MAT 161-006  CALCULUS WITH ANALYTIC GEOMETRY I  Spring 2014

Class Time, Locations:  Mon – Fri, 11:00 – 11:50 AM  (MW  BR 161, TRF  BR 206)

Instructor:  Linda Smith Gurganus

Office:  Bear Hall 201A (two doors from the elevator)

Cell Phone:  (910) 616-9390  Please call between 6 AM and 7:30 PM.

E-Mail:  gurganusl@uncw.edu

Web page:  http://people.uncw.edu/gurganusl/

My Schedule:

<table>
<thead>
<tr>
<th></th>
<th>Mon</th>
<th>Tues</th>
<th>Wed</th>
<th>Thurs</th>
<th>Fri</th>
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<tbody>
<tr>
<td>11:00 – 11:50</td>
<td>MAT 161</td>
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<td>BR 161</td>
<td>BR 206</td>
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<td>12:00 – 2:00</td>
<td>Lunch</td>
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<td>2:00 – 3:15</td>
<td>MAT 111</td>
<td>Office Hours</td>
<td>MAT 111</td>
<td>Office Hours</td>
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<td></td>
<td>BR 200</td>
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<tr>
<td>3:30 – 4:45</td>
<td>Office Hours</td>
<td>MAT 115</td>
<td>Office Hours</td>
<td>MAT 115</td>
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<tr>
<td></td>
<td>(till 4:30)</td>
<td>BR 219</td>
<td>(till 4:30)</td>
<td>BR 219</td>
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Office hours are set aside for my students. I am also available after class.
For an appointment: call, text, see me after class, or drop by my office.


Available in hardback, paperback, and electronic format.
Can be purchased alone or with access to WebAssign.
To keep as a reference, I recommend hardback, but paperback is cheaper.
Best deal:  paperback + eBook + WebAssign for $126.26 with free shipping at http://www.cengagebrain.com/micro/calculus
(Your paperback cover may look different from the my hardback cover.)

WebAssign:  On-line e-book and interactive homework is available at www.webassign.com
Advantage:  immediate feedback. Drawback: danger of dependence. Make sure you use it to help you master the material, not just for a grade. I recommend doing problems on line and in the book to help you assess your mastery.
WebAssign HW grade option: If your overall on-line HW grade helps your semester grade, I will count it as 10% of your semester grade; otherwise, I don’t.

TI-83 or 84 Graphing Calculator:  This is to be used as a tool, not a crutch. You are welcome to use your graphing calculator in class and on tests when appropriate. However, you will also be expected to be able to do the algebra, analysis, and compute derivatives and integrals by hand. Some parts of tests may be without a calculator.
Note:  Graphing calculators with computer algebra systems, such as TI-89, 92, and Inspire, are not allowed on tests. They can do too much that I want to see if YOU can do.
University Catalog Course Description: MAT 161-162. Calculus with Analytic Geometry (4-4)

Prerequisite: MAT 111-112 or 115 or equivalent preparation in algebra and trigonometry.

Calculus of a single variable intended for students in the mathematical and natural sciences. Functions and limits; differentiation with applications including maxima and minima, related rates, approximations; theory of integration with applications; transcendental functions; infinite sequences and series; conic sections, parametrized curves and polar coordinates; elementary differential equations. Three lecture and two laboratory hours each week. [gray: covered only in MAT 162]

MAT 161 is the 1st half of the standard university single-variable calculus sequence. It is intended for majors in Mathematics, Engineering, Statistics, Physics, Chemistry, Biochemistry, and Computer Science. (MAT 151, Basic Calculus, is intended for majors in Business, Biology, and the Social Sciences.)

In MAT 161, we begin with limits, and then learn techniques of differentiation and integration. We study the wider application of these skills in the natural and social sciences and learn to communicate the results of these investigations.

Calculus has served as the primary quantitative language of science and engineering for the last three centuries by providing the theoretical basis used to measure change. For a historical timeline with information on the contributions of major mathematicians, see http://www.mhhe.com/math/calc/smithminton2e/cd/tools/timeline/

Course Student Learning Objectives: Upon completing MAT 161, students should be able to:

