

Prerequisite Four years of high school mathematics including Algebra II, geometry, trigonometry, and satisfactory scores on Math Placement Exam and Math Placement Trig Exam; or MATH 117 or MATH 118, with grade of C or better.

Professor: Dr. David K. Neal COHH 4108 745-6213 david.neal@wku.edu

Office Hrs MW 10:40 – 11:20; T R 1:30 – 2:15; or by appointment

Text The text is not required. Course notes and exercises will be provided in pdf format at <http://people.wku.edu/david.neal/136/005.html>

For additional reference on any topic, use any standard calculus text, such as *Calculus of a Single Variable* (5th Ed.), by Larson and Edwards.

Course Description

MATH 136 is the first of the foundation sequence of courses that apply toward the mathematics major. It also satisfies General Education Category D–II and Colonnade Quantitative Reasoning requirement (QR). The course is designed for students majoring or minoring in mathematics and for students studying the physical sciences or engineering. The course covers standard topics of single-variable calculus on limits, differentiation, integration, and their applications. Included are trigonometric, exponential, and logarithmic functions, the Fundamental Theorem of Calculus, Volumes of Rotational Solids, L'Hopital's Rule, and Integration by Substitution.

Students should be very aware that calculus is rigorous and demanding. It is significantly more challenging than any previous mathematics course that you have taken. Moreover, this class is taught by a *professor* at a university as opposed to, for instance, an online instructor at a community college. Therefore you should expect the academic standards to be significantly higher than what you have previously encountered.

Students should also be aware that academic standards will not be compromised or lowered for students who choose to miss class, for students who are not capable of learning mathematics at this level, or for students who fail to put forth the effort required to succeed at mathematics at this level.

Grading Scale

Five tests (with their accompanying quizzes) and a final exam each will be weighted as one-sixth of your grade, and final grades will be determined as follows:

A: Excellent **B:** Good **C:** Satisfactory
D: Unsatisfactory **F:** Failure **FN:** Failure due to non-attendance

Excellent is at least a 93.5% average; Good is at least an 85.5% average;
Satisfactory is at least a 78.5% average; Failure is below 70%.

Attendance Policy

Registration in this course obligates you to be regular and punctual in class attendance. Therefore, attendance is mandatory and every student is expected to attend every class. To help discourage absences and to help encourage daily studying, there will be unannounced pop quizzes throughout the semester. The scores on these quizzes will be added to the subsequent in-class test. Quizzes cannot be made up or taken early. A missed quiz will result in a grade of 0 for that quiz and will significantly lower the overall score of the next test. If you wish to pass, then take my advice and don't miss class.

Calculator

A graphing calculator will be needed and the TI-84 is recommended. Students may not use a TI-89 or any calculator with symbolic calculation ability on tests and/or quizzes.

Tests

Each test will be based on class lectures and assigned exercises. A practice test with solutions will be provided about a week and a half in advance of each test. The tests will be closed-book with no formula sheets allowed. A certain portion of each test may be so that *no calculators are allowed*. The tests are timed and are to be taken in class. Students are expected to work problems in a timely manner and to do so neatly, completely, correctly, with proper mathematical notation having no "scratch-outs."

On test days, the classroom is a testing zone. Students are expected to be on time and to be ready for the exam upon entering the classroom. Do not bring any open notes into the classroom. If you do so, then you will be asked to leave. Do not at any time look at or use your cell phone in the classroom. If you do so, then you will be asked to leave and your test will not be graded.

Tentative Test Dates

Test 1: Thurs Sep 10 **Test 2:** Wed Sep 30 **Test 3:** Thurs Oct 22
Test 4: Thurs Nov 5 **Test 5:** Thurs Nov 19
Final Exam: Thursday Dec 10, 1:00 PM – 3:00 PM.

Make-Up Policy

Students are expected to take all tests in class on the days that they are scheduled. No rescheduling will occur. All requests for taking tests at other times will be denied. Your desire to attend another event will not be cause for me to give you a make-up because this class takes priority over all other events scheduled at this time including travel to or from other activities. If you desire to attend another event, then you should cancel, re-schedule, or request to be excused from that event so that you can take your scheduled exam.

Withdrawal Date

Wednesday October 14, 2015 is the last day to withdraw from the course with a grade of W or to change enrollment from credit to audit.

Learning Outcomes

Quantitative Reasoning courses teach students to interpret, illustrate, and communicate mathematical and/or statistical ideas. Students will learn to model and solve such problems. In general, successful students will demonstrate the ability to:

1. Interpret information presented in mathematical and/or statistical forms.
2. Illustrate and communicate mathematical and/or statistical information symbolically, visually and/or numerically.
3. Determine when computations are needed and execute the appropriate computations.
4. Apply an appropriate model to the problem to be solved.
5. Make inferences, evaluate assumptions, and assess limitations in estimation modeling and/or statistical analysis.

Specifically, successful students in the course will demonstrate proficiency in the ability to correctly work calculus problems on various topics that include:

- (i) Limits; indeterminate forms; continuity; L'Hopital's Rule
- (ii) Derivatives; rates of change; implicit differentiation; related rates; Newton's Method
- (iii) Mean Value Theorem; Extreme Value Theorem; maxima/minima/concavity; optimization
- (iv) Antiderivatives; the Fundamental Theorem of Calculus; area between curves; Integration by Substitution
- (v) Exponential growth and decay; volumes of rotational solids; Inverse Function Theorem

Mathematics Tutor Lab

For free extra help in the class, tutors are available in the Math Lab in COHH and in the Student Learning Center. Please check at these facilities for the specific times and availability of tutors.

Accessibility Services

In compliance with university policy, students with disabilities who require accommodations (academic adjustments, and/or auxiliary aids or services) for this course must contact the Student Accessibility Resource Center in DSU 1074. The phone number is 270-745-5004; TDD 270-745-3030. Per university policy, please do not request accommodations directly from the professor without a letter of accommodation from SARC.