COURSE DESCRIPTION
CALCULUS III
MA 227–OF, SUMMER 2019

DEPARTMENT OF MATHEMATICS
UNIVERSITY OF ALABAMA AT BIRMINGHAM

Course Instructor: Professor Yanni Zeng
Office: CH 496A
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E-mail: ynzeng@uab.edu
Office Hours: Tuesday and Thursday, 2:00 p.m. – 2:50 p.m. (or by appointment)

Meeting times: MTWR 3:00pm-4:30pm
Meeting location: HHB 221
Prerequisite: Grade of C or better in MA 126 or equivalent
Credits: 4 semester hours

Important dates:
First day of classes: June 3, 2019
Last day to drop without paying full tuition: June 10, 2019
Independence Day Holiday: July 4, 2019
Last day to withdraw with a “W”: July 5, 2019
Last day of class: Aug 2, 2019
Test I: Thursday, June 20, 2019;
Test II: Thursday, July 11, 2019;
Test III: Thursday, August 1, 2019.
(These dates are approximate and may be slightly shifted due to unforeseen circumstances.)
Final exam: There will be no Final Exam for this course. Your grade will be calculated by homework, quizzes, attendance and in-class tests.

Course policies:
- Please make sure that you are able to receive e-mail through your Blazer-ID account. Official course announcements will be sent to that address.
- Turn off all cell phones during class.
- If you wish to request a disability accommodation please contact DSS at 934-4205 or at dss@uab.edu.
- The two lowest homework grades and one lowest quiz grade will be dropped to account for any missed assignments due to illness or any other circumstance.

Date: April 30, 2019.
The one lowest test grade will be dropped to account for any missed test due to illness or any other circumstance.
No books or notes will be allowed during any of the tests or quizzes.
Calculators which do not have access to the internet will be allowed during tests and/or quizzes.
A $5'' \times 8''$ Quick Reference Card made by the student will also be allowed on all exams, but not on quizzes.

Methods of teaching and learning:

- 35 class meetings of 90 minutes 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 10 hours of private study and homework per week.
- The online homework system WebAssign will be used (look for more information 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:
  – Attendance. Attendance in the course is crucial for your success and counts for 5% of the grade. The roll will be taken at the beginning of every session.
  – Regular online homework. Online homework will be due on most Mondays. 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. 10 retakes are allowed during the week in which the set is available. Problems on quizzes and tests are modeled after homework problems. Staying on top of homework is therefore extremely important. Homework counts for 15% of the course average.
  – (Unannounced) quizzes. Quiz problems are similar to the homework problem sets. This allows students to gauge whether they are ready to work problems in a test situation. Quizzes contribute 10% to the course average.
  – Three 90-minute in-class tests. Two best tests contribute 35% each to the course average.
• Your final grade is determined according to the following table:

<table>
<thead>
<tr>
<th>Course performance</th>
<th>Final Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>88-100</td>
<td>A</td>
</tr>
<tr>
<td>75-87</td>
<td>B</td>
</tr>
<tr>
<td>62-74</td>
<td>C</td>
</tr>
<tr>
<td>50-61</td>
<td>D</td>
</tr>
<tr>
<td>below 50</td>
<td>F</td>
</tr>
</tbody>
</table>

Tips:
• Help is available in the Math Learning Lab (HH 202).
• 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 I HAVE A CLASS KEY in the signin link.
(2) Enter the following course key:
  uab 8247 4680
  and proceed. (If prompted for your institution, enter uab)
(3) When prompted to purchase an access code, select “...trial period” (Do not purchase an access code at this time. However, you must purchase an access code within two weeks for you 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. Your book may have an access code bundled with it. You must use it.)
(4) After your first registration, you can sign in as returning user.
(5) Should you run into technical problems Enhanced WebAssign provides technical support online and/or by phone.