MTH 95 Intermediate Algebra　　　　**CRN:30718**　　　　　　**Winter 2019**

Instructor: Vikki Maurer　　　　　　　　Class times: MTWF 10:00 to 10:50pm
Office: WOH 119　　　　　　　　　　　　Class location: WOH 126
Student Hours: M11-12, W11-12, R10-11　　Email: maurerv@linnbenton.edu

MTH 095 Intermediate Algebra Course Description:
Intermediate Algebra is a course that develops the concept of a function. It is designed for the student who has an algebraic foundation (Math 075). Topics include an investigation of different functions, their graphs, and properties. The functions included are linear, quadratic, polynomial, radical, and exponential. Problem solving, technology, and cooperative learning is emphasized throughout the course. During the term, students will learn to recognize and express mathematical ideas graphically, numerically, symbolically, and in writing. Application problems are realistic with some data to be collected, analyzed and discussed in a group setting with results submitted in written form. Credits 4 Prerequisite: MTH 075 or Placement into the course.

MTH 095 Student Learning Outcomes:
1. Interpret and analyze functions to find information such as domain, range, variable and function values by using a variety of tools that may include graphs, tables or given equations.
2. Model application problems using appropriate algebraic models, which may include linear, quadratic, and exponential.
3. Communicate mathematical concepts, processes and solutions.
4. Apply algebra skills to topics such as factoring polynomials, solving quadratic equations, and simplify expressions.

Required Materials:
- Tablet or Laptop (available for purchase or rent in bookstore if you don't have one.) Minimum specifications for use with ALEKS software: https://www.aleks.com/support/system_requirements
- ALEKS access code for 11 weeks or continue using a previously purchased 52-week code. ALEKS course code: **AVNHV-RPK3F**
  Temporary ALEKS access code **7F671-03DE7-07389-57540**
- Course Materials Packet
- Three-Ring Binder for packet and notes
- Non-graphing, scientific calculator

Grading Policy: Your grades will be based on the following:

ALEKS Weekly Objectives/Homework	20%
ALEKS Pie Progress (Topics Completion)	5%
ALEKS Skills Test 1	5%
ALEKS Skills Test 2	15%
In-Class Work	25%
Mid-term Exam	12%
Comprehensive Final Exam	18%

Grading Scale: A: 90 -100% B: 80 – 89% C: 70 - 79% D: 60 - 69% F: 0 - 59%

A grade of Incomplete may be assigned at the discretion of the instructor under special circumstances. The student must have completed the majority of the course, been in regular attendance and passing the course prior to the "special circumstance".

Tests:
- The Midterm Exam will be taken in our classroom and it has a time limit of one class period. The test must be taken on the scheduled day. If you miss this test you will get a score of zero. Testing at an alternate time will only be allowed for special prearranged circumstances. There is no make up test or retake of this exam, however a missing midterm grade may be replaced with the percentage on the final exam up to 75%. See the calendar for the midterm date.

- The date and time of the Comprehensive Final Exam will not change: Monday, December 3 from 8:00 to 9:50pm. Students have 1 hour and 50 minutes to complete the exam.

- The **ALEKS Skills Tests** will be taken in the Testing Center in RCH 111. Once the instructor has signed your testing ticket, you will have a few days to go in and take the test on your own time. These tests are taken in ALEKS and they are not timed. Refer to the test ticket for further information. You will need to get your test ticket signed before you take the test. Your instructor will sign the test ticket only after you have earned at least a score of 70% on the ALEKS skills review quiz.

Homework:
ALEKS is an adaptive online homework website (www.aleks.com). You will need to purchase an access code in order to get logged in. Your skills work will be completed on this site. Each week's skills will be available for a given length of time and you must learn those skills and demonstrate mastery by the deadline date and time. Your score at the time of the deadline will be recorded as a homework grade for that week. There will be an additional review assignment prior to each of the ALEKS tests. Students who finish their ALEKS work before the deadline can work on other topics in the course pie. At the end of the quarter your lowest score from this category will be dropped.

