

## Math 231 Calculus with Functions I, Fall 2013

### Basic Info:

Meeting Times/Locations

- Section 0001, MWF Roop Hall 0105, 8:00–8:50am

Instructor: Dr. Joshua Ducey

Email: [duceyje@jmu.edu](mailto:duceyje@jmu.edu)

Website: <http://educ.jmu.edu/~duceyje>

Office Location: Roop 339

Office Hours:

- Monday 2:30–3:20pm
- Tuesday 11:00–12:15pm
- Wednesday 12:20–1:10pm
- By appointment

Book: Calculus I with Integrated Precalculus by Taalman, Freeman 2014

### Course Goals and Content:

The student should develop an understanding of both the theory and applications of the Calculus and precalculus topics covered. We will cover topics from Chapters 0 through 4 of the text.

### Homework:

Will be assigned *weekly*. We will be using the online homework resource WeBWorK. Go to [webwork.cit.jmu.edu](http://webwork.cit.jmu.edu), scroll down to MATH231, and click the link next to **Joshua Ducey** to access your assignments.

### Quizzes and Notebook Checks:

There will be random quizzes given in class. No make-up quizzes will be given. All of the homework that you do for this course should be neatly written up in a “homework notebook”. Write your work in a way that will be useful to you for later study. Occasionally I will ask you to bring your notebooks to class so that I can check them for correctness and completeness.

### Success:

*Come to class.*

*Read your book.*

*Do your homework.*

### Getting Help:

You are encouraged to work on homework with your classmates. My office hours are fixed times when I will be in my office to help you, but you can also make an appointment to see me at a different time (just email me).

The Science and Math Learning Center offers free tutoring. No appointment necessary, just walk right in. It is located in Room 200, and operates Monday through Thursday 10am–8pm, Friday 10am–2pm, Sunday 5pm–8pm. I strongly encourage you to take advantage of this service. There is also a Rose Library location, see their website for details [www.jmu.edu/smrc](http://www.jmu.edu/smrc).

**Evaluation:**

WeBWorK: 15%

Quizzes and Notebook Checks: 5%

Three Exams: 60%

Cumulative Final Exam: 20%

**Grade Scale:**

[90 – 100] A- to A

[80 – 90) B- to B+

[70 – 80) C- to C+

[60 – 70) D- to D+

[0 – 60) F

**Final Exam Time:**

Monday 12/9/2013, 8:00am–10:00am

**General University Policy:** [www.jmu.edu/syllabus](http://www.jmu.edu/syllabus)

Nature of the Course Content:

MATH 231. Calculus with Functions I.

4 credits. *Offered fall and spring.*

MATH 231 and 232 form a sequence that combines first-semester calculus with algebra and trigonometry. The sequence is designed for students whose pre-calculus skills are not strong enough for MATH 235. Calculus material in MATH 231 includes limits and derivatives of algebraic functions and their applications. *Prerequisite: MATH 155, MATH 156 or sufficient score on the Mathematics Placement Exam. MATH 231-232 together are equivalent to MATH 235 for all prerequisites. Not open to students who have already earned credit in MATH 235.*

Goals of the Course:

- (1) To develop an understanding of the logical structure and style of mathematics by:
  - Using reason in an orderly, cogent fashion.
  - Writing clear, well organized solutions to problems.

Structure refers to the foundations of mathematics and to the techniques used to build on those foundations. Style refers to the clarity, elegance, efficiency, and precision desirable in mathematical expression.
- (2) To develop ability to use mathematical tools to solve problems and to transfer this knowledge to analogous situations by:
  - Using differentiation to solve problems involving optimization and rates of change.
  - Using algebra, limits, and derivatives to classify properties of power, polynomial, rational, and general algebraic functions.
- (3) To develop computational skills such as:
  - Solving equations and inequalities, factoring, fraction manipulation, handling exponents.
  - Calculating limits and derivatives.
  - Finding maxima and minima of functions, and curve sketching of algebraic functions.
- (4) To develop an understanding of the theory of calculus and algebraic structures by knowing:
  - The definitions of limit, derivative, and continuous function.

- The important results concerning continuous and differentiable functions including the Intermediate Value Theorem, Rolle's Theorem, the Mean Value Theorem, and the relationship between continuity and differentiability.
- The theory of maxima and minima of functions.