- Use graphical, numerical, analytical and verbal representations of functions, limits, derivatives and integrals. (MS 1; QRE 1)
- understand the meaning of the derivative in terms of a rate of change and local linear approximation and use derivatives to solve a variety of problems. (MS 1 & 2; QRE 1 & 2)
- understand the meaning of the definite integral both as a limit of Riemann sums and as the net accumulation of change and use integrals to solve a variety of problems. (MS 1 & 2; QRE 1 & 2)
- understand the relationship between the derivative and the definite integral as expressed in the Fundamental Theorem of Calculus. (MS 1; QRE 1)
- use correct mathematical syntax to explain solutions in both written and graphic forms. (MS 3; QRE 3)
- model physical situations using the concepts of calculus. (MS 2 & 3; QRE 2 & 3)
- use technology to help solve problems, experiment, interpret results, and verify and communicate conclusions. (MS 1 & 2 & 3; QRE 1 & 2)
- determine the reasonableness of solutions, including sign, size, relative accuracy, and units of measurement. (MS 2 & 3; QRE 1, 2 & 3)
### Course Content and Tentative Test Schedule:

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Topic/Title</th>
<th>Sections</th>
<th>Approx. Test Dates</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Functions and Models</td>
<td>1-6</td>
<td></td>
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<tr>
<td>2</td>
<td>Limits and Derivatives</td>
<td>1-8</td>
<td>Test 1: ________________________</td>
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<tr>
<td>3</td>
<td>Differentiation Rules</td>
<td>1-11</td>
<td>Test 2: (may be in 2 parts)</td>
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<tr>
<td>4</td>
<td>Applications of Differentiation</td>
<td>1-9</td>
<td>Test 3: ________________________</td>
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<tr>
<td>5</td>
<td>Integrals</td>
<td>1-5</td>
<td></td>
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<tr>
<td>6</td>
<td>Applications of Integration</td>
<td>1-5</td>
<td>Test 4: Fri, April 25</td>
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### Semester Grade Calculation: (continues on next page)

#### Grading Scale:
- A range begins at 90 (A- goes through 92.5; UNCW does not give a grade of A+)
- B range begins at 80 (B- goes through 82.5; B+ begins at 87.5)
- C range begins at 70 (C- goes through 72.5; C+ begins at 77.5)
- D range begins at 65 (no + or -)
- F below 65

Factors influencing borderline grades include attendance, consistent work throughout the semester, and improvement shown by performance on the final exam.

### Semester Grade Calculation: (continued from previous page)

#### Category: Weight:
- Tests (4) 4 x 20% = 80%. Dates will be posted on my faculty web page.
- Final Exam 20% (more if improved mastery is demonstrated)
- HW If you choose to use the on-line homework on WebAssign and your overall score helps, I will count it as 10%, with tests and exams 18% each.

#### Policy on Mastery:
Since you will need to really master this material, it is important to keep working all semester to improve towards complete mastery of everything, and your final exam grade should show improved mastery. I will lower to 5% the weights of all tests with grades lower than the final exam and give the remainder to the final exam.

#### Amount and quality of work involved:
Plan for 2-3 hours or more per day outside of class for homework and doing whatever it takes to put it all together into a coherent and useful body of knowledge in your long-term memory and skills that can be used as needed. For mastery, you will need to work a substantial number of problems in each section. Do your work when you are at your best. Do quality work that is legible and easy to follow.
Computer Use:

During class, you are expected to use computers only when appropriate for the course. I do not tolerate any web surfing, e-mail, chats, etc. during class.

The mathematical software, MAPLE 14 Classic, is a powerful symbolic manipulation program capable of performing sophisticated calculations and graphing. We will use MAPLE from time to time. MAPLE will enable you to do more sophisticated problems than can be done by hand, eliminate tedious work by hand, and give you a feel for what is possible with functions that are outside the scope of this course. You can access it anywhere you have an Internet connection, by logging into UNCW TealWare. The textbook identifies those exercises that require some form of technology. Exercises that require a computer algebra system such as MAPLE are identified in the text by a CAS icon.

Attendance: Attendance at each class is expected. I do not deduct from your grade for absences, but if you must be absent, you are responsible for material you missed. Get notes quickly learn the material, and get the homework done; your instructor cannot be expected to re-teach you lectures you missed.

If you are sick with a fever, UNCW expects you to stay away from class to avoid spreading serious illnesses, including the flu, to others.

State Policy on Excused Absences for Religious Observance: In accordance with North Carolina G.S. 116-11(3a), students are entitled to two excused absences per academic year for religious observances. In order to preserve your right to make up any tests or other work missed for religious observance required by your faith, you must inform the Registrar in writing of your intended absence before the end of the first week of class.