ALEKS Homework Guidelines:
You should keep a notebook of loose leaf paper for your ALEKS homework.   You are expected to work through each problem and then write up neat, readable solutions for your notebook. Include the original problem unless it is a lengthy word problem. This will give you a study reference before testing.

In-Class Work:
Students will be actively participating in learning activities and group work every class meeting. Generally these activities must be done in class and cannot be made up. These are the lessons for this course. The activities are designed to help students develop and understand the concepts behind the math skills and how to apply them to various situations. The experiences gained from working in the groups will be a major component in determining the student's success in this course. **Attendance is therefore required.** At the end of the quarter your two lowest scores from this category will be dropped.

Attendance Policy:
If you miss four hours of class (1/10 of the class) you will get a warning. If you miss eight hours of class (20% of the class) your final course grade will drop one letter grade. Essentially, there are five letter grades, and if you miss 1/5th of the class, you will not be eligible for the top letter grade.

Help:
If you have questions, PLEASE come see me and ask! I have scheduled office hours but you're welcome to come in at other times too. Study groups are encouraged! Many students find that working with classmates is the best way to learn and understand the material. Don't forget about the e-book and videos available on ALEKS.

Use the Learning Center and Math Cafe:
The Learning Center, WH226, is an excellent place to study and to get help with your homework. (Please remember to log on and log off the computer with each visit to the Learning Center.) The other LBCC campuses have similar facilities with Math Help available.
- There is free wireless available in the Learning Center (and lots of places to plug in so your battery won't be depleted.)
- The relaxed atmosphere and table arrangement in the Learning Center and Math Cafe provide a great location for **study groups** to meet and work.
- Instructional assistants are available to answer your math and ALEKS questions
- The Learning Center offers some free individual and small group tutoring in addition to the help desk. Ask about this service at the information counter or the tutoring area.

Computers:
Computer labs are open to students in the Library and in the Learning Center. Laptops are usually available for short-term check out from the Library.

Expectations:
- I expect that my students will be involved in class. This includes being present, on time, asking questions and participating in discussions. *(The instructor notes excellent attendance/attitude and will "bump up" a borderline grade for such students.)*
- You should come to class prepared (this means you should bring your notebook, tablet/laptop, etc. in addition to having your work with you). Spend **at least 8 hours per week working on this class and in ALEKS.**
- I expect you will be respectful of everyone in the class, in word as well as behavior. Along these lines, I ask that you **turn off and/or put away your cell phone, music player, laptop, etc. during class unless it is being used for an activity so as to avoid causing a distraction.**

Academic Honesty:
 I assume that you are ethical and honest. However, if there is an incident of academic dishonesty (cheating), you will receive a score of zero for that test/assignment and the incident will be reported to the college administration for possible further disciplinary action. If there is a second offense, you will receive a grade of F for the course and the incident will be reported to the college administration with a recommendation for disciplinary action.

Special Circumstances:
Students who have any emergency medical information the instructor should know of, who need special arrangements in the event of evacuation, or students with documented disabilities who may need accommodations, should **make an appointment with the instructor as early as possible, no later than the first week of the term.**

Request for Special Needs or Accommodations
Direct questions about or requests for special needs or accommodations to the LBCC Disability Coordinator, RCH-105, 6500 Pacific Blvd. SW, Albany, Oregon 97321, Phone 541-917-4789 or via Oregon Telecommunications Relay TTD at 1-800-735-2900 or 1-800-735-1232. Make sign language interpreting or real-time transcribing requests 2-4 weeks in advance. Make all other requests at least 72 hours prior to the event. LBCC will make every effort to honor requests. LBCC is an equal opportunity educator and employer.

