**MTH 130-206 (CRN 3933)**

**College Algebra**

**Spring 2018**

**Text and calculator**

College Algebra by Paul Sisson 2nd edition

For the final exam, a TI-30 series calculator

**Instructor**

Dr. Clayton Brooks

Office: Smith Hall 723

Office hours: MW 2:00 – 4:00, TR 3:15 – 4:00, or by appointment

E-mail: brooksc at …

Telephone: The University does not give me full telephone access so I may not be able to return your call. So, with that in mind, my number is ×6-6702.

**Course description**

College Algebra – 3 hrs.

Polynomials, rational, exponential, and logarithmic functions. Graphs, equations and inequalities, sequences. (PR: Math ACT 21 or above)

**Learner outcomes**

The student is expected to be able to:

* Learn the vocabulary and concepts used in studying equations
* Solve linear equations in one variable
* Solve rational equations with variables in the denominators
* Solve formulas for a specific variable
* Solve applied problems by using linear equations
* Learn procedures for solving applied problems
* Perform arithmetic with complex numbers
* Solve a quadratic equation by various methods
* Model situations with quadratic equations
* Solve equations by factoring
* Solve rational equations
* Solve equations with radicals
* Learn the vocabulary used with inequalities
* Solve and graph linear and compound inequalities
* Solve equations and inequalities involving absolute values
* Plot points in the Cartesian coordinate plane
* Find the distance and midpoint between two points
* Sketch graphs by plotting points
* Find intercepts and symmetries in graphs
* Find the equation of a circle
* Find the slope of a line
* Find the equation of a line in point-slope, slope-intercept, and general forms
* Recognize the equations of horizontal and vertical lines
* Find equations of parallel and perpendicular lines
* Use linear regression to model an application
* Define relation and function
* Determine the domain of a function
* Analyze properties of functions based upon their graphs
* Determine intervals of increase of a function, and its average rate of change
* Determine if a function is odd or even
* Graph basic functions
* Evaluate and graph piecewise-defined functions
* Graph algebraic transformations of known graphs
* Find arithmetic and composite combinations of functions
* Decompose a function into a composition
* Find and apply inverse functions
* Graph quadratic functions
* Model and solve problems using quadratic functions
* Solve equations of a quadratic form
* Determine zeros and end behavior of polynomial functions
* Determine the multiplicity of a zero of a polynomial function
* Perform long and synthetic division of polynomials
* Understand the concept of the Factor Theorem
* Examine all asymptotes of a rational function
* Solve polynomial and rational inequalities
* Sketch the graph of an exponential function
* Model problems involving compound interest
* Identify and apply the natural exponential function
* Define and apply basic properties of logarithms
* Graph and apply logarithmic functions
* Understand the relationship between exponential and logarithmic functions
* Solve exponential and logarithmic equations and their applications
* Model exponential, logarithmic, and logistic growth.
* Understand the nature of solutions to linear systems.
* Use graphing, substitution and elimination to solve linear systems.
* Model problems with linear systems.
* Use matrices to represent linear systems.
* Utilize technology to solve linear systems.
* Perform matrix arithmetic and its relation to applications.
* Become familiar with the use of an appropriate calculator

**Assessment of learner outcomes**

The student will be expected to:

* Answer questions that determine basic comprehension of concepts.
* Interpret results given data or graphs.
* Simplify expressions.
* Solve equations.
* Graph results or functions.
* Interpret results.
* Apply concepts to find solutions to a situation.

This will be demonstrated by the results of 3 in-class tests and a cumulative final exam.

The test will consist of a portion that does not allow a calculator or other technology, and a portion that will require a graphing calculator.

No sharing of calculators or other technology during a test is allowed.

**University Policies**

By enrolling in this course, you agree to the University Policies listed below. Please read the full text of each policy be going to [www.marshall.edu/academic-affairs](http://www.marshall.edu/academic-affairs) and clicking on “Marshall University Policies.” Or, you can access the policies directly by going to <http://www.marshall.edu/academic-affairs/?page_id=802>

Academic Dishonesty/ Excused Absence Policy for Undergraduates/ Computing Services Acceptable Use/ Inclement Weather/ Dead Week/ Students with Disabilities/ Academic Forgiveness/ Academic Probation and Suspension/ Academic Rights and Responsibilities of Students/ Affirmative Action/ Sexual Harassment

Policy for Students with Disabilities: Marshall University is committed to equal opportunity education for all students, including those with physical, learning and psychological disabilities. University policy states that it is the responsibility of students with disabilities to contact the Office of Disability Services (ODS) in Prichard Hall 117 (304.696.2467) to provide documentation of their disability. Following this, the ODS Coordinator will send a letter to each of the student's instructors outlining the academic accommodation he/she will need to ensure equality in classroom experience, outside assignment, testing, and grading. The instructor and student will meet to discuss how the accommodation(s) requested will be provided. For more information, access the website for the Office of Disabled Student Services: [http://www.marshall.edu/disabled.](http://www.marshall.edu/disabled)

**Grading policy**

The weights given to aspects of the class are:

100 points each In-class tests

200 points Final exam

A letter grade, or its equivalent on a 90-80-70-60 scale, will be given for each aspect. The final grade will be an average of those aspects.

**Attendance policy**

There is no formal attendance policy. However, being absent for exams and class presentations and discussions inherently carries potentially severe penalties.

**Teaching outline**

Week of:

January 9: Sections 1.1 – 1.3

January 16: Sections 1.4 – 1.6

January 23: Sections 2.1 – 2.3, quiz on chapter 1

January 30: Sections 2.4 – 2.6

February 6: **Test on February 9**

February 13: Sections 3.1 – 3.3

February 20: Sections 3.4 – 4.1

February 27: Sections 4.2 – 4.4, quiz on chapter 3

March 6: Sections 4.5, 4.6

March 13: **Test on March 16**

March 27: Sections 5.1, 5.2, 5.4

April 3: Sections 6.1, 7.1, 7.2

April 10: Sections 7.3 – 7.5

April 17: **Test on April 20**

April 24: Sections 8.1, 8.2

**The Final Exam is scheduled for Saturday, April 28, 2:00 – 4:00.**

**This is the common College Algebra final exam for all sections.**

**Tutoring**

The math tutoring lab will be open this semester, starting the second week of classes, in Smith Hall 625.

The hours are 10-4 and 5-6:30 MTWR and 10-noon Friday.

Information page: <http://www.marshall.edu/math/tutoring/>

**On-line assistance**

All College Algebra classes are connected to Hawkes Learning. Students can access the homework (if they purchase an access code, which comes with a NEW book) by going to

<http://www.hawkeslearning.com/>

and clicking on “Student Sign-In” button in the upper right corner. This will bring up a screen where they can create an account.

Dr. Michael Schroeder created a course for us. When you get to the point in the registration process to add the course, you will first select our university, course, instructor, and then section (the one which says Spring 2018).

Ignore the “Certify” portions of the courseware, but rather focus on the “Learn” (essentially an electronic version of parts of the textbook with guided examples) and the “Practice” (given the set of problems from the section with randomized numbers and variables) sections.

If you have any questions, feel free to send them Dr. Schroeder: schroederm@marshall.edu

**Late penalties**

A penalty of 1% reduction for each hour late will be assessed for any assignment. Make-up tests will not be given for any unexcused absence.

**Course philosophy**

The basic idea is to provide the student with the algebraic tools needed to succeed with related duties in other subjects. Breadth, rather than depth, of the wide range of subjects will dictate the schedule for the semester.