**Marshall University**

**MTH 132 Syllabus**

|  |  |
| --- | --- |
| Course Title/Number  | Pre-Calculus with Science Applications MTH 132 |
| Semester/Year | Spring 2016 |
| Section/CRN | 208 6056 |
| Days/Time | MTWRF 1:00 pm – 1:50 pm |
| Location | CH 436 |
| Instructor | Professor Shannon Miller-Mace |
| Office | SH 741B |
| Phone | (304) 696-3796 |
| E-Mail | miller207@marshall.edu OR MUOnline/Blackboard |
| Office/Hours | MTWR 2:00 pm – 3:00 pm, MT 4:00 pm – 5:00 pm, or by appointment. |
| University Policies | By enrolling in this course, you agree to the University Policies listed below. Please read the full text of each policy by 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  |

**Course Description: From Catalog**

|  |
| --- |
| Functions used in calculus including polynomial, rational, exponential, logarithmic, and trigonometric. Systems of equations and inequalities, conic sections, polar parametric equations, sequences and series. Binomial Theorem. 5 hours. (PR: Math ACT 24 or above, or C or better in MTH 127 or C or better in MTH 130) |

**Required Texts, Additional Reading, and Other Materials**

|  |
| --- |
| 1. **Algebra and Trigonometry** by Stewart, 4th Edition.
2. Students will be required to use a **computer** to access WeBWork and communicate with the instructor outside of class. Many computer labs are located around campus.
3. Students are required to have a **graphing calculator** for the course.
4. Students should keep a **notebook** of all class notes, written homework assignments, etc. and collect handouts, worksheets, quizzes, and tests.
5. Students may access **supplemental course materials** using larsonprecalculus.com.
 |

|  |  |  |
| --- | --- | --- |
| **Course Student Learning Outcomes**  | **How students will practice each outcome in this Course** | **How student achievement of each outcome will be assessed in this Course** |
| **Students will be prepared for the start of the calculus sequence, mastering a study of functions, trigonometry, etc.** | interactive lectures and discussions, group activities, and homework exercises  | WeBWork assignments, semester tests, final examination |
| **Students will be prepared for courses in science and engineering, exploring applications of mathematical modeling using linear algebra and special topics.** | interactive lectures and discussions, group activities, and homework exercises | WeBWork assignments, semester tests, final examination |

**Course Requirements / Due Dates**

|  |
| --- |
| 1. Activities and Exercises – Outside-of-class, students will prepare with reading and exercises from the textbook. In-class, they will complete mini lesson worksheets and activities that promote discovery and practice of the concepts covered in lesson. See the Course Schedule for approximate lesson coverage dates. Due dates will be announced in class.
2. WeBWork – Students will complete sets of exercises to assess their understanding of the material outside of class through the online platform WeBWork. Due dates will fluctuate with the flow of the class and will be approximately once a week.
3. Semester Tests – Students will take five in-class exams covering sections from the textbook. See the Course Schedule for test dates.
4. Final Examination – Students will be assessed using a cumulative Final Exam. See the Calendar for the Course Schedule exam date.
 |

**Grading Policy**

A final letter grade will be determined on the following scale:

90.00 – 100% A

80.00 – 89.99% B

70.00 – 79.99% C

60.00 – 69.99% D

Below 60.00% F

\*\*Students must take the MTH 132 Comprehensive Final Examination in order to complete the class and receive a letter grade. The exam is scheduled for Monday, May 2nd, 2016 at 5:00 pm – 7:00 pm in SH 513.\*\*

|  |
| --- |
| **Activities and Exercises** will be worth **15%**, Activities and Exercises –> 15%WeBWork –> 15%Semester Exams –> 50%Final Examination\*\* –> 20%Total –> 100%**WeBWork** will count for **15%,** the **five in-class** **exams** will be worth **50%**, and the **Final Exam** will count for **20%** of the grade. |

**Attendance Policy**

|  |
| --- |
| Students are expected to attend each class. **Unexcused absences** from **10%** of the class ($\~$**8 class periods**) will result in an **F** **letter grade** for the semester. Excessive use of cell phone or sleeping during class will be counted as an unexcused absence. Students who are frequently tardy or leave class early will also receive an unexcused absence. It is the responsibility of the student to keep track of the number of unexcused absences they have accumulated.Only **excused absences** will warrant make up assignments or exams. To obtain an excused absence, please see the instructor or go to the Dean of Students’ Office in the MSC. Students **must** notify the instructor by phone or e-mail **prior to** an exam if they cannot take a scheduled exam. Students must present a serious reason for missing any exam. Makeup exams will be given to students outside of class time at the convenience of the instructor.  |

