

**COURSE DESCRIPTION
CALCULUS III
MA 227-OF, SUMMER 2020**

DEPARTMENT OF MATHEMATICS
UNIVERSITY OF ALABAMA AT BIRMINGHAM

Course Instructor: Dr. Junfang Li
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Office Hours: remote by appointment
Course Teaching Assistant: Mr. Oluwadara Ogunkoya
Office Hours: 4-5pm Monday, Tuesday

Meeting times: MTWR 15:00 - 16:30.
Meeting location: remote
Prerequisite: Grade of C or better in MA 126 or equivalent
Credits: 4 semester hours
Textbook: *Essential Calculus*, Second Edition by James Stewart, Thomson-Brooks/Cole, 2013, Sections 10.1-5, 10.7-8, 11.1-8, 12.1-8.

Important dates:

First day of classes: Monday June 8, 2020.
Last day to Drop/Add without paying full tuition & fees: Monday, August 15, 2020.
Last day of classes: Thursday, August 6, 2020.
Independent Day Holiday: Friday July 3, 2020.
Tentative Test dates: Test 1: Thursday, June 25, 2020;
Test 2: Monday, July 13, 2020.
These dates are tentative.
Final exam: To be announced later.

Course policies:

- Course announcements and documents will be available at Canvas. Please also make sure that you are able to receive e-mail through your Blazer-ID account. Official course announcements may be sent to that address.
- For disability accommodations contact DSS at 934-4205 or at *dss@uab.edu*.
- The two lowest homework grades 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

Date: June 8, 2020.

final exam score. You have to advise the instructor of such circumstances at the earliest possibility.

- No books or notes will be allowed during any of the tests. A $5'' \times 8''$ Quick Reference Card made by the student will also be allowed on all major exams (tests and final exam).

Methods of teaching and learning:

- 35 class meetings of 90 minutes duration consisting of lectures and discussions of examples and homework problems. Time for two in-class tests is included.
- Students are expected to undertake at least 8 hours of private study and homework per week.
- The online homework system WebAssign will be used (see below).

Aims of the course:

Upon successful completion of the course a student

- can apply one-dimensional calculus techniques to vector-valued functions;
- can apply the calculus of vector-valued functions to treat motion problems;
- understands basic concepts and applications of multivariable calculus;
- can solve standard optimization problems;
- can use different coordinate systems to solve two and three dimensional integration problems; and
- knows when and how to apply important concepts from vector analysis.

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

Course content:

- Dot product and cross product
- Equations of lines and planes
- Vector functions of one real variable: continuity, derivatives, and integrals
- Arc length, velocity, acceleration; motion in space
- Multivariable functions: partial derivatives, gradient, directional derivatives
- Linear approximation
- The chain rule
- Optimization
- Double and triple integrals
- Iterated integrals
- Integration using polar, cylindrical, and spherical coordinates
- Change of variables

Assessment procedures:

- Student achievement will be assessed by the following measures:
 - **Regular online homework** via the commercial WebAssign website affiliated with the textbook publishers. Feedback is provided when wrong answers are given. Students are encouraged to retake the homework problems (with randomly changed parameters) until they obtain correct answers; 20 re-takes are allowed during the week in which the

set is available. After the homework expires, you may download the correct solutions. Homework contributes 5% to the course average. Problems on tests are modeled after homework problems. Staying on top of homework is therefore extremely important.

- **Class Attendance, group work, and on-paper assignments** The roll will be taken automatically by zoom meeting report function. If you are unable to attend class, you must email me **before** that class takes place and bring a **verifiable excuse** later.

Students will also be required to work in small groups under the supervision of the course instructor and the course assistant. A weekly written assignment will be assigned on every Thursday which contributes 5% to the course average. Students should turn in the written assignments no later than 3pm next Monday.

- Two 90-minute **in-class tests** using ProctorU program. Each test contributes 25% to the course average.
- A 150-minute comprehensive **final examination** using ProctorU program. The final contributes 40% to the course average.
- Your course performance is your course (including the final exam score). This is a number between 0 and 100. (Excellent class attendance can be used to give a 1% curve up to your course average.)
- 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
- In addition your course grade may be raised by a strong performance on the final exam (normally at most one letter grade).

Tips:

- Help is available via Zoom meeting with the Math Learning Lab (HHB202).
- By working steadily and regularly, you will increase your chances to succeed in this course.
- Remember, being a full-time student is a full-time job.

How to get started on Enhanced WebAssign:

- (1) Go to *www.webassign.net* and click on LOGIN on the left on your screen, and then click on I HAVE A CLASS KEY.
- (2) Enter the following course key:

uab 8548 4733

and proceed; enter **uab** if prompted for your institution.
- (3) You will be prompted to purchase/acquire an access code.
- (4) After your first registration, you can sign in as a returning user.
- (5) Should you run into technical problems WebAssign provides technical support online and by phone.