MATH 122 – T31
Quantitative Skills and Reasoning
Fall 2017

Catalog Data: MATH 122 (5-0) Credit 2. An introductory study of quantitative and reasoning skills needed for success in science, technology, engineering and mathematics.

Objective: Upon completion of this course the student should have the arithmetic and basic algebra skills needed for most majors. This will also give students in math related disciplines such as science, technology, engineering and mathematics the prerequisite skills needed for the higher-level mathematics courses. Students in majors that do not require college algebra or calculus may consider Math 121 instead.

Objective: Upon completion of this course the student should have the arithmetic and basic algebra skills needed to proceed to college algebra. Students in majors that do not require college algebra or calculus may consider Math 121 instead

Outcomes: The student will be able to:

1. Perform basic arithmetic operations with integers, rational and real numbers including multiplication, division, addition and subtraction.
2. Solve linear equalities and inequalities in one variable.
3. Find the slope of a line and graph linear equations graphically
4. Add, subtract, multiply and divide polynomials
5. Find the greatest common factor of a polynomial
6. Factor trinomials and use some special factoring techniques on other polynomials.
7. Add, subtract, multiply and divide rational expressions.
8. Simplify radical expressions
9. Add, subtract, multiply and divide radical expressions.

Instructor: Susan Barton, Ph.D., Professor of Mathematics
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Office: LRC 323L (Robert C. Byrd Learning Resource Center mistakenly abbreviated RRC in some places)
Office phone: 304-929-1609
Office Hours: **M**: 8 – 8:50 and 2 – 2:50; **T** 8 – 9:20 and 11 – 11:50; **W** 8 – 8:50 and 2 – 2:50; **R:** 8 – 9:20 and 11 – 11:50; **F** 8 – 8:50
Class Time: 9:00 – 9:50AM **Room:** Inn-B 301
Method: This is a lecture based course meeting 3 times a week. **Resource:** A course calendar etc. may be found at community.wvu.edu/~sbarton
Tutoring: You may stop by my office any time, office hours are just the times I promise to be there. You may also make an appointment. **Additional help:** (The Math Lab (Room LRC 323D) is open from 8am to 4:30pm for quiet study). A schedule will be posted before the second week of class detailing the hours that tutoring is available. Free tutoring is also available through the Student Success Center (LRC 222) and Student Support Services (Benedum Center 130).

Textbook: Lial/Hornsby/McGinnis, *Beginning and intermediated Algebra*, 6th Edition, Pearson 2016

Chapters Covered:

Chapter 3: sections 1,2,3,4,5
Chapter 5: sections 1,2,3,4,5
Chapter 6: sections 1,2,3,4,5,6
Chapter 8: sections 1,2
Chapter 10: sections 1,2,3,4,5
If time permits the following topics may be added at the instructor's discretion
Chapter 7: sections 3,4
Chapter 11: sections 1,2,3

Topics:

1. Linear Equations in Two Variables (8 days)
    a) Linear Equations and Rectangular Coordinates
    b) Graphing Linear Equations in Two Variables
    c) The slope of a Line
    d) Slope-Intercept Form of a Linear Equation
    e) Point-Slope Form of a Linear Equation and Modeling
2. Factoring and Applications (12 days)
    a) The Greatest Common Factor; Factoring by Grouping
    b) Factoring Trinomials
    c) More on Factoring Trinomials
    d) Special Factoring Techniques
    e) Summary Exercises: Recognizing and Applying Factoring Strategies
    f) Solving Quadratic Equations Using the Zero-Factor Property
3. Rational Expressions and Applications (10 days)
    a) The Fundamental Property of Rational Expressions
    b) Multiplying and Dividing Rational Expressions
    c) Least Common Denominators
    d) Adding and Subtracting Rational Expressions
    e) Complex Fractions
    f) Solving Equations with Rational Expressions
4) Inequalities
    a) Linear Inequalities in one variable
    b) Set operations and compound inequalities
5) Roots, Radicals and Root Functions (8 days)
    a) Radical Expressions (omit graphs)
    b) Rational Exponents
    c) Simplifying Radicals, (may omit the Distance Formula, and Circles)
    d) Adding and Subtracting Radical Expressions
    e) Multiplying and Dividing Radical Expressions

Grading and Assessment:

Quizzes/Homework: There are 4 scheduled quizzes each worth 25 points apiece. I may give additional quizzes. However many quizzes are given I will count your best 4 quizzes. Quizzes will thus count for 100 points (about 13%) of your course grade. Homework will be assigned and sometimes collected. You should be prepared for me to collect homework at any time. This will count for 100 points (about 13% of your grade).

Participation: One point every day that you attend class AND you do not use your cell phone or other distracting device in class. This is a participation point and may be taken away at my discretion. The result will be scaled to 50 points (about 7%) of your course grade.

Exams: Three in class hourly tests, each worth 100 points (about 13%) of your course grade. Tentative Exam days Sept 15th, Oct 11th, and Nov 8th.

Final Exam: A comprehensive exam worth 200 points (about 27%) of the course grade will be given on Monday Dec 11th at 8:00 am.

NOTE: Only excused absences will enable a student to make up quizzes or exams. This means that you must have an excuse for the day of the missed exam and every subsequent day until you have made it up.

Course Grade: Grades are assigned according to the following scale:

A – 90 - 100% (675 – 750 points); B – 80 – 89.9% (600 – 674 points)

C – 70 - 79.9% (525 – 599 points) ; D – 60 - 69.9% (450 – 524 points); F - below 60%

Borderline grades may be improved based on performance and grade distribution of the whole class.

Calculator Usage: Graphing calculators will be forbidden on most exams and quizzes.
Computer Usage: None **Reference:** None **Laboratory Projects:** None
ABET Category Content: Mathematics - Credit 3 or 100%

Academic Integrity Syllabus Statement:

The integrity of the classes offered by any academic institution solidifies the foundation of its mission and cannot be sacrificed to expediency, ignorance, or blatant fraud. Therefore, I will enforce rigorous standards of academic integrity in all aspects and assignments of this course. For the detailed policy of West Virginia University regarding the definitions of acts considered to fall under academic dishonesty and possible ensuing sanctions, please see the West Virginia University Academic Catalog at http://catalog.wvu.edu/undergraduate/coursecreditstermsclassification/#academicintegritytext. Should you have any questions about possibly improper research citations or references, or any other activity that may be interpreted as an attempt at academic dishonesty, please see me before the assignment is due to discuss the matter.

Disclaimer: The professor reserves the right to make any necessary adjustments and/or modifications to this syllabus.

VERY TENTATIVE Calendar Math 122

M	W	F
~~Aug 14~~	16 Syllabus/Intro	18 3.1
21 3.2	23 3.3	25 3.4
28 3.4/3.5	30 Quiz	Sept 1 3.5
4 	6 8.1	8 8.1/8.2
11 8.2	13 Review	15 Exam
18 5.1	20 5.1/5.2	22 5.2
25 5.3	27 5.3/5.4	29 Quiz
Oct 2 5.4	4 5.4	6 5.5
9 Review	11 Exam	13 6.1
16 6.1/6.2	18 6.2	20 6.3
23 Quiz	25 6.4	27 6.4
30 6.5	Nov 1 6.5/6.6	3 6.6
6 Review	8 Exam	10 10.1
13 10.2	15 10.3	17 10.3/10.4
20 	22 	24 
27 10.4	29 Quiz	Dec 1 10.5
4 Review	Prep Day	