

MATH 372: PREPARATION FOR BEGINNING ALGEBRA - NONCREDIT

Originator

mflora

Co-Contributor(s)**Name(s)**

Jordan, Leif

Kleinfelter, Daniel

Justification / Rationale

We want to add a non-credit option for students who would like to learn pre-algebra.

Effective Term

Spring 2023

Credit Status

Noncredit

Subject

MATH - Mathematics

Course Number

372

Full Course Title

Preparation for Beginning Algebra - Noncredit

Short Title

PRE-ALGEBRA NC

Discipline**Disciplines List**

Mathematics

Modality

Face-to-Face

100% Online

Hybrid

Catalog Description

This is a noncredit course focusing on the elementary operations required for algebra. Topics include adding, subtracting, multiplying, and dividing integers, decimals, fractions, and mixed numbers; the concept and uses of variables; percents, ratios, rates, and proportions; the metric and American systems of measurement, including the conversion of units; simplifying algebraic expressions; and concepts from elementary geometry such as perimeter, area, and volume.

Schedule Description

This course covers adding, subtracting, multiplying, and dividing integers, fractions, mixed numbers, and decimals; variable expressions; and other topics to prepare students for beginning algebra.

Total Non-Credit Contact Hours

108

Lecture Units

0

Lab Units

0

In-class Hours

108

Out-of-class Hours

0

Total Course Units

0

Total Semester Hours

108

Override Description

noncredit

Prerequisite Course(s)

Advisory: ENG 061

Required Text and Other Instructional Materials**Resource Type**

Book

Open Educational Resource

Yes

Author

Lynn Marecek, MaryAnne Anthony-Smith, Andrea Honeycutt Mathis

Title

Pre-Algebra

Edition

2nd

Publisher

OpenStax

Year

2020

College Level

No

ISBN #

ISBN-13: 978-1-951693-19-0

Resource Type

Web/Other

Open Educational Resource

Yes

Year

n/a

Description

MyOpenMath.com

Class Size Maximum

30

Entrance Skills

Extract information from text written at an 8th grade reading level or higher.

Requisite Course Objectives

ENG 061-Demonstrate both literal and analytic/interpretive reading skills, and convey these skills in writing.

Course Content

1. Basic number facts.
2. Addition, subtraction, multiplication, and division of rational numbers in fraction or mixed number form.
3. Natural number exponents and the order of operations involving fractions, mixed numbers and decimals.
4. Methods of finding the greatest common factor and least common multiple using prime factorizations.
5. Decimal notation and place value, including comparing, ordering, estimating and rounding decimals; and locate decimals on the real number line.
6. Addition, subtraction, multiplication and division of decimals.
7. Converting between decimals, fractions, and mixed numbers.
8. Ratios and rates, and the concept of proportions, including solving proportion problems.
9. Percents, converting between percents, fractions, and decimals; and solving percent problems using an equation or a proportion.
10. American and metric measurement units of length, volume, weight and time, including conversion within and between systems involving fractions, mixed numbers and decimals.
11. Perimeter and area of basic geometric figures such as rectangles, squares, triangles, and circles and figures that can be broken down into two or more of these.
12. Square roots and the Pythagorean Theorem.
13. Volume of basic geometric solids such as a rectangular solid, cylinder, and cone.
14. The concept of a variable.
15. Translating statements into the language of algebra.
16. Simplifying algebraic expressions; the use of the commutative, associative and distributive properties and the order of operations.
17. Rules of natural number exponents involving variables.
18. Add, subtract, multiply and divide rational expressions whose numerator and denominator are monomials.
19. Evaluate algebraic expressions for rational number and decimal values of variables.
20. Applications involving these concepts and skills.

