

Department of Mathematics|College of Science

Spring 2014

Dr. Evelyn Pupplo-Cody (pupploco@marshall.edu)

This semester begins on January 13, 2014 and ends on May 8, 2014.

Please note that all times are Eastern.

Please see the [University Academic Calendar](#) for course withdrawal dates.

Office

Office Hours:

My Marshall University e-mail address is pupploco@marshall.edu. My office on Marshall University's campus is Morrow Library 106 and the phone is (304) 696-3047. Please feel free to stop by my office or e-mail me if you have any questions.

About me:

I have been teaching at Marshall University since 1989. My credentials include a Ph.D. from the University of Kentucky where I studied univalent function theory and other topics in mathematics.

My interests include all types of technology in teaching mathematics. I am an avid reader and enjoy many kinds of puzzles.

Course Materials and Cost

Precalculus, Mathematics for Calculus (with CD), 4th Edition by Stewart, Redlin, and Watson

You will need a graphing calculator. If you take exams off-campus, you will need a webcam and microphone on your computer.

The book cannot be purchased at the MU Bookstore. Please order a used copy from an online bookseller. The price should be about \$10 plus S&H.

Technical Requirements

- To use Black Board you must have the latest versions of your internet browser and Java.
- To take exams off-campus you will need a webcam and

- microphone on your computer.
- Help Desk – for assistance needs

<http://www.marshall.edu/ucs/cs/helpdesk/>

HELP DESK PHONE NUMBERS:

(304) 696-3200 (Huntington, WV)

(304) 746-1969 (Charleston, WV)

(877) 689-8638 (Toll free)

Course Details

ACT Math 24 or SAT Mathematics 560 or undergraduate level MTH 127 Minimum Grade of C or undergraduate level MTH 130 Minimum Grade of C.

This is a five-credit course.

Objectives of the course:

1. To prepare students for a course in calculus with analytic geometry.
2. To prepare students for science and engineering courses.
3. To give students a solid understanding of how algebra and trigonometry are used.
4. To develop facility in using graphing calculators to solve math problems.
5. To satisfy the mathematics general education requirement.

MTH 132 Student Learning Outcomes	How students will practice each outcome in MTH 132	How student achievement of each outcome will be assessed in MTH 132
Students will employ quantitative methods to solve problems drawn from basic algebra and geometry.	Students will view on-line videos, read on-line lecture notes, work on homework, participate in on-line discussions, and ask questions.	Students will take on-line quizzes and on-line examinations.

Students will demonstrate the ability to work with functions symbolically, visually, and numerically.	Students will view on-line videos, read on-line lecture notes, work on homework, participate in on-line discussions, and ask questions.	Students will take on-line quizzes and on-line examinations.
Students will analyze, evaluate, and graphically represent quadratic functions, polynomial functions, rational functions, radical functions, exponential functions, and logarithmic functions.	Students will view on-line videos, read on-line lecture notes, work on homework, participate in on-line discussions, and ask questions.	Students will take on-line quizzes and on-line examinations.
Students will demonstrate the ability to work with equations and inequalities symbolically, visually, and numerically.	Students will view on-line videos, read on-line lecture notes, work on homework, participate in on-line discussions, and ask questions.	Students will take on-line quizzes and on-line examinations.
Students will analyze, compare, and evaluate the six basic trigonometric functions and their inverses.	Students will view on-line videos, read on-line lecture notes, work on homework, participate in on-line discussions, and ask questions.	Students will take on-line quizzes and on-line examinations.
Students will apply the Law of Sines and/or the Law of Cosines to determine missing data in triangles.	Students will view on-line videos, read on-line lecture notes, work on homework, participate in on-line discussions, and ask questions.	Students will take on-line quizzes and on-line examinations.
Students will employ vectors to solve real-world problems.	Students will view on-line videos, read on-line lecture notes, work on homework, participate in on-line discussions, and ask questions.	Students will take on-line quizzes and on-line examinations.
Students will demonstrate an ability to represent certain equations in polar form or parametrically.	Students will view on-line videos, read on-line lecture notes, work on homework, participate in on-line discussions, and ask questions.	Students will take on-line quizzes and on-line examinations.
Students will demonstrate an ability to analyze systems of linear equations using matrices and their operations to solve real-world problems.	Students will view on-line videos, read on-line lecture notes, work on homework, participate in on-line discussions, and ask questions.	Students will take on-line quizzes and on-line examinations.
Students will analyze and compare	Students will view on-line videos, read on-line lecture notes, work on	Students will take on-line quizzes and on-line

