# ASC 92 Beginning Algebra

**Course Description:** This course covers is a beginning level algebra course. Topics covered include fundamental operations, fractions, exponents, equations, inequalities, and factoring. The class does not satisfy college graduation requirements for math.

>   **Credits:** 3 semester credits
>   **Prerequisite(s):** none

**Course Objectives/Student Outcomes:**

It is expected that students will be able to

- Perform basic algebraic operations using positive and negative numbers, fractions, and exponents.
- Demonstrate an understanding of terms and rules used in algebra.
- Utilize problem-solving strategies to solve problems.
- Simplify expressions & solve equations and inequalities.
- Factor using greatest common factor, factor by grouping, and factor trinomials of the form $x^2+bx+c$.
- Analyze and solve various types of math problems.
- Utilize a hand-held calculator when solving algebra problems.
- Gain the skills needed to participate in a college algebra course.

**Instructor:** Jan Nahinurk
**Office:** Learning Center, Thatcher 1104
**Office Hours:** Tuesday, Thursday 10:00-12:00 PM
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**Class Schedule:** MWF 10:00–10:50 AM

**Textbook:** Miller, O'Neill, Hyde, *Introductory Algebra*, 2nd Ed – E-text with ALEKS access code; ISBN 0077409795

**Course Requirements:**

Learning algebra is an investment of time. Algebra is learned best by practice, reflect, and practice some more. Understanding the steps in the topic explanations and video presentations is a good start. However, to truly know the material, you should be able to look at a problem, know how to proceed, and carry out the steps WITHOUT ASSISTANCE. The independent practice in the ALEKS learning system provides opportunities for you to get to that point. Passing grades on assessments demonstrate that you have indeed learned the skills taught.

>   **Learning Modules:** Students will work in ALEKS learning system on topics to be mastered. The topics are divided into 12 modules. Problems for each topic are linked to worked-out explanations, e-textbook material, and video demonstrations. Work on MyPie topics constitutes 8% of the student's final grade and is calculated by the percent of topics mastered by "module due dates."

**Progress Checks:** Each of the 12 learning modules is followed by an ALEKS progress check. The Progress Checks will be administered in the Math Lab during class. Students are expected to complete the progress checks on the scheduled due dates. When students open ALEKS on a due date, the assessment will be the first task to open. Progress Checks constitute 8% of the student's final grade.

**Homework:** There are 2 homework assignments in the course: the midterm review and the final review. These assignments can be multiple times and the best scores will be used. This work constitutes 8% of the student's final grade.

**Tests:** Two proctored tests will be given: the midterm and final exams. These exams are comprehensive and constitute 60% of the student's final grade.

**Quizzes:** The instructor will administer quizzes during scheduled class periods. Quiz grades constitute 8% of the student's final grade.

**Participation:** Students are expected to work on algebra topics during the schedule math lab sessions. Student engagement will be evaluated weekly and points will be earned for active participation in learning. Participation constitutes 8% of the student's final grade.

## Course Outline with Due Dates:

**Modules:** Master the module topics in ALEKS MyPie on or **before** the due dates.
**Homework:** Complete assignments before the due date (11:59 PM).
**Progress Checks, Quizzes, and Tests:** Take the assessments in class on the dates assigned.

- Module 1 – January 24
  - Progress Ck 1 - January 25
- Module 2 – January 31
  - Progress Ck 2 – February 1
- Module 3 - February 7
  - Progress Ck 3 - February 8
- Module 4 - February 14
  - Progress Ck 4 - February 15
- Module 5 - February 21
  - Progress Ck 5 - February 22
- **Midterm Review Homework – February 28**
- **Midterm Exam – February 29**

- Module 6 – March 6
  - Progress Ck 6 - March 7
- *Spring Break – March 12-16*

- Module 7 - March 20
  - Progress Ck 7 - March 21
- Module 8 – March 27
  - Progress Ck 8 - March 28
- Module 9 – April 3
  - Progress Ck 9 - April 4
- *Easter Break – April 6-9*
- Module 10 - April 12
  - Progress Ck 10 - April 13
- Module 11 - April 19
  - Progress Ck 11 - April 20
- Module 12 – April 26
  - Progress Ck 12 - April 27

- **Final Review Homework – May 9**
- **Final Exam – May 7-11 (see final exam schedule)**

## Relationship to Campus Theme:

This course introduces algebra skills that are used to solve problems in science, technology, business, and social sciences.

