Kent Core Course Proposal Questionnaire

Please review the Kent Core Policy Statement before completing and submitting the questionnaire to the University Requirements Curriculum Committee accompanied by a Course Catalog Update workflow and typical course syllabus.

Date: 11/5/2014

Department/School: Mathematical Sciences

Course ID: 10771 **Credit Hours:** 5

Course Title: Basic Mathematical Concepts I Plus

Prerequisite(s): (Math ACT score of 22 or higher) or (ALEKS score of 35 or higher) or (C or better in Math 00022).

Select Kent Core Category:

- ☐ **Composition**
- ☒ **Mathematics and Critical Reasoning**
- ☐ **Humanities and Fine Arts**
  - ☐ **Humanities**
  - ☐ **Fine Arts**
- ☐ **Social Sciences**
- ☐ **Basic Sciences**
- ☐ **Additional**

1. **Explain how the course addresses (a) concepts central to the subject area and (b) the specific Kent Core learning goals listed in the *University Catalog* (www.kent.edu/catalog/kent-core)**

   a. **Acquire critical thinking and problem-solving skills.**

   One primary objective of this course is problem solving.

   b. **Apply principles of effective written and oral communications.**

   Students will present written and oral reports of their work.

   c. **Broaden their imagination and develop their creativity.**

   This course will expand the way students perceive the importance and utility of quantitative reasoning in situations that are of relevance to their future careers.

   d. **Cultivate their natural curiosity and begin a lifelong pursuit of knowledge.**

   Success and positive experiences in this course will help break down the notion that mathematical sciences are not accessible or useful to the average person in everyday situations. This will lead students to expand the domains where they feel confident to pursue their natural curiosity and develop their knowledge.

   e. **Develop competencies and values vital to responsible uses of information and technology.**

   Familiarity with number facts is critical for understanding information in the modern world.

   f. **Engage in independent thinking, develop their own voice and vision and become**

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informed, responsible citizens.

Understanding number facts is often necessary to independently and critically evaluate information that is given a person.

g. **Improve their understanding of issues and behaviors concerning inclusion, community and tolerance.**

Not routinely covered in this course.

h. **Increase their awareness of ethical implications of their own and others' actions.**

Not routinely covered in this course.

i. **Integrate their major studies into the broader context of a liberal education.**

The use of number facts and mathematical reasoning arises in a number of situations.

j. **Strengthen quantitative reasoning skills.**

This is a primary focus of this course.

k. **Understand basic concepts of the academic disciplines.**

This course will help students see how mathematics applies to a number of disciplines.

2. **If this course is being proposed for the Composition category or the Mathematics and Critical Reasoning category, indicate the essential skills that the course is intended to teach, sharpen or strengthen. (Skip this question if the proposed course is intended for other categories.)**

This course is intended for students to sharpen and strengthen their problem solving skills in an algebraic setting.

3. **State how the course is representative of a field that has attained maturity and substance with critical mass of its own scholarly literature, methodology, community of specialists and conceptual framework.**

Mathematics has been studied since antiquities and been considered one of the cores of a strong education.

4. **Are adequate resources available for this course (e.g., faculty, classroom space, equipment, library holdings)? If yes, explain.**

Yes. Enrollments in Math 00023 and Math 14001 will decline as the enrollment for this course increases.

5. **Has this course been offered previously?**

Currently being offered as Math 20095

6. **Given the available Kent Core course options, why is it important that this course be added as an option for students in fulfilling their Kent Core?**

Students may take this course will have the same outcomes as students taking Math 14001 Basic Math Concepts and that course fulfills the Kent Core. This course is open to students who are not prepared for Math 14001 and provides the background and

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extra time such students need to be successful with this material. Students will not be allowed to get credit for both this course and Math 14001.

7. **Please complete and attach the Kent Core Learning Outcomes Assessment Plan, and attach a sample syllabus.**

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Kent Core Learning Outcomes Assessment Plan

Course number, title (credit hours): 10771, Basic Mathematical Concepts I Plus (5 credit hours)

Department/School: Department of Mathematical Sciences Proposed Kent Core Category: Mathematics and critical reasoning

A sample syllabus must accompany the plan.

