

**COURSE DESCRIPTION
CALCULUS II REMOTE
MA 126–OG, FALL 2020**

DEPARTMENT OF MATHEMATICS
UNIVERSITY OF ALABAMA AT BIRMINGHAM

Course Instructor: Professor Ian Knowles

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Office Hours: MW after class; you can also email for a private Zoom session.

Homework and Test Files: For each homework assignment and test (including the final) you are required to submit a **single pdf file** in Canvas on or before the due time. A tablet computer is useful, but certainly not mandatory. Homework/test printouts and worksheets can be scanned to single pdf file using a mobile scanning app such as Adobe Scan.

Meeting times: MW 12:20–2:10pm.

Meeting location: Online via Zoom.

Prerequisite: Grade of C or better in MA 125 or equivalent.

Credits: 4 semester hours.

Class Lecture Notes: Download from Canvas; Chapters 2–7.

Reference Textbook: *Essential Calculus, Second Edition* by James Stewart, Thomson-Brooks/Cole, 2013, Chapters 4–8,10.

Important dates:

First day of classes: Monday August 24, 2020.

Last day to drop/add classes: Monday August 31, 2020.

Labor Day (UAB Holiday): Monday September 7, 2020.

Last day to withdraw with a “W”: Friday December 4, 2020.

Last day of classes: Friday December 4, 2020.

Test 1: Monday September 21, 2020; Class notes 2.3-4; 3.1-4

Major tests: Test 2: Monday October 12, 2020; Class notes 4.1-4; 5.1-3

Test 3: Monday November 2, 2020; Class notes 6.1-8

Test 4: Monday November 30, 2020; Class notes 7.1-6.

The above dates and sections are tentative; precise dates and test section numbers will be announced in class a week or so before a test.

Exam Week: December 7 – December 11, 2020.

Final exam: 1:30–4:00pm Wednesday December 9, 2020; Zoom.

Course policies.

Date: August 20, 2020.

- Please make sure that you are able to receive e-mail through your Blazer-ID account. Official course announcements may be sent to that address.
- If you are contacted by the Early Alert Program, consider taking advantage of their services; see *Student Resources* on the Blazernet website.
- For disability accommodations contact DSS at 934-4205 or at *dss@uab.edu*.
- The lowest weekly homework grade will be dropped to account for any missed assignments due to illness or any other circumstance.
- If a test is missed due to a serious verifiable circumstance or official university business, the test grade will be replaced with the properly rescaled final exam score. You must advise the instructor of such circumstances at the earliest possibility **before** the exam takes place.
- While calculators that do not have access to the internet are permitted, no books or notes will be allowed during the tests, except that one $8.5'' \times 11''$ sheet of your own construction may be used in each test/final.

Methods of teaching and learning.

- 27 110-minute class meetings consisting of lectures and discussions of examples and homework problems. Time for four in-class tests is included.
- Students are expected to undertake at least 10 hours of private study and homework per week during the term.
- The second half of the Wednesday class is devoted to a weekly tutorial designed to provide you with assistance in completing the homework assignment for the week. The assignments are always due on Friday of each week. Late submissions will be graded for correctness, but will not count toward the course score.
- During test weeks, the test will be during the first half of the Monday class, and the second half of the Wednesday class of the previous week will be used in similar fashion as a tutorial for your test review problems, which I will distribute at least a week before each test.

Aims of the course.

Upon successful completion of the course a student

- understands the concept of definite integral;
- is able to apply the definite integral to find volumes, work, and arc length;
- knows the basic techniques of integration;
- is able to apply Calculus concepts to problems in Physics and Engineering;
- understands the concept of a vector, can perform basic vector calculations, and is able to use vectors to describe lines and planes in space;
- understands the concept of vector-valued functions, and is able to use vector functions to describe parametric curves, tangent vectors and velocity;
- is able to determine the convergence/divergence of improper integrals, sequences, and infinite series; and
- can find power series representations of functions and use them for approximation, evaluation of integrals, and limits.

The understanding of a concept is demonstrated by an ability to solve pertinent problems related to that concept.

Course content.

- Basic techniques of integration including substitution, integration by parts, partial fractions and the use of tables.
- Applications of integration (area, volume, work).
- Vectors in three dimensions, their geometric and algebraic representation, dot product and cross product.
- Equations of lines and planes.
- Vector functions and parametric curves, tangent vectors, arc length, velocity and speed.
- Sequences and series, power series.

Assessment procedures.

- Student achievement will be assessed by the following measures:
 - **Regular graded homework.** Written homework will be assigned on Monday of each week (except for weeks preceding a test week) and due on Friday of the same week. Homework contributes 40% to the course average. Problems on tests are modeled after homework problems. Staying on top of homework is therefore extremely important.
 - **Four 50-minute Zoom tests.** Each test contributes 9% to the course average and typically includes a mixture of shorter questions (or parts of questions) designed to test insight and manipulative skills, together with longer problems requiring in-depth understanding, including “word” problems.
 - **150-minute comprehensive final examination.** The final is comprehensive and contributes 24% to the course average.
- Your course performance is your course average, which is a number between 0 and 100 obtained by adding the scores, weighted as above, from the homework, tests, and final.
- Your final grade is determined according to the following table:

Course performance:	88-100	75-87	62-74	50-61	below 50
Final Grade:	A	B	C	D	F
- After the final exam score and grades have been entered, grades may be checked via <https://www.uab.edu/cas/mathematics/resources> under the heading **Check Grades**.

Tips.

- Help is available in the Math Learning Lab, if you can't find me.
- Working steadily, regularly attending class, and asking lots of questions when you are stuck (a practice I strongly encourage !), all increase your chances of success.
- Ultimately, you are in charge of your mathematics education, but I am more than willing to help you chart a effective path through the Calculus wilderness.
- Remember, being a full-time student is a full-time job.

Class Schedule:

Week	Monday	Wednesday	Friday
08/24 – 08/28		Tutorial 1:20–2:10pm	HW1 due
08/31 – 09/04		Tutorial 1:20–2:10pm	HW2 due
09/07 – 09/11		Tutorial 1:20–2:10pm	HW3 due
09/14 – 09/18		Test 1 Review Tutorial 1:20–2:10pm	
09/21 – 09/25	Test 1 12:20–1:10pm	Tutorial 1:20–2:10pm	HW4 due
09/28 – 10/02		Tutorial 1:20–2:10pm	HW5 due
10/05 – 10/09		Test 2 Review Tutorial 1:20–2:10pm	
10/12 – 10/16	Test 2 12:20–1:10pm	Tutorial 1:20–2:10pm	HW6 due
10/19 – 10/23		Tutorial 1:20–2:10pm	HW7 due
10/26 – 10/30		Test 3 Review Tutorial 1:20–2:10pm	
11/02 – 11/06	Test 3 12:20–1:10pm	Tutorial 1:20–2:10pm	HW8 due
11/09 – 11/13		Tutorial 1:20–2:10pm	HW9 due
11/16 – 11/20		Test 4 Review Tutorial 1:20–2:10pm	
11/23 – 11/27	Thanksgiving Break		
11/30 – 12/04	Test 4 12:20–1:10pm		
12/07 – 12/11		Final Exam 1:30–4:00pm	