

# New Course Form

For help filling out the form press F1 or look at the bottom of the screen. For additional instructions, see [Course Form Instructions](#).

**Type of Action** | **New Course – Course not previously offered.**

1. Catalog Prefix and Number\*: **MAT 075**

2. Course Title: **Mathematical Literacy**

**Pilot Course Information: Pilot for one year**

Are you requesting pilot status only at this time? Yes  No

Implementation Date?

Are you requesting pilot status in addition to regular approval process? Yes  No

Implementation date? **Pilot in Fall 2014** Fall or Spring? **Fall** Year? **Regular approval for 2015**

Has this course been previously approved as pilot status Yes  No

3. Justification for requested action.

**This course is designed as an alternative path to college-level general education math courses for students not majoring in Science, Technology, Engineering or Math fields. The course focuses on developing mathematical maturity by integrating conceptual and procedural tools that support the use of key mathematical concepts in a variety of contexts. Non-STEM students with pre-algebra skills will have the opportunity to complete their quantitative reasoning requirement in one year, with this one semester of developmental coursework followed by one semester of college-level math. Students who successfully complete this course will also meet the prerequisite for Intermediate Algebra if they decide to prepare for college algebra.**

**Mathematical literacy for college students is a new type of course being developed by the American Mathematical Association of Two-Year Colleges New Life for Developmental Mathematics program and related to the Quantway project funded by the Carnegie Foundation.**

4. Submitting Entity: Curriculum Committee:

Or College: **Bluegrass Community and Technical College**

5. Person(s) Primarily Responsible for Proposal (**Complete item only if course is not part of a curriculum package. Verify that members are still current and active prior to submission.**):

<u>Name</u>	<u>Teaching Area</u>	<u>College</u>
<b>Barbara Elzey</b>	<b>Mathematics &amp; Statistics</b>	<b>Bluegrass</b>
<b>Peggy Saunier</b>	<b>Mathematics &amp; Statistics</b>	<b>Bluegrass</b>

**Involvement of Others (Identify Individuals):**

6. System Office Staff:

7. Others:
8. Is this course offered at other colleges?  Yes  No  
 If yes, have they been involved in the development of this course?  Yes  No  N/A
9. Is this course duplicative or similar to other courses offered by KCTCS?  Yes  No  
 If yes, Justification:

10. Credit / Contact Hours: 10a. Semester Credit Hours: Minimum **4** Maximum **4**  
 10b. Semester Contact Hours: **4** If lab, etc., ratio of contact hours to credit hours. (See contact/credit hour ratio chart)

11. Grading Basis:  Graded- (Includes grades: A,B,C,D,E calculates in the GPA)  
 P/NP (Includes grades: P,F not included in the GPA)  
 ABC/NC (Includes grades: A,B,C,D,MP,F,P not included in the GPA)

12. Repeat for additional credit:  Yes  No

(Repeat for additional credit. Check "yes" if the student may repeat the course and receive additional credit. This usually applies to special topics courses that can be repeated for additional credit if a different topic is taken. Indicate maximum amount of credit a student may earn and the total number of completions. For example, for a 1-4 credit course that may be repeated with different topics up to a maximum of 6 credits, enter 6 total credits and 6 completions.)

The number of completions should be based on the minimum number of credits Example: **Course credits 1-4; Number of total credits in course – 6**; then the total number of completions should be 6. (Total credits in course (6 credits) divided by the minimum number of course credits (1 credit) = 6 repeats.)

**PeopleSoft will prevent students from enrolling when either the number of total credits is met or the number of total completions is met.**

**If yes, complete the following:**

Total credits allowed:

Total completions:

13. Open Entry – Open Exit:  Yes  No

14. Course Attribute: Each course will be assigned one of the following course attributes:

DEVL (Transitional)     TECH (Technical)     OTHR (Other)

*Since new courses must be approved prior to gaining general education status, cultural studies status, or digital literacy status, these attributes will be assigned administratively upon status approval.*

15a. Components (Check all components that require scheduling. For each component that is checked, enter the credit hours and contact hours for each component that is checked.):

Component	Credit Hours	Contact Hours	Component	Credit Hours	Contact Hours
<input checked="" type="checkbox"/> Lecture	4	4	<input type="checkbox"/> Practicum		
<input type="checkbox"/> Laboratory			<input type="checkbox"/> Co-Op		
<input type="checkbox"/> Clinical			<input type="checkbox"/> Discussion		

### OR

15b. Integrated Components (If components are integrated, and only one component (lecture or lab) needs scheduling, rather than both lecture and lab, complete this section.)

Lecture/ Lab	Lecture Credit	Lecture Contact	Lab Credit	Lab Contact

16. Requisites:

Pre-requisite     Yes     No    If yes, list: **MAT 055 or equivalent as determined by KCTCS placement examination.**

Co-requisite     Yes     No    If yes, list:

Pre-requisite     Yes     No    If yes, list:

or

Co-requisite

17. Implementation Term (Course scheduled to begin, ex. Fall 2014):    **Fall 2014**

18. Proposed Course Description (Course description as it will appear in the catalog. Each statement must begin with a verb.):

**Designed to develop the mathematical thinking skills and understanding needed for non-math and non-science majors, this one-semester course integrates numeracy, proportional reasoning, algebraic reasoning, and functions. This course provides an alternate path to college-level math courses other than college algebra. Prerequisite: MAT 055 or equivalent as determined by KCTCS placement examination.**

### Course Proposal Rationale:

19. Will this course be a part of an approved curriculum/curricula?  Yes  No

If yes, which curriculum/curricula?