LBCC Comprehensive Statement of Nondiscrimination
LBCC prohibits unlawful discrimination based on race, color, religion, ethnicity, use of native language, national origin, sex, sexual orientation, gender, gender identity, marital status, disability, veteran status, age, or any other status protected under applicable federal, state, or local laws. For further information see Board Policy P1015 in our Board Policies and Administrative Rules. Title II, IX, & Section 504: Scott Rolen, CC-108, 541-917-4425; Lynne Cox, T-107B, 541-917-4806, LBCC, Albany, Oregon. To report: linnbenton-advocate.symplicity.com/public_report

The instructor reserves the right to make changes to the syllabus/calendar at any time.

	Monday	Tuesday	Wednesday		Friday
Week 1 Jan 7 - 11	Introduction: Syllabus; ALEKS	Function Carnival	Function Representations		Dimensional Analysis and ALEKS Practice Quiz
Week 2 Jan 14-18	Linear Equations: Quick Sort and Practice Thinking Linearly	Linear Functions: Draining Liquid	Variation		Variation
Week 3 Jan 21-25	No School Campus Closed	Properties of Exponents	Integer Exponent Practice		Rules of Rational Exponents ALEKS Quiz
Week 4 Jan 28 - Feb 1	Solving Equations for a Variable	Rational Exponent Function Application **DEADLINE ALEKS SKILLS TEST 1**	Simplifying Radicals		Radical Function Application: Tsunamis
Week 5 Feb 4 - 8	Intro. To Graphing Root vs. Linear Functions; Radical Functions;	Finish Radical Functions; Radical Functions Match-Up	More with Radical Functions		Introduction to Polynomials
Week 6 Feb 11 - 15	Polynomials	Midterm Exam Review	**Midterm Exam Taken In Class**		Factoring out a GCF and Factoring Basic Trinomials
Week 7 Feb 18-22	No School Campus Closed	Factoring by Grouping and "ac" Method;	Factoring Special Products; Choosing and Applying Factoring Methods		Complete Factoring Methods ICA; Roots and Factors - Solving Quadratic Equations
Week 8 Feb 25 - Mar 1	Solving Quadratic Equations by Square Root Method; Completing the Square	Solving Quadratic Equations with the Quadratic Formula	Solving Quadratic Equations by Graphing		Projectile Application
Week 9 Mar 4 - 8	Quadratics Finish	Exponential Functions Introduction	Exponential Functions Applications		Patterns and Growth; Exponential vs. Linear Change
Week 10 Mar 11 - 15	Comparing Models	Modeling Domain and Range **DEADLINE ALEKS SKILLS TEST 2**	Final Exam Review		Final Exam Review
Finals Week			March 20 FINAL EXAM IN CLASS 8:00am to 9:50am **ALEKS PIE DEADLINE**		

Week 1 (19 Topics, due on 01/13/2019 11:59 PM)
Converting between temperatures in Fahrenheit and Celsius
Converting between metric and U.S. Customary unit systems
Converting between compound units: Basic
Converting between compound units: Advanced
Identifying functions from relations; Vertical line test
Domain and range from ordered pairs
Evaluating functions: Linear and quadratic or cubic
Variable expressions as inputs of functions
Finding inputs and outputs of a two-step function that models a real-world situation: Function notation
Domain and range from the graph of a discrete relation
Domain and range from the graph of a continuous function
Finding an output of a function from its graph
Finding inputs and outputs of a function from its graph
Choosing a graph to fit a narrative: Basic
Choosing a graph to fit a narrative: Advanced
Converting between scientific notation and standard form in a real-world situation
Evaluating a rational function