## Classroom Policies:

- Students are expected to be in the lab engaged in coursework during scheduled class periods. Coursework includes work on topic mastery, homework assignments, and progress checks.
- Electronic devices, such as cell phones, must put away during class.
- Progress checks and tests must be taken in the math lab on the assigned dates. The final exam is scheduled during the week of May 7-11.
- Students may work ahead; students who complete the course requirements by midterm can enroll in Intermediate Algebra during the second half of the semester.

## Evaluation:

Grades for the course are calculated as follows: participation/engagement – 8%, mastery of topics in ALEKS - 8%, results from homework - 8%, results from progress checks – 8%, results from quizzes - 8%, and results from tests - 60%. Letter grades are assigned using the scale below.

> A--90-100%
> B--80-89%
> C--70-79%
> D--60-69%
> F--59% or lower

**Academic Integrity:** The academic community is operated on the basis of honesty, integrity and fair play. It is the expectation that all students, as members of the college community, adhere to the highest levels of academic integrity. This means that:

- Students are responsible for submitting their own work. Student work must not be plagiarized.
- Students must not work together on graded assignments without authorization from the instructor or get help on examinations from textbooks, notes, technological resources, other people, etc.

To learn how to avoid plagiarism in your work, review the website from Purdue University, Is It Plagiarism Yet?  (http://owl.english.purdue.edu/owl/resource/589/02/)

Violations of academic principles such as cheating, plagiarism or other academic improprieties will be handled using the guidelines outlined in the Student Handbook on pages 18, 19, and 37.

## Disabilities and Special Needs:

If you have a disability for which you need accommodation, contact the Learning Center to request disability support services: phone 701-228-5477 or toll-free 1-888-918-5623.

# Learning Module Topics

**Module 1: r1-2** (21 topics, due on 08/30/11)
1. Introduction to exponents
2. Writing expressions using exponents
3. Factors
4. Prime numbers
5. Prime factorization
6. Least common multiple
7. Equivalent fractions
8. Simplifying a fraction
9. Addition or subtraction of fractions with the same denominator
10. Addition or subtraction of fractions with different denominators
11. Fractional part of a circle
12. The reciprocal of a number
13. Product of a unit fraction and a whole number
14. Product of a fraction and a whole number
15. Introduction to fraction multiplication
16. Fraction multiplication
17. Division involving a whole number and a fraction
18. Fraction division
19. Writing a mixed number as an improper fraction
20. Rounding decimals
21. Multiplication of a decimal by a whole number

**Module 2: r3-4** (13 topics, due on 09/06/11)
1. Decimal place value
2. Converting a decimal to a fraction
3. Converting a fraction to a terminating decimal
4. Converting a fraction to a repeating decimal
5. Converting a mixed number to a decimal
6. Multiplication of a decimal by a power of ten
7. Division of a decimal by a power of ten
8. Converting between percentages and decimals
9. Converting a percentage to a fraction
10. Converting a fraction to a percentage
11. Perimeter of a square or a rectangle
12. Perimeter of a polygon
13. Area of a square or a rectangle

**Module 3: s1.1-1.2** (14 topics, due on 09/13/11)
1. Introduction to exponents
2. Writing expressions using exponents
3. Order of operations: Problem type 1
4. Order of operations: Problem type 2
5. Order of operations with whole numbers and exponents
6. Ordering fractions
7. Mixed arithmetic operations with fractions
8. Perimeter of a square or a rectangle
9. Area of a square or a rectangle
10. Fractional position on a number line
11. Plotting integers on a number line
12. Plotting rational numbers on a number line
13. Ordering integers
14. Absolute value of a number

**Module 4: s1.3-1.4** (11 topics, due on 09/20/11)
1. Writing a signed number for a real-world situation
2. Integer addition: Problem type 1
3. Integer addition: Problem type 2
4. Integer subtraction: Problem type 1
5. Integer subtraction: Problem type 2
6. Integer subtraction: Problem type 3
7. Word problem with addition or subtraction of integers
8. Simple addition and subtraction of signed fractions
9. Signed fraction addition: Advanced
10. Signed decimal addition
11. Operations with absolute value

