

Math 232: Calculus with Functions II

CATALOG DESCRIPTION

A continuation of Math 231. Calculus topics include limits and derivatives of transcendental functions, the theory of integration and basic integration techniques.

Prerequisite: Math 231 with a grade of C– or better.

NOTE: Math 231–232 together are equivalent to Math 235 for all prerequisites.

GOALS OF THE COURSE

- (1) To develop an understanding of the logical structure and style of mathematics by:
 - (a) Using reason in an orderly, cogent fashion.
 - (b) 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 the ability to use mathematical tools to solve problems and to transfer this knowledge to analogous situations by:
 - (a) Using algebra, limits, and derivatives to classify properties of exponential, logarithmic, trigonometric, and inverse trigonometric functions.
 - (b) Using integration to solve geometric problems (e.g., areas, volumes, and lengths) and to represent physical problems.
- (3) To develop computational skills such as:
 - (a) Solving equations and inequalities involving exponential and trigonometric functions.
 - (b) Approximating Riemann sums and using integration techniques to calculate definite and indefinite integrals.
- (4) To develop an understanding of the theory of calculus and algebraic structures by knowing:
 - (a) The theory of exponential and logarithmic functions and their properties, and the unit circle definitions and properties of trigonometric and inverse trigonometric functions.
 - (b) The definitions of Riemann sums and definite and indefinite integrals, and how they are related by the Fundamental Theorem of Calculus.

REQUIRED MATERIALS

Textbook: Calculus I with Integrated Precalculus, a draft manuscript (Volume 2, 2012–2013) by Laura Taalman. This is a custom book published by Freeman press, available at the JMU bookstore. Previous editions of the textbook are likely to have significant differences.

Technology:

A graphing calculator is required from the following list — TI 83, TI 83+, TI 84, TI 84+. Casio graphing calculators are also likely to be approved, but ask the instructor.

INSTRUCTOR INFORMATION

Dr. Brian Walton

Office: Roop 110

Phone: 540–568–6387

E-mail: waltondb@jmu.edu

Website: [Walton's JMU faculty website](#) (with links to various webapps)

Blogs: [Walton's JMU Math Blog](#)

IM: Google, Skype, AIM all using dbrianwalton (but only by appointment)

Drop-In Office Hours: (no appointment necessary)

Mondays 9:00–10:00

Tuesdays 9:00–11:00 and 3:30–4:30

Wednesdays 9:00–10:00

For other times, please contact me in advance for an appointment.

MEETING INFORMATION

Classes will meet every Monday, Tuesday, Wednesday and Friday at the following times and locations.

Section 5:

MWF 1:25–2:15 in Roop 129

Tu 12:30–1:45 in Burruss 33

Section 6:

MWF 2:30–3:20 in Roop 129

Tu 2:00–3:15 in Burruss 33

IMPORTANT DATES

January 9–10: No class meeting (conference)

January 15: Last day to drop a class without withdraw

January 21: Martin Luther King, Jr. Day. No classes

February 12: JMU Assessment Day. No daytime classes

March 4–8 Spring Break

Fri, March 15: Last day to withdraw from a class

Wed, May 1: **Final Exam** for Section 6 (1:00–3:00)

Fri, May 3: **Final Exam** for Section 5 (10:30–12:30)

Grading Policies

Course grades will be based on a weighted average of grades in a variety of different grading categories.

- Participation = 5%
- WeBWork = 10%
- Homework = 10%
- Class Tests = 45% (15% each)
- Final Exam = 30%

The weighted score at the end of the semester will determine the letter grade based on the percentages:

90–100% = A, 80–90% = B, 70–80% = C, 60–70% = D, 0–60% = F.

Pluses and minuses may be rewarded.

The Participation grade will be based on participation in-class and on short self-assessments and requires regular attendance. If you miss a class when your name is called to participate, you lose that opportunity without possibility for make-up. Excused absences (requested in-advance) will be accommodated. Self-assessments taken in class may also not be made-up.

WeBWork (WW) is an online homework system. Each WW assignment will have a number of problems. Each assignment will have equal contribution (regardless of the number of problems) toward the overall WW grade. Typically, you will have an unlimited number of attempts at problems but they must be completed before the due-date.

Homework will primarily consist of written assignments that are not suitable for WeBWork, as well as provide an opportunity for students to learn to communicate mathematical ideas in written form. Mini-projects will be included which will include a requirement of a written report which must be completed in proper English writing (paragraphs, sentences, punctuation, spelling, etc.). The number of assignments will be fairly small, so each such assignment will have a significant effect on your overall grade and should not be skipped. (For example, if we have only two such assignments, each would be separately worth 5% of your overall grade.)

Class Tests will be given in class on the following dates: Friday, February 8; Wednesday, March 20; and Tuesday, April 23. Exam content will be typically material up-to but not including the class period prior to the exam. Each exam will consist of a 50 minute testing period. Calculators will be necessary for the tests.

The Final Exam is comprehensive and will be a similar format to the Class Tests, but for a longer duration. Calculators will be necessary for the exam.

Honor Code Policy

The JMU Honor Code (<http://www.jmu.edu/honor/code.shtml>) emphasizes that every action we undertake represents our own, personal contribution, honestly obtained and submitted. It is important that you do your own work and that work you submit represents only your own work.

Cooperative learning can be a useful way to learn. So I encourage you to work together with other students in your learning. WeBWorK problems are designed so that each student typically sees a different specific problem, so you may help one another in the process of solving problems. You should not solve someone else's problem, nor should you ask someone to solve your problem. You may for help in how to proceed with a problem. Written homework requires a more careful policy.

The policy for written homework assignments is that you should write your solution independent of others. Again, I think it is useful to talk with one another about how this is done. To bring these conflicting ideas into harmony, please observe the following rules. You may discuss and work through a problem together. However, you must write your solution in the absence of any notes or other assistance from that collaboration. In other words, work together until everyone understands. Then separate and write solutions using your knowledge but not the collaboration itself. You may not show or ask to see a finished solution. Unusually similar solutions (more than would be expected by simply following the same steps) will be questioned and may result in a disciplinary action compatible with the JMU Honor Code office.

Exams are closed book and closed notes. Approved calculators should be brought, and calculator memory should be cleared. No cell phones or other devices are allowed. Books and notes should be clearly put away. Only provided scratch paper may be used (do not bring your own).

Disability Accommodations

Students with disabilities who require reasonable accommodations to meet course requirements must register with the Office of Disability Services (<http://www.jmu.edu/ods/>) and contact me to discuss access issues. You will be respected and your confidentiality will be maintained.

Additional JMU Policies

See <http://www.jmu.edu/syllabus/> (including Attendance, Academic Honesty, Adding and Dropping Classes, Inclement Weather, Religious Accommodations).