conic sections and their rotations.	homework, participate in on-line discussions, and ask questions.	examinations.
Students will evaluate arithmetic and geometric series for convergence and employ counting techniques to analyze probabilities.	Students will view on-line videos, read on-line lecture notes, work on homework, participate in on-line discussions, and ask questions.	Students will take on-line quizzes and on-line examinations.
Students will use the Principle of Mathematical Induction to prove mathematical statements.	Students will view on-line videos, read on-line lecture notes, work on homework, participate in on-line discussions, and ask questions.	Students will take on-line quizzes and on-line examinations.

This course consists of five units: a review unit consisting of parts of chapters 1, 2, 3, and four other units covering several chapters. Each unit is divided into sections. For each section I suggest that you do the following.

- Begin by reading relevant sections in the text book. The content in my lectures is not meant to replace the text, but to supplement it.
- Look at my lectures for a guided tour through the section. Many lectures contain video clips of selected problems, definitions and rules, worked out examples, and explanations. There are many videos on the material in this course at www.KhanAcademy.org. I urge you to check this site out.
- **Work the odd-numbered problems for practice.** Answers are in the back of the book.
- If you are having trouble, please contact me through the MUOnline e-mail or through Marshall University's e-mail. I would be happy to explain to you how to do any of the problems. If you understand the concept being presented, you may be able to skip some of the problems. Only you can be the judge of the work you will have to put in to master the material, but remember that "practice makes perfect."
- For the homework grade, please complete the homework quizzes after each section. They can be found in the Assessments section of the course.
- Upon finishing each unit you will need to take a unit examination and a comprehensive final examination will conclude the course.

The following table lists the fourteen weeks of the semester and the sections you will need to complete. Since this is a five-credit course, you will have to work at this every single day. You may work ahead and finish early in the semester. Students who work consistently every day tend to make better grades than those who try to hurry through or leave it all to the last minute.

Schedule

Week	Unit	Sections	Topics	Pages for exercises
1	1	1.4	Fractional Expressions	42 – 44
		1.7	Inequalities	87 – 89
		Chapter 1	Review p. 128	129 – 131
		2.2	Graphs of Functions, including piecewise defined functions	165 – 167 (especially #59-72)
		Chapter 2	Review p. 240 (Sec 2.9 covered in Week 2)	240 – 243 #1-74
2	1	3.3	Real Zeros of Polynomials	287 – 290
		3.5	Complex Zeros and the FTA	306 – 307
		Chapter 3	Review p. 325	325 – 327
		2.9	One-to-One Functions and Their Inverses	236 – 239

Quizzes and exam on Unit 1 (All sections in Chapters 1, 2, and 3 will be tested with special emphasis on the sections listed above) due by 1/24 at NOON.

3	2	4.1	Exponential Functions	343 – 347
		4.2	Logarithmic Functions	356 – 358
		4.3	Laws of Logarithms	363 – 364
		4.4	Exponential and Logarithmic Equations	372 – 374
4	2	4.5	Modeling with Exponential and Logarithmic Functions	386 – 388
		5.1	The Unit Circle	416 – 417
		5.2	Trigonometric Functions of Real Numbers	426 – 427
		5.3	Trigonometric Graphs	439 – 442
5	2	5.4	More Trigonometric Graphs	451
		6.1	Angle Measure	480 – 483
		6.2	Trigonometry of Right Triangles	489 – 492
		6.3	Trigonometric Functions of Angles	501 – 502

Quizzes and exam on Unit 2 (Sections 2.9, 4.1 – 6.3) due by 2/14 at NOON.