Week 2 (28 Topics, due on 01/20/2019 11:59 PM)
Identifying parallel and perpendicular lines
Identifying linear equations: Advanced
Identifying linear functions given ordered pairs
Writing an equation in slope-intercept form given the slope and a point
Writing an equation of a line given the y-intercept and another point
Writing the equation of the line through two given points
Writing the equations of vertical and horizontal lines through a given point
Finding slopes of lines parallel and perpendicular to a line given in slope-intercept form
Finding slopes of lines parallel and perpendicular to a line given in the form $Ax + By = C$
Identifying parallel and perpendicular lines from equations
Writing equations of lines parallel and perpendicular to a given line through a point
Comparing properties of linear functions given in different forms
Interpreting the parameters of a linear function that models a real-world situation
Application problem with a linear function: Finding a coordinate given the slope and a point
Application problem with a linear function: Finding a coordinate given two points
Table for a linear function
Finding outputs of a one-step function that models a real-world situation: Function notation
Finding outputs of a two-step function with decimals, real-world situation: Function notation
Finding inputs and outputs of a two-step function that models a real-world situation: Function notation
Domain and range of a linear function that models a real-world situation
Graphing a function of the form $f(x) = ax + b$: Integer slope
Graphing a function of the form $f(x) = ax + b$: Fractional slope
Writing a direct variation equation
Word problem on direct variation
Writing an inverse variation equation
Word problem on inverse variation
Writing an equation that models variation
Word problem on combined variation

Week 3 (22 Topics, due on 01/27/2019 11:59 PM)
Understanding the product rule of exponents
Introduction to the product rule of exponents
Product rule with positive exponents: Univariate
Ordering numbers with positive exponents
Understanding the power rules of exponents
Introduction to the power of a power rule of exponents
Introduction to the power of a product rule of exponents
Introduction to the quotient rule of exponents
Simplifying a ratio of univariate monomials
Rewriting an algebraic expression without a negative exponent
Introduction to the product rule with negative exponents
Quotient rule with negative exponents: Problem type 1
Power of a power rule with negative exponents
Power and quotient rules with negative exponents: Problem type 1
Rational exponents: Unit fraction exponents and whole number bases
Rational exponents: Unit fraction exponents and bases involving signs
Rational exponents: Non-unit fraction exponent with a whole number base
Rational exponents: Negative exponents and fractional bases
Rational exponents: Product rule
Rational exponents: Quotient rule
Rational exponents: Products and quotients with negative exponents
Rational exponents: Power of a power rule

Week 4 (23 Topics, due on 02/03/2019 11:59 PM)
Solving for a variable in terms of other variables using addition or subtraction: Basic
Solving for a variable in terms of other variables using addition or subtraction: Advanced
Solving for a variable in terms of other variables using multiplication or division: Basic
Solving for a variable in terms of other variables using multiplication or division: Advanced
Solving for a variable in terms of other variables using addition or subtraction with division
Solving for a variable inside parentheses in terms of other variables
Solving for a variable in terms of other variables in a linear equation with fractions
Evaluating a rational function: Problem type 1
Square roots of integers raised to even exponents
Introduction to simplifying a radical expression with an even exponent
Square root of a perfect square monomial
Cube root of an integer
Finding nth roots of perfect nth powers with signs
Finding the nth root of a perfect nth power fraction
Finding the nth root of a perfect nth power monomial
Converting between radical form and exponent form
Simplifying a radical expression with an even exponent
Introduction to simplifying a radical expression with an odd exponent
Simplifying a radical expression with an odd exponent
Simplifying a higher root of a whole number
Introduction to simplifying a higher radical expression
Simplifying a higher radical expression: Univariate
Simplifying products or quotients of higher radicals with different indices: Univariate

Week 5 (20 Topics, due on 02/10/2019 11:59 PM)
Degree and leading coefficient of a univariate polynomial
Simplifying a sum or difference of two univariate polynomials
Simplifying a sum or difference of three univariate polynomials
Multiplying a univariate polynomial by a monomial with a positive coefficient; negative coefficient
Multiplying binomials with leading coefficients of 1
Multiplying binomials with leading coefficients greater than 1
Multiplying conjugate binomials: Univariate
Squaring a binomial: Univariate
Multiplying binomials with negative coefficients
Multiplication involving binomials and trinomials in one variable
Table for a square root function
Evaluating a cube root function
Domain of a square root function: Basic
Domain of a square root function: Advanced
Domains of higher root functions
Graphing a square root function
Graphing a cube root function

