

Syllabus for MATH 211-01

Calculus II, Fall 2014

<http://jamesrohal.com/teaching/fall-2014-math-211-01/>

Professor: Dr. James Rohal

Office: Main Hall 219
Phone: 804-557-0425
Email: james.rohal@westliberty.edu
Office Hours: See <http://jamesrohal.com/schedule/>

Description: We will learn a mix of mathematical topics including: techniques and applications of integration, sequences, series, power series, and Taylor's Theorem. Computational tools such as *Mathematica* will be used.

Prerequisite: Grade of C or better in MATH 210.

Course Objectives: By the end of this course students will be able to

1. Differentiate, integrate, and apply exponential and logarithmic functions.
2. Compute the Riemann sum and associated definite integral for geometric and physical quantities arising frequently in applications (e.g., area and volume of a solid of revolution).
3. Apply integration techniques (integration by parts, trigonometric integrals, trigonometric substitution, partial fractions, and improper integrals) to evaluate integrals of more complicated functions, with applications in science and engineering.
4. Demonstrate fundamental concepts in sequences and series (e.g., convergence properties), which are necessary in many applications (e.g., Fourier analysis and signal processing).
5. Think critically and independently about problems.
6. Apply the appropriate tools to solve real life problems.

Text: *Calculus: Early Transcendental Functions with Enhanced WebAssign* (5th Edition) by Larson and Edwards.

Attendance: I will pass a seating chart around the first week of class. You are expected to sit in your assigned seat the remainder of the semester and attend all classes on time. Arriving late for a class or leaving early is very disruptive of class. If you need to leave early, please let me know at the beginning of class.

Homework: Homework problems will be listed on the board after each lecture. I encourage you to work together on assignments. The weekly homework quizzes and *Mathematica* assignments will be based off of these problems.

Mathematica: *Mathematica* assignments are a series of problems that you complete using the software package *Mathematica*. You can access *Mathematica* for free online by creating a Wolfram ID and accessing the Wolfram Programming Cloud. Details will be sent in an email. Since there are no formal *Mathematica* labs, you are expected to complete *Mathematica* assignments on your own. These assignments will be posted on Sakai.

Quizzes: There will be weekly homework quizzes. You will complete several problems which will then be graded in class by a fellow classmate.

Exams: There will be four exams and a final. Your lowest exam grade will be replaced with your (scaled) final grade (if it is better than your lower exam grade). You must take all four exams to be eligible for this benefit.

Fri, Sep 19	Exam #1
Fri, Oct 10	Exam #2
Mon, Nov 3	Exam #3
Mon, Nov 24	Exam #4
Fri, Dec 12	Final Exam in Main Hall 210 from 10:30am – 12:30pm

Make-up Policy: If you are absent the day of an exam, then the score for that item will be zero unless you and I discuss it, and we both agree that a make-up is appropriate. Adjustments will be made for students who must miss class due to illness, observance of a religious holiday, and for students who must due to a university sponsored activity (with letter from coach, sponsor, etc). I am more willing to give make-ups if *prior* permission is obtained. If an assignment is due on a day you are absent, you must have a valid excuse to receive points on the assignment. There will be no opportunity to make up missed quizzes.

Cheating: Don't do it. Students are expected to adhere to the official Academic Dishonestly Policy as stated below:

Academic Dishonesty, in whatever form, belies the stated philosophy of WLU "to promote the development of the intellectual, cultural, social, physical, emotional, moral, and vocational capacities of all persons within its sphere of influence." Individuals who commit acts of academic dishonesty violate the principles, which support the search for knowledge and truth. The academic community has established appropriate penalties and disciplinary action for such behavior that can include being expelled from WLU.

Grading:

Exams	4 × 120 points
Final	1 × 245 points
Quizzes	7 × 25 points
<i>Mathematica</i>	4 × 25 points

The standard grading scale will be used. There are *no opportunities* for extra credit in this course besides that given on exams. The grade A+ is awarded at my discretion based on exceptional performance throughout the class.

Special Attention: If you have a disability that affects your academic experience and plan to seek accommodations, it is your responsibility to inform Disability Support Services as soon as possible. Disability Support Services is located in the Learning and Student Development Center (LSDC) in Main Hall. Carrie Young is the ADA representative; she can be reached at (304) 336-8216 or by email at carrie.young@westliberty.edu. It is important to request accommodations early enough to provide adequate time to facilitate your request and provide faculty with written verification of eligibility.

Course Outline:

- Chapter 5 §5.4: Fundamental Theorem of Calculus
§5.5: Integration by Substitution
§5.6: Numerical Integration
§5.7: The Natural Logarithmic Function
§5.8: Inverse Trigonometric Functions
- Chapter 6 §6.1: Slope Fields and Euler's Method
§6.2: Growth and Decay
§6.3: Separation of Variables
§6.4: Logistic Equation
- Chapter 7 §7.1: Area of a Region Between Two Curves
§7.2: Disk Method
§7.3: Shell Method
§7.4: Arc Length and Surfaces of Revolution
§7.5: Work
§7.6: Moments, Centers of Mass
- Chapter 8 §8.1: Basic Integration Rules
§8.2: Integration by Parts
§8.3: Trigonometric Integrals
§8.4: Trigonometric Substitutions
§8.5: Partial Fractions
§8.8: Improper Integrals
- Chapter 9 §9.1: Sequences
§9.2: Series and Convergence
§9.3: Integral Test and p -Series
§9.4: Comparison Test
§9.5: Alternating Series
§9.6: Ratio and Root Tests
§9.7: Taylor Polynomials and Approximations
§9.8: Power Series
§9.9: Representations of Functions by Power Series
§9.10: Taylor and Maclaurin Series

Time permitting, we may also cover.

- Chapter 10 §10.2: Plane Curves and Parametric Equations
§10.3: Parametric Equations and Calculus
§10.4: Polar Coordinates and Polar Graphs
§10.5: Area and Arc Length in Polar Coordinates