-related statistics. This course prepares students to take a college-level non-algebraic course in mathematics, such as MAT101, MAT102, or MAT103. Students placing at this level and needing MAT111 should take MAT006 or MAT007 instead of this course. Graded on an SA-SB-SC-R-U-W basis. Does not fulfill requirements for any degree or certificate. Prerequisite: MAT001 or math placement, and RDG098.

A-E-G / 4 cr. hrs.

III. LEARNING OUTCOMES:

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

1. Apply the concepts of numeracy to investigate and describe quantitative relationships and solve problems in a variety of contexts.
2. Represent proportional relationships and solve problems that require an understanding of ratios, rates, proportions, scaling, and data.
3. Reason using the language and structure of algebra to investigate, represent, and solve problems.
4. Represent relationships between quantities in multiple ways (tables, equations, graphs) and solve problems that require an understanding of modeling.
5. Communicate quantitative information in writing.

IV. PROCEDURES FOR ACCOMPLISHING THESE OUTCOMES:

CLASSROOM STRUCTURE AND DECORUM

This class will differ from traditional lecture-based math classes. Students will work in groups the whole time. All members of the groups are expected to participate in posing questions, meaningful mathematical discussions and problem solving. All students are expected to communicate with the group in a respectful and supportive manner giving all members of each group the opportunity to express his/her opinions.

In order to successfully carry out this group collaboration students need to come to each class on time and prepared. Before each class session, students are expected to complete the homework (OCE/PNLs). Students should bring their completed homework, workbook, writing instrument (preferably pencil), a notebook and calculator to class. Attendance is as important for the success of the individual student as it is for the members of her/his group. Students are responsible for all that transpires in class whether or not they are in attendance. The college defines excessive absence or lateness as more than the equivalent of one week of class meetings during the semester. Excessive absence or lateness may lead to failure of the course or removal from the class roster.

MATERIALS NEEDED FOR THIS CLASS:

Instead of a textbook, students will purchase an In-Class workbook. This workbook should be brought to every class meeting. Students are required to keep the workbook in a three-ring binder. Students should acquire and have the following materials at every class session:

- pencil and eraser
- non-graphing calculator
- notebook
- three-ring binder
- an Access Code for the online component of the course

ONLINE HOMEWORK

Students are required to create an account on the Pathways platform in order to enroll in the course containing the homework assignments they should complete. Detailed instructions on how to do that will be given to students in a separate handout. There will be two types of online homework: OCE (out of class experience) and PNL (preparing for next lesson). Generally one of each will be assigned every class meeting. Paper versions of the OCEs and PNLs will also be distributed in class. Students are encouraged to complete the work on paper as well as online.

V. MAJOR TOPICS REQUIRED:

1. **Numeracy**
   Quantitative situations in real life
   Making sense of large numbers, scientific notation
   Estimation
   Order of operations
   Perform multi-step calculations
   Converting between percents, ratios, and decimals in context
   Probability (percent and proportion)
2. **Proportional Reasoning**
   Using ratio and proportion to make sense of large numbers
   Relative and absolute change
   Picture data with graphs
   Measures of central tendency
   Ratio/proportion in index numbers
3. **Algebraic Reasoning**
   Converting units
   Meaning and use of variables
   Geometry and using formulas to make financial decisions
   Solving for an unknown
   Solving proportions
4. **Using Models**
   Linear models (equations, graphs, slope)
   Exponential growth (time permitting)
   Comparing linear and exponential change (time permitting)

VI. TOPICS OUTLINE WITH TIMELINE

The pedagogical approach to Mathematical Literacy is highly integrated. Each topic is discovered by the student through relevant context. Major topics such as number sense, estimation, and proportional reasoning are continually returned to for reinforcement and deeper understanding. Topics overlap depending on the application. Communication of quantitative information is embedded throughout the course.

Topics	Approximate Time (Including examinations)
Number sense Exponential growth Pattern recognition Ratios, percents, and decimals Estimation Order of operations	3 weeks
Number sense Ratios, percents, and decimals Estimation Order of operations Scientific Notation Proportions Simple probabilities from two-way tables	2 weeks
Proportions Unit analysis, rates, and conversions Relative vs. absolute change Graphical methods for displaying data including bar graphs, polygons, and pie charts Scaling graphs	2 weeks

Relative vs. absolute change Graphical methods for displaying data including pictographs Scaling Measures of central tendency: mean, mode, median, and weighted averages Application of index numbers	3 weeks
Understanding variables Dimensional analysis Unit conversions Precision and rounding Error propagation Length, area, and volume calculations Evaluating and simplifying formulas	2 weeks
Solving linear equations and proportions Order of operations Solving single-term quadratic equations	2 weeks
Linear models and graphs Optional topics (time permitting): Percent increase/decrease Compound interest Exponential models and formula Comparison of linear and exponential models	1 week

VII. Evaluation of Student Performance:
To be determined by the instructor

VIII. Courses that require this course as a prerequisite:

BIO101, BIO103, BIO105, BIO109, BIO111, BIO130-132, BIO137, BIO141, CHE100, CHE120, CHE122, CST112, ESC101, ESC102, MET101, MET102, AST101, ESC102, ESC124, ESC202, MAT101, MAT102, MAT103, MAT107, MAT108, MAT115H, MAR111, MAR115, MAR102, OPD101, PHY110, SCI127H

IX. Supporting Information:

Mathematics tutoring services, as well as video and computer aids, are provided for all students through the Math Learning Center (Ammerman Campus, Riverhead 235), the Center for Academic Excellence (Grant Campus, Health, Sports, and Education Center 129), and the Academic Skills Center (Eastern Campus, Orient 213).