COURSE DESCRIPTION
CALCULUS II REMOTE
MA 126–OG, SUMMER 2020

DEPARTMENT OF MATHEMATICS
UNIVERSITY OF ALABAMA AT BIRMINGHAM

Course Instructor: Professor Ian Knowles
Office: University Hall, Room 4024
Phone#: (205) 934-2154
E-mail: iknowles@uab.edu
Office Hours: MTuWTh after class; you can also email for a private Zoom appointment at my number below.
Homework and Test Files: For each homework assignment and test (including the final) you are required to submit a **single pdf file** on or before the due time to my email address above. Homework and test printouts can be scanned using a mobile scanning app such as Adobe Scan, for example.

Meeting times: MTuWTh 4:45-6:15pm.
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 the class website; 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 June 08, 2020.
Last day to drop/add classes: Monday June 15, 2019.
Independence Day (UAB Holiday): Friday July 03, 2020.
Last day to withdraw with a "W": Friday July 10, 2020.
Last day of classes: Friday August 07, 2020.

Major tests:
Test 1: Thursday June 25, 2020; Class notes 2.1–4,3.1–4;
Test 2: Thursday July 16, 2020; Class notes 4.1-4,5.1-3,6.1-5;
Test 3: Thursday July 30, 2020; Class notes 6.6–8,7.1–6.

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: August 08 – August 14, 2020.
Final exam: 4:15-6:45pm Wednesday August 12, 2020; Zoom.

Course policies.

- 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.

- 35 90-minute class meetings consisting of lectures and discussions of examples and homework problems. Time for three in-class tests is included.
- Students are expected to undertake at least 15 hours of private study and homework per week during the term.
- The Thursday class is devoted to a weekly in-class tutorial designed to provide you with one-on-one assistance with the homework assignment for the week. Steven Redolfi, a mathematics department graduate student will assist in these tutorials. 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 on Thursday and the Wednesday class 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.
- Riemann sums, the definite integral, area and distances.
- The fundamental theorem of calculus, indefinite integrals and antiderivatives.
- 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 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.
  - **Three 90-minute in-class tests.** Each test contributes 12% 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 weighted scores 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 my assistant and I are 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.