Course Objectives

	Objectives
Objective 1	Demonstrate proficiency in basic number facts (addition, subtraction, multiplication, division of integer numbers).
Objective 2	Recognize the concept of a fraction as a part of a whole.
Objective 3	Convert between improper fractions and mixed numbers.
Objective 4	Compute using the four basic operations of addition, subtraction, multiplication, and division on the rational numbers in both fraction and mixed number forms.
Objective 5	Apply prime factorization to simplify fractions and find least common multiples.
Objective 6	Use the fundamental property of fractions and prime factorizations to write equivalent fractions.
Objective 7	Apply the basic operations to solve application problems that involve integer numbers, decimals, mixed numbers and rational numbers.
Objective 8	Apply the order of operations to simplify expressions involving several operations using rational numbers, mixed numbers and decimals.
Objective 9	Use rounding and estimation to solve problems involving rational numbers, mixed numbers and decimals.
Objective 10	Employ decimal notation and place value to compare, order, and round numbers.
Objective 11	Use the concept of ratio or rate involving both rational numbers, mixed numbers and decimals to determine the solution to a proportion problem.
Objective 12	Apply methods of conversion between percents, decimals, and fractions.
Objective 13	Determine the solution to equations involving percents by deductive reasoning.
Objective 14	Recognize and convert between units of measurements in the American and metric systems involving rational numbers, mixed numbers and decimals using conversion factors or proportions.

Objective 15	Use unit measure appropriately in applications involving rational numbers, mixed numbers and decimals.
Objective 16	Use concepts and formulas from geometry.
Objective 17	Compute square roots of natural numbers, fractions and decimals; and use the Pythagorean Theorem to solve simple right triangle problems.
Objective 18	Locate integer numbers, rational numbers, mixed numbers and decimals on the real number line.
Objective 19	Understand the concept of a variable and how a variable can be used to represent an unknown quantity.
Objective 20	Distinguish between various subsets of the rational numbers including natural numbers, whole numbers, and integers.
Objective 21	Apply the commutative, associative, distributive, inverse and identity properties to simplify algebraic expressions involving fraction, mixed number and decimal coefficients.
Objective 22	Use the properties of natural number exponents to simplify algebraic expressions.
Objective 23	Evaluate an algebraic expression via substitution of rational numbers, mixed number and decimals; and determine if a given value is a solution to an algebraic equation.
Objective 24	Explain the concepts of term, factor, variable and coefficient.

Student Learning Outcomes

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

Outcome 1	Combine the abilities to judge relative sizes of numbers, perform computations with numbers in different representations, and assess the reasonableness of results in order to demonstrate number sense.
Outcome 2	Use the information obtained in application problems to estimate a reasonable solution, determine appropriate methods of solution that involve arithmetic and algebraic computations, execute those methods of solution, and compare the results to the estimate.
Outcome 3	Apply algebraic principles and deductive reasoning to perform computations with symbolic expressions.
Outcome 4	Use proportional reasoning to describe relationships between quantities and determine the values of unknown quantities.

Methods of Instruction

Method	Please provide a description or examples of how each instructional method will be used in this course.
Laboratory	Students will participate in individual and group exploration of course topics. Professor, ISA(s), and students will discuss and explore course topics.
Discussion	Discussion will be used to review, analyze, and evaluate various methods of problem solving.
Lecture	Lecture will be used for introduction on explanation of course topics.
Technology-based instruction	Students will complete problem sets and receive feedback (automated and/or from professor) on assignments.
Demonstration, Repetition/Practice	Students will be given additional problem sets to complete on their own to improve skills.

Methods of Evaluation

Method	Please provide a description or examples of how each evaluation method will be used in this course.	Type of Assignment
Computational/problem-solving evaluations	Students will solve problems that involve the course topics. They will receive feedback on their answers and explanations from the professor. Students will not be allowed to use calculators except on select problems (such as certain problems involving irrational numbers).	In and Out of Class
Tests/Quizzes/Examinations	Students may take quizzes, tests, and/or exams for grade and/or self-evaluation purposes. Students will not be allowed to use calculators except on select problems (such as certain problems involving irrational numbers).	In and Out of Class

Written homework	Students will be assigned homework covering topics from lecture. The problems will require critical thinking and problem-solving beyond that of simple computation or procedural exercises. Students are not allowed to use calculator to complete the homework assignments. Students will not be allowed to use calculators except on select problems (such as certain problems involving irrational numbers).	In and Out of Class
Mid-term and final evaluations	Students will be evaluated by a comprehensive final exam. Students are not allowed to use calculator on the final exam. Students may be evaluated by one or more mid-term exams as well.	In Class Only
Laboratory projects	Students may be evaluated by their participation in lab activities and may be required to turn in write-ups of these activities.	In Class Only
Other	Out-of-class hours will be accounted for electronically through the learning management system.	Out of Class Only

Assignments

Other In-class Assignments

1. Students taking face-to-face sections will be expected to attend classroom lectures and take notes.
2. Students taking online and/or hybrid and/or Hyflex sections will be expected to participate in the lecture activities as created for the particular section and take appropriate notes.