**Module 5: s1.5** (9 topics, due on 09/27/11)
1. Integer multiplication and division
2. Mixed arithmetic operations with integers
3. Signed fraction multiplication: Advanced
4. Exponents and integers: Problem type 1
5. Exponents and integers: Problem type 2
6. Exponents and signed fractions
7. Exponents and order of operations
8. Evaluation of a linear expression in two variables
9. Evaluation of a polynomial in one variable

**Module 6: s1.6** (7 topics, due on 10/18/11)
1. Properties of addition
2. Properties of real numbers
3. Distributive property: Basic
4. Distributive property: Advanced
5. Combining like terms: Basic
6. Combining like terms: Advanced
7. Combining like terms in a quadratic expression

**Module 7: s2.1** (7 topics, due on 10/25/11)
1. Additive property of equality with whole numbers
2. Additive property of equality with integers
3. Additive property of equality with a negative coefficient
4. Multiplicative property of equality with whole numbers
5. Multiplicative property of equality with signed fractions
6. Multiplicative property of equality with integers
7. Translating sentences into equations

**Module 8: s2.2-2.5** (9 topics, due on 11/01/11)
1. Applying the percent equation
2. Writing a mathematical expression
3. Using two steps to solve an equation with whole numbers
4. Solving a two-step equation with integers
5. Solving a linear equation with several occurrences of the variable: Problem type 1
6. Solving a linear equation with several occurrences of the variable: Problem type 3
7. Solving a linear equation with several occurrences of the variable: Problem type 4
8. Translating sentences into two-step expressions
9. Solving a word problem using a linear equation: Problem type 1

**Module 9: s2.6-2.8** (11 topics, due on 11/08/11)
1. Writing an inequality
2. Writing a compound inequality
3. Solving a linear inequality: Problem type 1
4. Solving a linear inequality: Problem type 2
5. Solving a linear inequality: Problem type 5
6. Graphing a linear inequality on the number line
7. Introduction to algebraic symbol manipulation
8. Finding the side length of a rectangle given its perimeter or area
9. Word problem involving area and perimeter of a rectangle
10. Writing an inequality for a real-world situation
11. Set builder and interval notation

**Module 10: s5.1-5.4** (15 topics, due on 11/15/11)
1. Exponents and integers: Problem type 1
2. Exponents and integers: Problem type 2
3. Exponents and signed fractions
4. Evaluating expressions with exponents of zero
5. Writing a positive number without a negative exponent
6. Writing a negative number without a negative exponent
7. Writing a simple algebraic expression without negative exponents
8. Product rule of exponents
9. Multiplying monomials
10. Quotients of expressions involving exponents
11. Introduction to the power rule of exponents
12. Power rule with positive exponents
13. Using the power and product rules to simplify expressions with positive exponents
14. Scientific notation with positive exponent
15. Scientific notation with negative exponent

**Module 11: s5.5-5.7** (12 topics, due on 11/22/11)
1. Multiplying monomials
2. Simplifying a sum or difference of polynomials
3. Simplifying a polynomial expression
4. Multiplying a monomial and a polynomial: Problem type 1
5. Multiplying a monomial and a polynomial: Problem type 2
6. Multiplying binomials: Problem type 1
7. Squaring a binomial
8. Multiplying binomials: Problem type 2
9. Multiplying binomials: Problem type 3
10. Dividing a polynomial by a monomial: Problem type 1
11. Dividing a polynomial by a monomial: Problem type 2
12. Polynomial long division: Problem type 1

**Module 12: s6.1, 6.2, 6.5** (10 topics, due on 12/02/11)
1. Greatest common factor
2. Factoring a quadratic with leading coefficient 1
3. Factoring a perfect square trinomial
4. Factoring a difference of squares
5. Introduction to the GCF of two monomials
6. Greatest common factor of two monomials
7. Factoring out a monomial from a polynomial: Problem type 1
8. Factoring out a monomial from a polynomial: Problem type 2
9. Factoring a multivariate polynomial by grouping: Problem type 1
10. Factoring a multivariate polynomial by grouping: Problem type 2