I. Kent Core learning objectives	II. Ohio Transfer Module learning objectives	III. What corresponding learning outcomes are included in this course?	IV. What method(s) will be used to assess student learning?	V. What evidence of this assessment will be presented annually for the five-year Kent Core review of this course?
Define number systems contained within the set of real numbers. Students will also be able to define the various symbols used in logic. Different number bases with emphasis on place value.		Apply the understanding of the four basic operations to solve problems. Use truth tables to determine whether logical arguments are valid or invalid. Apply understanding of number properties to solve problems efficiently.	Solve problems in class and discuss theorems. All activities in the course contribute to basic proficiency in using mathematical logic.	Each year, data from all sections will be collected and analyzed. We will report the total number of students assessed, and the achievement levels on homework, midterms and final.
Operations in systems of numbers (through the real numbers).		Use Venn diagrams to determine the validity of De Morgan's laws.	Complete homework assignments, pass quizzes, tests and a final exam.	
Clock and modular arithmetic. Properties of different systems of numbers; number theory: divisibility rules, LCM and GSF. Problem solving and various strategies.			Students will appraise their current understanding of the subsets of the real number system and identify prior misconceptions. They will listen to each other's explanations and try to make sense of them.	

ASSURANCES:

By submitting this proposal, we assure that:

1. The faculty members who teach this course have agreed to the learning outcomes and assessment methods.
2. Assessment results will be reviewed annually by the faculty and submitted to the University Requirements Curriculum Committee.
3. Modifications to the course and/or assessment plan will be based on the annual review.

Department Chair/School Director (or designee) Signature _____ Date 11-2014

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SYLLABUS
MATH 10771– Basic Mathematics Concepts I Plus
(5 credit hours)

Catalog Information:

This course is for students who have an ACT score of 22 or higher but do not attaint the 45-54 ALEX placement score required by the 4-credit course of Basic Mathematics Concepts I. This version of Concepts I offers "just in time" supplemental instruction and a slower pace to support the student in successfully achieving the course goals. These students will also study all the concepts of the regular Basic Mathematics Concepts course. These concepts include: Development of the real number system and its sub-systems (natural numbers, whole numbers, integers, rational numbers, irrational numbers), numeration systems, place value, logic, sets, number theory, open sentences and algebra concepts, modular arithmetic, and problem solving.

Pre-requisite:

An ACT score of 22 or higher

Text: *Mathematics for Elementary Teachers: A Contemporary Approach* by Musser, Peterson, & Burger
This course covers chapters 1-9 and Topics 1 and 2. No calculator is used in the course to encourage students to develop number sense. This NO CALCULATOR policy is also a requirement in the regular Math Concepts I course.

Topics:

- Logic and argument (4 days)
- Set theory (6 days)
- Place value in base ten and other bases (4 days)
- Operations with whole numbers (10 days)
    - Properties of operation
    - Algorithms
    - Models for operations
    - Order of operations
    - Operations in other bases
    - Exponents
- Number Theory (4 days)
- Integers (4 days)
    - Properties of operations
    - Models for operations
    - Algorithms for operations
- Clock and modular arithmetic (2 days)
- Rational numbers (7 days)
    - Fractions
    - Properties of operations
    - Models for operations
- Ratio, proportion, and percent (10 days)
- Irrational numbers (3 days)
    - Radicals
    - Rational exponents
- Real numbers (1 day)
- Problem Solving (4 days as primary focus; permeates course)
- Relations, functions, algebra (7 days)

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Tests: 5 days
Review for Tests: 5 days
Review for Final Exam: 1 day

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KENT STATE UNIVERSITY

Name: Katherine J Smith Submission Date: 1/19/2015

Organization: Curriculum Services

Course Catalog Update

<< Go back to Course Catalog Update form Print

Basic Course Data

Change type: Establish

Faculty member submitting this proposal: Mark L. Lewis

Requested Effective Term: 201580

Campus: Kent

College: AS-Arts and Sciences

Department: MATH-Mathematical Sciences

Course Subject: MATH-Mathematics

Course Number: 10771

Course Title: Basic Mathematical Concepts I Plus

Title Abbreviation: Basic Math Concepts I Plus

Slash Course and Cross-list Information:

Credit Hours

Minimum Credit / Maximum Credit: 5 to 5

Contact Hours: Lecture - Minimum Hours / Maximum Hours: 5 to 5

Contact Hours: Lab - Minimum Hours / Maximum Hours:

Contact Hours: Other - Minimum Hours / Maximum Hours:

Attributes

Is this course part of the LER, WIC or Diversity requirements: Yes

If yes, course attributes: 1. LMCR-LER-Mathematics and Critical Reasoning 2. 3.