Other Out-of-class Assignments

1. Students will be expected to read the textbook and/or other reading material outside of class and take appropriate notes.
2. Students will be expected to review their notes from lecture and reading in preparation for exams and as resources for out-of-class assignments.

Grade Methods

Pass/No Pass Only

Distance Education Checklist

Include the percentage of online and on-campus instruction you anticipate.

Online %

100

On-campus %

0

What will you be doing in the face-to-face sections of your course that necessitates a hybrid delivery vs a fully online delivery?

Although the course can be offered entirely online, it may also be offered in a hybrid format to take advantage of collaboration activities that are more suited to in-person interaction.

Examinations may be given in a controlled location if proctoring of that nature is required by the instructor.

Lab Courses

Instructional Materials and Resources

If you use any other technologies in addition to the college LMS, what other technologies will you use and how are you ensuring student data security?

Professors will use MyOpenMath and/or other free courseware or other technology. Only technology that is considered safe for both faculty and student use will be used. Whenever possible, technology will be integrated with Canvas to decrease the amount of signing in and out of various accounts and/or requiring less secure web-browser settings.

If used, explain how specific materials and resources outside the LMS will be used to enhance student learning.

MyOpenMath allows faculty to assign pre-written and instructor-created assignments that are more appropriate for quality learning than those that can be created in Canvas while still receiving instantaneous feedback.

Effective Student/Faculty Contact

Which of the following methods of regular, timely, and effective student/faculty contact will be used in this course?

Within Course Management System:

Discussion forums with substantive instructor participation
Online quizzes and examinations
Private messages
Regular virtual office hours
Timely feedback and return of student work as specified in the syllabus
Weekly announcements

External to Course Management System:

Direct e-mail
Posted audio/video (including YouTube, 3cm mediasolutions, etc.)
Synchronous audio/video
Telephone contact/voicemail

For hybrid courses:

Orientation, study, and/or review sessions
Scheduled Face-to-Face group or individual meetings

Briefly discuss how the selected strategies above will be used to maintain Regular Effective Contact in the course.

Faculty will regularly contact students individually and as a group through Canvas messages and/or college email. Students will also receive regular announcements with course, college, or other relevant information.

In discussions and through other lab assignments, students will communicate with each other and their professor regularly and frequently.

If interacting with students outside the LMS, explain how additional interactions with students outside the LMS will enhance student learning.

Students may prefer to contact their professor via email or on the phone, which allows for an improved experience for those who communicate better in those contexts. The professor may direct students to access free supplemental resources as well.

Other Information

MIS Course Data

CIP Code

27.0101 - Mathematics, General.

TOP Code

170100 - Mathematics, General

SAM Code

E - Non-Occupational

Basic Skills Status

Basic Skills

Prior College Level

Not applicable

Cooperative Work Experience

Not a Coop Course

Course Classification Status

Other Non-credit Enhanced Funding

Approved Special Class

Not special class

Noncredit Category

Elem/Secondary Basic Skills

Funding Agency Category

Not Applicable

Program Status

Program Applicable

Transfer Status

Not transferable

General Education Status

Y = Not applicable

Support Course Status

N = Course is not a support course

Allow Audit

Yes

Repeatability

Yes

Repeatability Limit

NC

Repeat Type

Noncredit

Justification

The course is designed to allow students to learn, re-learn, and/or practice material that is fundamental to mathematics study. If a student has taken the course but is not confident enough in their skills to sign up for a more advanced course, they may repeat this course to improve both skills and confidence.

Materials Fee

No

Additional Fees?

No

Approvals**Curriculum Committee Approval Date**

11/01/2022

Academic Senate Approval Date

11/10/2022

Board of Trustees Approval Date

12/16/2022

Chancellor's Office Approval Date

01/07/2023

Course Control Number

CCC000635370

Programs referencing this course

Pre-Algebra and Beginning Algebra Certificate of Competency (<http://catalog.collegeofthedesert.eduundefined/?key=381>)