Week 6 (8 Topics, due on 02/17/2019 11:59 PM)
Evaluating functions: Linear and quadratic or cubic
Factoring a linear binomial
Introduction to the GCF of two monomials
Greatest common factor of three univariate monomials
Factoring out a monomial from a polynomial: Univariate
Factoring out a binomial from a polynomial: GCF factoring, basic
Factoring a quadratic with leading coefficient 1
Factoring out a constant before factoring a quadratic

Week 7 (17 Topics, due on 02/24/2019 11:59 PM)
Factoring a univariate polynomial by grouping
Factoring a quadratic with leading coefficient greater than 1
Factoring a quadratic by the ac-method
Factoring a perfect square trinomial with leading coefficient 1
Factoring a perfect square trinomial with leading coefficient greater than 1
Factoring a difference of squares in one variable: Basic
Factoring a difference of squares in one variable: Advanced
Factoring a polynomial involving a GCF and a difference of squares: Univariate
Factoring a product of a quadratic trinomial and a monomial
Solving an equation written in factored form
Finding the roots of a quadratic equation of the form $ax2 + bx = 0$
Finding the roots of a quadratic equation with leading coefficient 1
Finding the roots of a quadratic equation with leading coefficient greater than 1
Solving a quadratic equation needing simplification

Week 8 (16 Topics, due on 03/03/2019 11:59 PM)
Solving a word problem using a quadratic equation with rational roots
Using the Pythagorean Theorem and a quadratic equation to find side lengths of a right triangle
Using i to rewrite square roots of negative numbers
Simplifying a product and quotient involving square roots of negative numbers
Adding or subtracting complex numbers; Multiplying complex numbers
Solving an equation of the form $x2 = a$ using the square root property
Solving a quadratic equation using the square root property: Exact answers, basic
Solving a quadratic equation using the square root property: Exact answers, advanced
Completing the square
Solving a quadratic equation by completing the square: Exact answers
Applying the quadratic formula: Exact answers
Applying the quadratic formula: Decimal answers
Solving a quadratic equation with complex roots
Discriminant of a quadratic equation
Solving a word problem using a quadratic equation with irrational roots

Week 9 (19 Topics, due on 03/10/2019 11:59 PM)
Graphing a parabola of the form $y = ax2$; Graphing a parabola of the form $y = ax2 + c$
Graphing a function of the form $f(x) = ax2$; Graphing a function of the form $f(x) = ax2 + c$
Finding the vertex, intercepts, and axis of symmetry from the graph of a parabola
Graphing a parabola of the form $y = x2 + bx + c$
Graphing a parabola of the form $y = ax2 + bx + c$: Integer coefficients
Finding the x-intercept(s) and the vertex of a parabola
Using a graphing calculator to find the x-intercept(s) and vertex of a quadratic function
Finding the maximum or minimum of a quadratic function
Word problem involving the maximum or minimum of a quadratic function
Domain and range from the graph of a parabola
Solving a quadratic equation by graphing
Translating the graph of a parabola: One step
Table for an exponential function
Graphing an exponential function: $f(x) = ax$
Graphing an exponential function: $f(x) = a(b)x$
Graphing an exponential function and its asymptote: $f(x) = a(b)x$
The graph, domain, and range of an exponential function

Week 10 (7 Topics, due on 03/18/2019 11:59 PM)
Writing and evaluating a function that models a real-world situation: Advanced
Writing an equation and drawing its graph to model a real-world situation: Advanced
Evaluating an exponential function that models a real-world situation
Finding a final amount in a word problem on exponential growth or decay
Finding the initial amount and rate of change given an exponential function
Writing an equation that models exponential growth or decay
Comparing linear, polynomial, and exponential functions