Can this course be repeated for credit: No Repeat	**Course Limit:**	**OR Maximum Hours:**
Course Level: Undergraduate	**Grade Rule:** B-Standard letter	

Rationale for an IP grade request for this course (if applicable):

Schedule Type(s): 1. LEC-Lecture 2. 3.

Credit by Exam: N-Credit by exam-not approved

Prerequisites & Descriptions

Current Prerequisite / Corequisite / Catalog Description:

Catalog Description (edited): Development of the real number system and its sub-systems, open sentences, numeration systems, modular arithmetic and some number theory concepts. Additional concepts covered: place value, logic, sets, and algebra concepts, modular arithmetic, and problem solving. This course has the same outcomes as MATH 14001. This course is for students who have an ACT score of 22 or higher but do not attain the 45-54 ALEX placement score required by the 4-credit course of Math 14001 Basic Mathematical Concepts I. Students cannot get credit for both this course and Math 14001. This course will fulfill any requirement which requires Math 14001.

Prerequisites (edited): (An ACT Math score of 22 or higher) or (an ALEKS Math score of 35 or higher) or (a C or better in Math 00022)

Corequisites (edited):

Registration is by special approval only: No

Content Information

Content Outline:

Content Hours per Course Topic	Topic Description

4	Logic and argument
6	Set Theory
4	Place value in base ten and other bases
10	Operations with whole numbers o Properties of operation o Algorithms o Models for operations o Order of operations o Operations in other bases o Exponents
4	Number Theory
4	Integers o Properties of operations o Models for operations o Algorithms for operations
2	Clock and modular arithmetic
7	Rational numbers o Fractions o Properties of operations o Models for operations
10	Ratio, proportion, and percent
3	Irrational numbers o Radicals o Rational exponents
1	Real Numbers
4	Problem Solving
7	Relations, functions, algebra
5	Exams
4	Review for exams

Display/Hide Delimited Course Outline

Total Contact Hours: 75

Textbook(s) used in this course: Mathematics for Elementary Teachers: A Contemporary Approach by Musser, Peterson, & Burger This course covers chapters 1-9 and Topics 1 and 2.

Writing Expectations: Students will be expected to write on homework and exams.

Instructor(s) expected to teach: Rollick, Minerovic,

Instructor(s) contributing to content: Rollick

Proposal Summary

Explain the purpose for this proposal:

The state has changed its rules and now requires that any student scoring a 22 or higher on the Math ACT not be placed in a "remedial" math course. On the other hand, our evidence indicates that students who have ALEKS score below 45 will not perform well in Math 14001. This course provides the extra material needed so that such students can be successful and obtain the same outcomes as Math 14001.

Explain how this proposal affects program requirements and students in your unit:

NA

Explain how this proposal affects courses, program requirements and student in other units:

Students who test would have places in Math 00023 and needed Math 14001 will be placed in this course instead.

Explain how this proposal affects enrollment and staffing:

The enrollments in Math 00023 and Math 14001 will decline. Faculty teaching those courses will be diverted to teach this course. Should yield no net change in staffing.

Units consulted (other departments, programs or campuses affected by the proposal):

All Colleges

Curriculum Services Information:

Approved by EPC:	**Curriculum Bulletin:**
Cross-list Banner Code:	**OBR Course Level:**
OBR Program Code:	**OBR Subsidy Code:**
CIP Code:	**Term Start:**
	Term End:

Comments (500 Character Maximum):

NOTE: Please do not use the following restricted characters: (~ * / \ --)

Approve | Return To Previous Approver | Deny

Comments:

Date	User	Comment
11/13/2014	Mark L. Lewis	No comments available.

History:

Date	User	Status
12/15/2014	Donald F. Palmer	Approved
12/8/2014	Mary Ann Haley	Approved
11/20/2014	Andrew M. Tonge	Approved
11/13/2014	Mark L. Lewis	Submitted
11/4/2014	Andrew M. Tonge	Returned For Edit
11/3/2014	Mark L. Lewis	Initially Saved As Draft