Course Description
Calculus III
MA 227–6B, Fall 2016

Department of Mathematics
University of Alabama at Birmingham

Course Instructor: Dr. Ian Knowles
Office: CH481A
Phone#: (205) 934-2154
E-mail: iknowles@uab.edu
Office Hours: After class; you can also phone or email for an appointment.

Meeting times: MW 10:10am-12noon.
Meeting location: HHB221
Prerequisite: Grade of C or better in MA 126 or equivalent
Credits: 4 semester hours

Important dates:
First day of classes: Monday August 29, 2016.
Last day of classes: Friday December 09, 2016.
Major tests:
 Test 1: Monday October 03, 2016;
These dates are tentative.
Final exam: Wednesday December 14, 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.
• 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 final exam score. You have to advise the instructor of such circumstances at the earliest possibility.

Date: August 26, 2016.
- No books or notes will be allowed during any of the tests. If you need a basic formula, just ask me.

**Methods of teaching and learning:**
- 27 class meetings of 110 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:**
- Cylinders and quadric surfaces.
- Vector functions of one real variable: continuity, derivatives, and integrals
- 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
- 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 via the commercial WebAssign website affiliated with the textbook publishers. Homework will be due one week after assignment. 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 retakes are allowed during the week in which the set is available. After the homework expires, you may download the correct solutions. Homework contributes 25% to the course average. Problems on tests are modeled after homework problems. Staying on top of homework is therefore extremely important.

– Two 110-minute in-class tests. Each test contributes 20% to the course average.
– A 150-minute comprehensive final examination. The final contributes 35% to the course average.
– Class Project. You will work in groups to complete this during the first two weeks of class; a maximum of 5% will be added to your final exam grade for your project.

• 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:

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

Tips:
• Help is available in the Math Learning Lab (HBB202), 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:

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.