

## **MATH 1130 ELEMENTARY FUNCTIONS**

**02 MWF 10:30-11:35 Sullivan-Harrell 269**

**03 MWF 11:45-12:55 Sullivan-Harrell 307**

**Fall 2017**

**Core 8**

**Mathematics Domain**

### **Instructor**

Dr. Alex Rice

### **Office**

Sullivan-Harrell 364

### **Hours (Subject to Change)**

Monday 1:00-2:30pm, Wednesday 9:15-10:15am

Thursday 10:00-11:30am

### **E-mail**

riceaj@millsaps.edu

### **Phone**

601-974-1371

### **Text**

Algebra and Trigonometry, 9th edition, Larson

### **Course Objectives**

Elementary Functions seeks to offer the continuing mathematics student and the student of other disciplines a one-semester course in algebra and trigonometry. The basic analytic and geometric properties of algebraic, exponential, logarithmic and trigonometric functions will be covered with a balance of theory, computational skills, and applications. This is a preparatory course for any college calculus course.

### **Course Content**

This course will include, but not be restricted to, Chapters P-7 of the text.

### **Course Prerequisites**

As a student enrolling in this course you are expected to be capable of performing fairly complex arithmetical computations. Your ACT math score must be at least a 20.

### **Who Should Take This Course**

This course is typically taken as a single course prerequisite to Math 1210 Survey of Calculus, or Math 1220 Analytical Geometry and Calculus 1. While any student may take this course, if you are considering this course solely for the purpose of meeting the Core 8 requirement (i.e. as a terminal mathematics course), the Department of Mathematics advises that you consider taking Math 1150 Elementary Statistics instead. Math 1150 offers more day-to-day applications of mathematics since it is not also trying to prepare the student for calculus.

### **American Disabilities Act**

If you have any needs or require accommodations related to a disability or learning difference, please contact Patrick Cooper to register with the Office of Disability Services. You can reach him via e-mail at [coopeap@millsaps.edu](mailto:coopeap@millsaps.edu) or by calling extension 1228. Accommodations will not be granted until a meeting has taken place with Patrick, letters have been processed, and you have met with your instructor.

## **Math Tutoring Lab: MW 7:00-8:30, TR 4:00-5:30, Sullivan-Harrell 308**

- a free service offered by Millsaps to support students taking mathematics classes
- staffed by students who have shown a proficiency in math
- more useful to students who use it throughout the semester rather than the night before the exam

### **Course Grade**

Weekly In-class Quizzes	15%
Three In-class Exams	20% each
Cumulative Final Exam	25%

### **Final Grade / Grading Scale**

[92, 100] A	[88, 90) B+	[76, 78) C+	[64, 66) D+
[90, 92) A-	[80, 88) B	[68, 76) C	[60, 64) D
	[78, 80) B-	[66, 68) C-	[0, 60) F

### **Important Dates**

September 4	Labor Day, no classes
October 9-10	Fall Break, no classes
November 1	Last day for dropping courses with grade of W
November 22-24	Thanksgiving Holiday

### **Exam Dates**

September 29	Test 1	Chapters P, 1, and 2	Rev., Equations, Linear Fun.'s
October 27	Test 2	Chapters 3, 4, 5	More Functions
November 29	Test 3	Chapters 6, 7	Trigonometry
December 6 (2-4pm)	Cumulative Final Exam (02)		
December 8 (2-4pm)	Cumulative Final Exam (03)		

## Information for students in the Compass Curriculum

### Mathematics Domain

In courses, which satisfy the **Mathematics Knowledge** requirement, students will study and solve pure and applied mathematical problems from both visual and analytic perspectives. Courses in this domain will help to develop your ability to convert conceptual information into problems that can be solved using standard mathematical and geometrical tools, solve the problems, and interpret the results.