(Submit a New Curriculum or Revision Form)

### Course Competencies and Delivery:

20. Proposed Course Competencies/Student Outcomes (*If part of an organized curriculum, how does it relate to program competencies /outcomes? **Begin statement with a capital letter and end with a period.***):

Upon completion of this course, the student can:

1. Apply the concepts of numeracy, including fractions, decimal numbers, percents, exponents, square roots and order of operations in multiple contexts.
2. Recognize proportional relationships and use proportional reasoning to solve problems.
3. Use the language of algebra to write relationships involving variables, interpret those relationships, and solve problems involving those relationships expressed as linear and quadratic models and geometric formulas.
4. Interpret and move flexibly between multiple formats for linear functions, quadratic functions, and linear systems including graphs, tables, equations, and words.
5. Demonstrate student success skills including perseverance, time management, and appropriate use of resources.
6. Develop the ability to think critically and solve problems in a variety of contexts using the tools of mathematics including technology.

21. Course Outline (*Two-level outline required. Although courses may have more than two levels, the third level is not necessary.*)

#### I. Numeracy

- A. Operation sense and the effects of common operations on numbers in words and symbols
- B. Competency in the application of place values, fractions, decimal numbers, percents, exponents, square roots and numbers written in scientific notation
- C. Use of estimation skills
- D. Application of quantitative reasoning to solve problems involving quantities or rates
- E. Measurement sense and use of geometric formulas
- F. Mathematical properties and uses of different types (tables, graphs, algebraic representations) of mathematical summaries of data
- G. Interpretation based on presentation of data from line graphs, bar graphs and charts

#### II. Proportional Reasoning

- A. Recognition of proportional relationships from verbal and numeric representations
- B. Comparison of proportional relationships represented in different ways
- C. Application of quantitative reasoning strategies to solve real-world problems with proportional relationships

#### III. Algebraic Reasoning

- A. Use of variables to represent quantities or attributes
- B. Simplification of polynomials using arithmetic operations and factoring
- C. Effect of changes in variable values in an algebraic relationship

- D. Construction and solution of linear equations or inequalities and quadratic equations to represent relationships involving one or more unknown or variable quantities
- E. Simplification of algebraic roots and integer and rational exponents in solving problems

#### IV. Functions

- A. Translation of problems from a variety of contexts into mathematical representation and vice versa
- B. Description of the behavior of common types of linear and quadratic functions using words, algebraic symbols, graphs, and tables
- C. Assessment of the reasonableness of a linear model for given data and consideration of alternative models
- D. Important characteristics (domain, shape, intercepts, maximum/minimum) of functions in various representations
- E. Determination and interpretation of the rate of change of a linear function using graphs, tables, equations, and words
- F. Graphical representation of linear equations or inequalities and quadratic equations
- G. Solution of linear systems in two variables and applied linear system problems
- H. Sources of inexactness and error in using mathematical models to characterize real-world scenarios or physical relationships

#### V. Student Success

- A. Use of written and verbal skills in relation to course content
- B. Evaluation of success strategies that address personal learning style, strengths, and weaknesses
- C. Use of print and online resources to conduct research
- D. Time management and goal setting techniques

#### VI. Mathematical Success

- A. Use of mathematical skills in diverse scenarios and contexts
- B. Use of appropriate technology
- C. Critical thinking in analyzing ideas, patterns and principles
- D. Flexibility with mathematics through various contexts, modes of technology, and presentations of information (tables, graphs, words, equations)
- E. Skills needed in studying for and taking tests

22. List of experiments/activities (*Courses with components other than lecture. e.g., laboratory, clinical, practicum, etc., must include a **sample** list of experiment topics or activities. Does not have to be all-inclusive.*):

23. Indicate sample suggested classroom resources for course (Should not have publishing date greater than five years.)

#### **Example:**

Sorrentino, S. A. & Gorek, B. (2010). *Mosby's textbook for long-term care assistant* (6<sup>th</sup> ed.). St. Louis, MO: Elsevier/Mosby-Year Book, Inc. ISBN-10: 0323075835 ISBN-13: 978-0323075831

### **SUGGESTED LEARNING RESOURCES FOR THIS COURSE**

Almy, K. & Foes, H. (2013). *Math Lit.* Pearson. ISBN-10: 0321818458 ISBN-13: 9780321818454

24. Provide a rationale for using textbook/references older than five years.

25. May this course be used as an equivalent for other courses? **Yes** **No X**  
If yes, please list.

**(The course description, competencies, and outline in this proposal are slightly edited versions of information for MTH 096A Mathematical Literacy-College Students taught at Rock Valley College in Rockford, IL.)**

**Signatures:** Complete and submit a signature page for every proposal.

\*The System Office assigns new course numbers. Contact Sydney Baseheart at [Sydney.baseheart@kctcs.edu](mailto:Sydney.baseheart@kctcs.edu).