|  |
| --- |
| **MTH 132 Course Schedule (subject to change)** |
| **MTWRF Class Spring 2016** |
|   | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday | Sunday |
| Jan  | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
| Week One | SyllabusP.1  | P.2P.3 | P.4P.5 | P.6P.7 | P.8P.9 |  |   |
| Jan | 18 | 19 | 20 | 21 | 22 | 23 | 24 |
| Week Two | MLK JR Day – No Class | 1.11.2 | 1.31.4 | 1.51.6 | WeBWork |   |   |
| Jan | 25 | 26 | 27 | 28 | 29 | 30 | 31 |
| Week Three | 1.71.8 | 1.10 | 2.1 | 2.2 | WeBWork |   |  |
| Feb | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Week Four | 2.3  | 2.4 | 2.5 | **Review for TEST 1**  | **TEST 1** |   |  |
| Feb | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| Week Five | 2.6 | 2.7 | 2.8 | 3.1 | WeBWork |   |  |
| Feb | 15 | 16 | 17 | 18 | 19 | 20 | 21 |
| Week Six | 3.2 | 3.33.4 | 3.5 | 3.63.7 | WeBWork |   |   |
| Feb | 22 | 23 | 24 | 25 | 26 | 27 | 28 |
| Week Seven | 4.14.2 | 4.3 | 4.4 | **Review for TEST 2**  | **TEST 2** |   |  |
| Feb – Mar | 29 | 1 | 2 | 3 | 4 | 5 | 6 |
| Week Eight | 4.5 | 4.64.7 | 5.15.2 | 5.3 | WeBWork |   |   |
| Mar | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| Week Nine | 5.4 | 5.5 | 5.6 | **Review for TEST 3**  | **TEST 3** |   |  |
| Mar | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| Week Ten | 6.1 | 6.2 | 6.3 | 6.4 | WeBWork |   |  |
| Mar | 21 | 22 | 23 | 24 | 25 | 26 | 27 |
| Spring Break - No Classes |
| Mar – Apr | 28 | 29 | 30 | 31 | 1 | 2 | 3 |
| Week Eleven | 6.5 | 7.17.2 | 7.37.4 | 7.5 | WeBWork  |   |  |
| Apr | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Week Twelve | **Review for TEST 4**  | **TEST 4** | 8.3 | 9.1 | WeBWork |   |  |
| Apr | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
| Week Thirteen | 9.2 | 10.110.2 | 11.111.2 | 11.3 | WeBWork |   |   |
| Apr | 18 | 19 | 20 | 21 | 22 | 23 | 24 |
| Week Fourteen | 11.4 | 13.113.2 | 13.3 | 13.5 | WeBWork |   |   |
| Apr - May | 25 | 26 | 27 | 28 | 29 | 30 | 1 |
| Week Fifteen | 13.6 | **Review for TEST 5**  | **TEST 5** | **Review for Final** | **Review for Final** |   |   |
| May | 2 | 3 | **4** | 5 | 6 | 7 | 8 |
| Week Sixteen |  |   |   |  | FINAL EXAM |  |   |

MTH 132 Topic Coverage – Spring 2016

1. Very brief review of basic concepts of algebra
2. Study of functions
	* Definition of a function
	* Domain and range
	* Graphs of functions
	* Linear functions
	* Quadratic functions
	* Polynomial functions
	* Radical functions
	* Rational functions
	* Exponential functions
	* Logarithmic functions
3. Further study of functions
	* Increasing, decreasing and constant functions
	* Piecewise defined functions
	* Operations with functions
	* Composition of functions
	* Even and odd functions
	* Inverse functions
	* Transformations of graphs of functions
4. Applications
	* Mathematical modeling
	* Maxima and minima
	* Exponential growth
	* Exponential decay
	* Continuously compounded interest
5. Further topics
	* Complex number system
	* Inequalities
	* Intermediate Value Theorem
	* Remainder Theorem
	* Factor Theorem
	* Synthetic Division
	* Fundamental Theorem of Algebra
	* Rational Zeros Theorem
	* Descartes’ Rule of Signs
6. Trigonometry topics
	* Right triangle trigonometry and applications
	* Radians, degrees, arc length, and angular speed
	* Circular functions
	* Graphs of transformed sine and cosine functions
	* Trigonometric identities
	* Inverses of trigonometric functions
	* Solving trigonometric equations
	* Law of sines
	* Law of cosines
	* Polar coordinates and graphs
	* Vectors, operations, applications
7. Linear algebra topics, including
	* Solving systems of linear equations graphically;
	* Substitution method of solving systems of linear equations;
	* Elimination method of solving systems of linear equations;
	* Gaussian elimination;
	* Gauss-Jordan elimination;
	* Matrix operations;
	* Inverse matrices;
	* Determinants;
	* Solving systems of linear equations using Cramer’s Method.
8. Miscellaneous Topics
	* Sequences and series
	* The Binomial Theorem
	* Mathematical Induction