6	3	6.4	The Law of Sines	510 – 512
		6.5	The Law of Cosines	518 – 521
		7.1	Trigonometric Identities	540 – 542
7	3	7.2	Addition and Subtraction Formulas	548 – 549
		7.3	Double-Angle, Half-Angle, etc.	557 – 560
		7.4	Inverse Trigonometric Functions	567 – 568
		7.5	Trigonometric Equations	579 – 580

8	3	7.6	Trigonometric Form of a Complex	589 – 591
		7.7	Vectors	599 – 602
		7.8	The Dot Product	609 – 611

Quizzes and exam on Unit 3 (Sections 6.4 – 7.8) due by 3/07 at NOON.

9	4	8.1	Systems of Equations	628 – 629
		8.2	Systems of Linear Equations in 2 Variables	635 – 638
		8.3	Systems of Linear Equations in Several Variables	646 – 648
		8.4	Systems of Linear Equations: Matrices	659 – 661
10	4	8.5	The Algebra of Matrices	669 – 672
		8.6	Inverses of Matrices and Matrix Equations	682 – 684
		8.7	Determinants and Cramer's Rule	697 – 699
		8.8	Systems of Inequalities	703 – 704
11	4	8.9	Partial Fractions	709 – 710
		9.1	Parabolas	730 – 732
		9.2	Ellipses	741 – 743
		9.3	Hyperbolas	751 – 753

Quizzes and exam on Unit 4 (Sections 8.1 – 9.3) due by 4/11 at NOON.

12	5	10.1	Sequences and Summation Notation	816 – 817
		10.2	Arithmetic Sequences	822 – 823
		10.3	Geometric Sequences	830 – 832
		10.5	Mathematical Induction	846 – 848
13	5	10.6	The Binomial Theorem	856 – 857
		11.1	Counting Principles	869 – 871
		11.2	Permutations and Combinations	879 – 882
		11.3	Probability	890 – 894
14	5	12.1	Finding Limits Numerically and Graphically	914 – 916
		12.2	Finding Limits Algebraically	923 – 924

Quizzes and exam on Unit 5 (Sections 10.1 – 11.3) due by 5/02 at NOON.

Comprehensive final exam (covers all sections) due by Thursday, 5/08 at NOON.

Course Grading

Each Unit Examination (five exams) will be worth 15% of the semester grade. Homework quizzes will be worth 10% of the semester grade. The comprehensive final exam will be worth 15% of the semester grade.

90.00 – 100 = A
80.00 – 89.99 = B
70.00 – 79.99 = C
60.00 – 69.99 = D
Below 60.00 = F

Exams

All quizzes will be taken with the *Assessments Tool* in MUOnline.

To help preserve the integrity of the course, exams will be taken in one of two ways.

1. Online using Respondus Monitor – instructions for downloading the software are posted in the course. You will need to use a computer with a webcam if you choose to take your exams online using Respondus Monitor. The current price for this service is \$10 per course. Please see the instructions in the Course Content folder in MUOnline.
2. On campus – a list of available times and computer classrooms are posted in the course. There is no charge for this option.

On-Campus Requirements

There is absolutely no requirement that you come to campus. You can communicate with me via the course *Mail* tool or the university's e-mail (pupploco@marshall.edu). You have the option of taking exams online through the *Assessments Tool* using Respondus Monitor.

I hold regular office hours each week. All students are welcome to come to my office for help if needed.

Course Policies

There are deadlines for the completion of each exam. Quizzes and exams will not be available after the deadlines; if there is a valid reason for missing an exam or quiz, please contact the instructor. The course is divided into 5 units with an exam at the end of each unit. There is a comprehensive final examination.

Available Help Online

The book that you bought should have a CD included. The CD includes videos that will explain the topics that are covered in the book.

You can also find some excellent explanations of precalculus topics at <https://www.khanacademy.org/math/trigonometry> . You should bookmark this site and refer to it as needed.

Homework

No homework will be collected. The quizzes are counted in lieu of collected homework. For practice, you should work the odd problems that have answers in the back of the book and send any questions about the homework to me. I will respond to each query within twenty-four hours.

University Policies

<http://www.marshall.edu/wpmu/academic-affairs/policies/>

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