COURSE DESCRIPTION
CALCULUS III
MA 227–6D, FALL 2020

DEPARTMENT OF MATHEMATICS
UNIVERSITY OF ALABAMA AT BIRMINGHAM

Course Instructor: Dr. Nandor Simanyi
Office: Zoom
Phone#: (205) 934-2154
E-mail: simanyi@uab.edu
Zoom Office Hours: Mondays and Wednesdays, 5:30–6:30. Meeting ID: 962 7069 1689 Passcode: 485482

Zoom Meeting times: MW 2:30–4:20 (includes a short break) Meeting ID: 930 8588 6681 Passcode: 580431
Prerequisite: Grade of C or better in MA 126 or equivalent
Credits: 4 semester hours
Textbook: *Essential Calculus — 2nd Edition* by James Stewart, ISBN 9781305044241, Chapters 10 – 13. You will need the hard cover or the loose leaf edition with full WebAssign access. The on-line edition does not suffice.

Important dates:

First day of classes: Monday, August 24.
Labor Day Holiday: September 7.
Last Day to Drop/Add (Without paying full Tuition or Fees): August 31.
Last Day to Submit Undergraduate Application for Degree: August 31.
Last Day for full term withdrawal for 75% refund: September 8.
Last Day for full term withdrawal for 50% refund: September 22.
Last Day for full term withdrawal for 25% refund: October 6.
Thanksgiving Break: November 23–29..
Last day of classes: December 4.
Last Day to withdraw with a Grade of W: December 4.
Final exam: Friday, December 11, 1:30pm–4:00pm; room to be announced later.

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.

Date: August 18, 2020.

- Accessible Learning: UAB is committed to providing an accessible learning experience for all students. If you are a student with a disability that qualifies under Americans with Disabilities Act (ADA) and Section 504 of the Rehabilitation Act, and you require accommodations, please contact Disability Support Services for information on accommodations, registration and procedures. Requests for reasonable accommodations involve an interactive process and consist of a collaborative effort among the student, DSS, faculty and staff. If you are registered with Disability Support Services, please contact DSS to discuss accommodations that may be necessary in this course. If you have a disability but have not contacted Disability Support Services, please call (205) 934-4205, visit their website, or their office located in Hill Student Center Suite 409.
- 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 have to advise the instructor of such circumstances at the earliest possibility.

Methods of teaching and learning:

- This class will be conducted virtually using a combination of live and recorded content through Canvas, Zoom, and other tools using the Canvas Learning Management system. Students should reserve the days and hours listed in the Class Schedule for live course elements, determined by the teacher. Students will not attend class on-campus.
- 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

- understands how coordinates and vectors are used in the treatment of three-space problems;
- 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 multi-variable 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:

- Vectors in two and three dimensions, their geometric and algebraic representation, dot product and cross product
- Vector functions: continuity, derivatives, and integrals
- Parametric curves and surfaces, polar coordinates
- Velocity, acceleration, arc length, and curvature

- Functions of several variables: continuity and 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
- Line and surface integrals (including surface area)
- Curl and divergence
- The integral theorems of Green, Stokes and Gauss

Assessment procedures:

- Student achievement will be assessed by the following measures:
  - Regular online homework on WebAssign, ten assignments altogether. Typically, homework will be due one week after assignment. Feedback is provided when wrong answers are given. Students are encouraged to re-take the homework problems (with randomly changed parameters) until they obtain correct answers. A maximum number of 20 takes is allowed during the week in which the set is available. Problems on tests are modeled after homework problems. Staying on top of homework is therefore extremely important. Each of them is 10 points.
  - Two 100-minute WebAssign tests, proctored by ProctorU. Each of them is 100 points.
  - A 150-minute comprehensive final examination on WebAssign, proctored by ProctorU. 200 points.
- Your course performance is the maximum of your course average and your final exam grade, each being a number between 0 and 100.
- Your final grade is determined according to the following table:
  A: 88-100, B: 75-87, C: 62-74, D: 50-61, F: below 50.

Tips:

- Help is available in the Math Learning Lab (HHB-202), if you can't find me.
- 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 9784 1252

and proceed; enter **uab** if prompted for your institution.

(3) When prompted to purchase an access code, select "**. . . trial period**" (you do not need to purchase an access code at this time. However, you must

purchase an access code within two weeks to continue using the system beyond the two-week trial period. The system will prompt you to enter your access code when the deadline approaches.)

(4) After your first registration, you can sign in as a returning user.
(5) Should you run into technical problems Enhanced WebAssign provides technical support online and by phone.