As an integral part of the Compass Curriculum, this course is designed to develop some very specific learning goals:

- Accurately interpret and explain information presented mathematically and graphically.
- Quantify problems, apply abstract symbolic manipulation or reasoning, and interpret the results.
- Understand how the computational skills taught apply in contexts both within and outside mathematics.
- Explicitly describe assumptions in estimation, modeling or data analysis and make appropriate inferences with critical thinking.
- Develop and interpret mathematical models of raw data or physical or social phenomena.

These learning goals will be met in this course as we study a variety of mathematical functions and their applications. The course will include a relatively thorough treatment of properties of polynomial functions, rational functions, exponential functions, logarithmic functions, and trigonometric functions.

In addition to a thorough study of the algebraic and graphical properties of each of these functions, we will see how they can be used to model real world problems. As just one specific example, we will see how exponential functions are used to determine various types of growth rates, including interest on financial investments. We will carefully evaluate what impact changes in certain variables (such as interest rate, time, or initial investment) will have on the growth of an investment.

While this course is certainly designed to further your understanding of all these types of mathematics functions, a major emphasis will be placed on enhancing your critical thinking skills. To perform the complex calculations necessary for this course, you will naturally find yourself learning how to think logically.

In addition to learning how to solve particular problems, we will learn when and why certain methods are applicable. This course will expose you to how mathematical modeling can be used to understand and explain natural and social phenomena. Additionally, you not only will be asked to construct mathematical models and perform mathematical calculations, you will (perhaps even more importantly) be asked to explain your processes and interpret your results.

Toward this end, on assignments and in class discussions, we will focus on understanding the reasoning behind any necessary computations and interpreting the results. On tests and homework, you will be expected to explain the details of any computations you make, why these computations are appropriate for the given context, your results, and what your results mean in context of the problem.

Knowing how to solve a problem is not enough, one must also know how to communicate why the methods they utilized were appropriate as well as their results. As noted above, in addition to solving problems, this course will help you learn to communicate how you obtained your results as well as what those results mean in context of the problem.

This is such a critical component of the course that it is possible that a student not receive credit for working a problem even if they obtained a ‘correct’ final answer. For full credit on all graded materials there must be an adequate level of communication as to how the answer was obtained. In fact, an incorrect answer with good reasoning is more valued than a correct answer with inadequate reasoning. As we cover material in this course, focus is on the process as well as on the final solution.

*Remember that we are looking for solutions to problems, not just answers. As a guide, imagine that the audience for your solution is a fellow classmate: as they read your solution, they should be able to see how the problem is solved and why the answer is correct.*

## **Writing**

In addition to allowing us to communicate our ideas to others, writing enables us to organize, review, and reflect upon our own ideas. This is as true in mathematics as it is in any other field. Since a major emphasis in this course will be on understanding the process of how certain types of problems can be solved mathematically, it is very important that you work all problems in a step by step process that leads to an appropriate solution. Each step should invoke a mathematical principle or property, correctly applied in context.

For all assignments, you will be required to organize your response in the form of correct, coherent, mathematical writing. That is, you will regularly and consistently use the language of the discipline to demonstrate to your reader both your thinking process, and your comprehension of the mathematical skills necessary for the task at hand.

## Honor Code

Millsaps College is an academic community dedicated to the pursuit of scholarly inquiry and intellectual growth. The foundation of this community is a spirit of personal honesty and mutual trust. Through their Honor Code, the students of Millsaps College affirm their adherence to these basic ethical principles.

An Honor Code is not simply a set of rules and procedures governing students' academic conduct. It is an opportunity to put personal responsibility and integrity into action. When students agree to abide by an Honor Code, they liberate themselves to pursue their academic goals in an atmosphere of mutual confidence and respect.

The success of the Code depends on the support of each member of the community. Students and faculty alike commit themselves in their work to the principles of academic honesty. When they become aware of infractions, both students and faculty are obligated to report them to the Honor Council, which is responsible for enforcement. A representative, but not exhaustive, list of academic offenses and violations covered by the Millsaps Academic Honor Code is provided at [http://www.millsaps.edu/academics/honor\\_code.php](http://www.millsaps.edu/academics/honor_code.php).

