Approved New Course (First Version)

CSKLS 373 Course Outline as of Fall 2019

CATALOG INFORMATION

Dept and Nbr: CSKLS 373   Title: FOUND OF MATH REAS
Full Title: Foundations of Mathematical Reasoning
Last Reviewed: 1/28/2019

Units		**Course Hours per Week**		**Nbr of Weeks**	**Course Hours Total**	
Maximum	3.50	Lecture Scheduled	3.00	17.5	Lecture Scheduled	52.50
Minimum	3.50	Lab Scheduled	2.00	6	Lab Scheduled	35.00
		Contact DHR	0		Contact DHR	0
		Contact Total	5.00		Contact Total	87.50
		Non-contact DHR	0		Non-contact DHR	0

Total Out of Class Hours: 105.00   Total Student Learning Hours: 192.50

Title 5 Category: AA Degree Non-Applicable
Grading: Grade or P/NP
Repeatability: 00 - Two Repeats if Grade was D, F, NC, or NP
Also Listed As:
Formerly:

Catalog Description:
This course is intended as an introduction for students in how to apply mathematical reasoning to their personal, professional, and academic lives. Students will learn how to do so via application problems that will require investigating new contexts, developing and proposing possible solutions, discussing and analyzing proposed plans, and making decisions. Topics include order of operations, real numbers, ratio and proportions, solving linear equations, dimensional analysis, geometric formulas, graphs/tables, and word problems. Regularly scheduled lab assignments reinforce or supplement lecture topics.

Prerequisites/Corequisites:

Recommended Preparation:

Limits on Enrollment:

Schedule of Classes Information:
Description: This course is intended as an introduction for students in how to apply mathematical reasoning to their personal, professional, and academic lives. Students will learn

how to do so via application problems that will require investigating new contexts, developing and proposing possible solutions, discussing and analyzing proposed plans, and making decisions. Topics include order of operations, real numbers, ratio and proportions, solving linear equations, dimensional analysis, geometric formulas, graphs/tables, and word problems. Regularly scheduled lab assignments reinforce or supplement lecture topics. (Grade or P/NP)
Prerequisites/Corequisites:
Recommended:
Limits on Enrollment:
Transfer Credit:
Repeatability: Two Repeats if Grade was D, F, NC, or NP

ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:

AS Degree:	**Area**	Effective:	Inactive:
CSU GE:	**Transfer Area**	Effective:	Inactive:
IGETC:	**Transfer Area**	Effective:	Inactive:
CSU Transfer:	Effective:	Inactive:	
UC Transfer:	Effective:	Inactive:	

CID:

Certificate/Major Applicable:
Both Certificate and Major Applicable

COURSE CONTENT

Student Learning Outcomes:
At the conclusion of this course, the student should be able to:
1. Apply mathematical reasoning and modeling to investigate, analyze, develop, propose possible solutions, and make decisions related to life experiences.
2. Use standard mathematical terminology and notation when describing, presenting and solving problems.
3. Apply basic concepts of real numbers, estimation skills, linear equations, their interconnections, and their uses in analyzing and solving real-world problems.
4. Apply concepts of ratio, proportions, rate of change, their interconnections, and their uses in analyzing and solving real-world problems.
5. Apply concepts of graphs, tables, statistics (measures of center), and equations in analyzing and solving real-world problems
Objectives:
Upon completion of the course, students will be able to:
1. Demonstrate self-directed learning skills such as time management and personal responsibility through the completion of course requirements.
2. Demonstrate an understanding of fractions, decimals, and percentages by representing quantities in equivalent forms, comparing and interpreting numbers in different forms.
3. Strengthen basic computational skills with real numbers, estimation skills, and number sense.
4. Use dimensional analysis to convert units of measurements.
5. Use appropriate technology in a given context.
6. Use tables, graphs, charts, and equations to describe and interpret information.

7. Use formulas to solve problems with common geometric shapes (perimater, circumference, area, and volume)
8. Calculate, compare and interpret measure of center to make decisions.
9. Apply algebraic and proportional reasoning concepts and techniques to solve complex problems.
10. Construct and use mathematical models to solve problems from a variety of contexts and make predictions/decisions.

Topics and Scope:

I. Learning Skills
    A. Math pathway
    B. Self-assessment and goal-setting
    C. Study techniques
    D. Support services, including:
        1. Math Lab
        2. Tutorial Center
        3. Student consultation hours
        4. Counseling
        5. Learning opportunities
        6. Mathematical habits of mind
            a. interpreting contextualized problems
            b. predicting solutions
            c. analyzing different ideas
            d. revising thinking and solutions
    E. Collaborate to collect, assemble, discuss, and present culturally-relevant information using team member knowledge, discipline-specific reading and research strategies
II. Numerical Reasoning
    A. Order of operations with real numbers
    B. Place value, magnitude, and rounding of numbers
    C. Estimation skills
    D. Exponents, scientific notation and standard notation
    E. Fractions, percentages, and decimals conversions and operations
    F. Dimensional analysis
III. Data Analysis and Probability
    A. Calculating and interpreting measures of central tendency
    B. Reading and interpreting charts, graphs, and tables (histograms, line graphs, bar graphs, scatterplots)
    C. Mathematical modeling and applications
IV. Proportional Reasoning
    A. Ratios and proportions
    B. Rate of change
    C. Simple versus compound interest
    D. Scaling and shrinking (perimeter, area, and volume)
    E. Mathematical modeling and applications
V. Algebraic Reasoning
    A. Variables versus constants
    B. Evaluating formulas and expressions
    C. Writing and simplifying algebraic expressions
    D. Solving equations (multi-step equations, proportions, literal equations)
    E. Expressing and interpreting relationships using inequality symbols
    F. Using linear models to represent information about change

G. Mathematical modeling and applications (linear and exponential contexts included)

* All sections are covered in the lecture and lab portions of the course.

Assignment:

Lecture-Related Assignments:
1. Homework assignments (20 - 30)
2. Quizzes (15 - 25)
3. Unit tests (4 - 6)
4. Final exam

Lab-Related Assignments:
1. Lab and/or online assignments, in-class assignments (30 - 60 problems per week)

Methods of Evaluation/Basis of Grade:

Writing: Assessment tools that demonstrate writing skills and/or require students to select, organize and explain ideas in writing.

None	Writing 0 - 0%

Problem Solving: Assessment tools, other than exams, that demonstrate competence in computational or non-computational problem solving skills.

Homework problems, lab assignments, in-class assignments	Problem solving 20 - 40%

Skill Demonstrations: All skill-based and physical demonstrations used for assessment purposes including skill performance exams.

None	Skill Demonstrations 0 - 0%

Exams: All forms of formal testing, other than skill performance exams.

Quizzes, unit tests, final exam	Exams 50 - 70%

Other: Includes any assessment tools that do not logically fit into the above categories.

Lecture and lab participation	Other Category 0 - 10%

Representative Textbooks and Materials:
Foundations of Math Reasoning (MyMathLab Access Kit). Dana Center. Pearson. 2016
Instructor prepared materials