Homework: I will assign problems on WebAssign that are similar to the suggested problems in the book. Do either or a combination of both, whatever works for you. Rework problems as needed until you have truly mastered them. It is important that you do these problems in your notebooks legibly so that you can review and synthesize the material. You have all semester to keep working on homework if you want the WebAssign problems to be a part of your semester grade. The goal is mastery, not just a homework grade.

TESTS: Exact dates of all tests will be announced at least one week in advance. You will have a full 50-minute class period. Don’t forget your calculator. Tests may be a portion that is to be done without calculator, such as analyzing functions for basic shape, end behavior, intercepts, extrema, and concavity. Policy on Make-Up Tests: I do not give individuals tests early/late just to accommodate students who want to leave early for Spring Break and the like. If you are sick, have a death in the family, etc., I will need verification in order to give a makeup test. Athletes are usually expected to take tests early if they have to be away for athletic events.
**Final Exam:** The final exam will be comprehensive. Part may be without calculator.

**Incompletes:** A temporary grade of I (incomplete) is given only if documented circumstances beyond the student's control (such as illness) render the student unable to complete the course work and the student has a passing grade average for work completed so far.

**Academic Honesty:** Collaboration and discussion is encouraged on work that is not for a grade. However, work that is graded must be your own. All tests are to be done without collaboration and without the aid of books or notes. Graphing calculators that do not have computer algebra systems are permitted on most test items. (TI-83 and 84 are fine. TI-89 and 92 are not allowed.) The Academic Honor Code (see the UNCW Code of Student Life) applies at all times, and rests on this principle: “It is ... this institution’s stated policy that no form of dishonesty among its faculty or students will be tolerated.” All students are expected to read and abide by the Academic Honor Code. See [http://www.uncw.edu/odos/documents/cosl-current.pdf](http://www.uncw.edu/odos/documents/cosl-current.pdf) p. 5 ff.

**Free Tutoring in the Math Lab:** part of the University Learning Center, DePaolo 1056. Provides free drop-in tutoring for students in all mathematics and statistics courses. [http://www.uncw.edu/ulc/math/index.html](http://www.uncw.edu/ulc/math/index.html)
Hours: Sun 2 - 9 PM, Mon - Thu 9 AM - 9 PM, and Fri 9 AM-2 PM. Closed Saturdays.
(First two weeks of the semester and Reading Day through exams: Mon - Fri 9 AM – 5 PM.)
One-on-one appointments: [http://www.uncw.edu/ulc/appointmentinstructions.html](http://www.uncw.edu/ulc/appointmentinstructions.html)

**Students with Disabilities:** If you have a documented disability and need reasonable accommodation in this course, you must register with the Office of Disability Services in DePaolo Hall, 1st floor (962-7555) and obtain an Accommodation Letter to give to your instructor. Then meet with your instructor to make mutually agreeable arrangements based on the recommendations of the Accommodation Letter. No extra time on tests without this.

**Use of Cell Phones, Computers, and other Electronic Devices:** You are to be fully engaged with the topic at hand during class. Use of the internet for non-class purposes will not be tolerated. Place cell phones on silent mode. Limit texting and checking messages during class.

**Campus and Personal Safety:** UNCW practices a zero-tolerance policy for violence and harassment of any kind. For emergencies contact UNCW CARE at 962-2273, or dial 911 (for Campus Police or Wilmington Police). For additional resources see the following websites: [http://www.uncw.edu/wsrc/crisis.html](http://www.uncw.edu/wsrc/crisis.html) and [http://www.uncw.edu/safe-relate/](http://www.uncw.edu/safe-relate/)
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<thead>
<tr>
<th>Date</th>
<th>Event</th>
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<tbody>
<tr>
<td>Jan 21, Tue</td>
<td>Last day to register, add, or drop a class w/o a grade</td>
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<tr>
<td>Feb 28, Fri</td>
<td>Last day to withdraw with a grade of W</td>
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<td>Jan 20, Mon</td>
<td>Martin Luther King, Jr., state holiday; no classes</td>
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<tr>
<td>Week of March 2</td>
<td>Spring Break; no classes</td>
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<td>Apr 17-18, Thu - Fri</td>
<td>Easter Break; No classes</td>
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<tr>
<td>Apr 30, Wed</td>
<td>Last day of classes</td>
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<td>May 1, Thu</td>
<td>Reading Day (no classes – just reviewing for exams)</td>
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<tr>
<td>May 6, Tue, BR 206</td>
<td>MAT 161 Final Exam, 11:30 – 2:30 (your choice)</td>
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<td>May 6, Tue, BR 206 or</td>
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<td>May 7, Wed, BR 161</td>
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