The pledge signed by all students upon entering the College is as follows:

**As a Millsaps College student, I hereby affirm that I understand the Honor Code and am aware of its implications and of my responsibility to the Code. In the interests of expanding the atmosphere of respect and trust in the College, I promise to uphold the Honor Code and I will not tolerate dishonest behavior in myself or in others.**

Each examination, quiz, or other assignment that is to be graded will carry the written pledge: **“I hereby certify that I have neither given nor received unauthorized aid on this assignment. (Signature)”** The abbreviation **“Pledged”** followed by the student's signature has the same meaning and may be acceptable on assignments other than final examinations.

It is the responsibility of students and faculty to report offenses to the Honor Code Council in the form of a written report. This account must be signed, the accusation explained in as much detail as possible and submitted to the Dean of the College.

The Honor Council, 2017–2018

Students:

Patrick Davis, Chair  
DJ Hawkins, Vice Chair  
Lillian-Lee Broussard  
Emma Carter

Faculty:

Dr. Lynn Raley (Fall) / Dr. David Wood (Spring) - Faculty Advisor  
Dr. Blakely Fender  
Dr. Nathan Shrader

## Policies of the Instructor

- No calculators will be allowed on any graded assignments.
- The student is responsible for material/information covered and assignments given during an absence.
- If your score on the cumulative final exam is higher than the lowest of your three in-class exam scores, your final exam score will replace that lowest score.
- Make-up exams will only be given in the event of a college-related obligation or a serious, documented medical emergency.
- *During tests*, your backpack, cell phone, etc. should be placed on the floor against the board.
- *Any violation of the Millsaps Honor Code* will be reported to the Honor Council. This includes (but is not limited to): cheating, plagiarism, lying, submitting someone else's work as your own, submitting work which you do not understand (in the case of group projects), and unauthorized assistance on any assignment which will be graded. See [http://www.millsaps.edu/academics/honor code.php](http://www.millsaps.edu/academics/honor%20code.php)
- *Cell phones and similar devices* are to be silent and put away during class. *Laptops* are to be closed.
- *Class communications* will be made by Millsaps e-mail. It is your responsibility to check your account.
- *Content of this syllabus* is subject to change by the instructor.

## Tentative Schedules

### (02) & (03)

Week 1	August 21-25	Syllabus, P1, P2, P3, P4
Week 2	August 28-Sep. 1	P.5, P.6, 1.1, 1.2
Week 3	September 4	no class on Monday, 1.3, 1.4
Week 4	September 11-15	1.6, 1.7, 2.1
Week 5	September 18-22	2.2, 2.3, 2.4, 2.6
Week 6	September 25-29	2.7 ( <b>end of material for Test 1</b> ) Review for Test 1, <b>TEST 1 (9/29)</b>
Week 7	October 2-6	3.1, 3.2, 3.3
Week 8	October 9-13	no class on Monday, 4.1, 4.2
Week 9	October 16-20	5.1, 5.2, 5.3
Week 10	October 23-27	5.4 ( <b>end of material for Test 2</b> ), Review for Test 2, <b>TEST 2 (10/27)</b>
Week 11	October 30-Nov. 3	6.1, 6.2, 6.3
Week 12	November 6-10	6.4, 6.5, 6.6
Week 13	November 13-17	7.1, 7.2
Week 14	November 20-24	7.3 ( <b>end of material for Test 3</b> ), no class Wednesday or Friday
Week 15	November 27-Dec. 1	review for Test 3, <b>TEST 3 (11/29)</b> , review for cumulative final
Week 16	December 4	review for cumulative final
	December 6 (02)	<b>FINAL EXAM 2 - 4 PM (02)</b>
	December 8 (03)	<b>FINAL EXAM 2-4 PM (03)</b>