MAT 161       CALCULUS WITH ANALYTIC GEOMETRY I       Spring 2015

Time, Locations:  Section 001: Mon – Fri, 9:00 – 9:50 AM (MW BR 161 Lab, TRF BR 206)
                Section 003: Mon – Fri, 11:00 – 11:50 AM (MW BR 161 Lab, TRF BR 206)

Instructor:     Linda Smith Gurganus
Office:         Bear Hall 201A (two doors from the elevator)
Cell Phone:     (910) 616-9390  Please call between 7:30 AM and 7:30 PM.
E-Mail:         gurganusl@uncw.edu
Web page:       http://people.uncw.edu/gurganusl/

<table>
<thead>
<tr>
<th>My Schedule:</th>
<th>Mon</th>
<th>Tues</th>
<th>Wed</th>
<th>Thurs</th>
<th>Fri</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>9:00 – 9:50</td>
<td>10:00 – 10:50</td>
<td>11:00 – 11:50</td>
<td>12:00 – 2:00</td>
<td>2:00 – 3:15</td>
</tr>
<tr>
<td></td>
<td>MAT 161 BR 161 lab</td>
<td>Office Hours</td>
<td>Office Hours</td>
<td>Office Hours</td>
<td>Office Hours</td>
</tr>
</tbody>
</table>

Office hours are set aside for my students (appointments recommended but not essential).
For an appointment: see me after class, e-mail me, 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
                (The paperback cover may look different from the hardback cover.)

WebAssign:      www.webassign.com provides on-line e-book and optional interactive
                homework. Advantage: immediate feedback. Drawback: danger of dependence. If you
                use it, make sure you wear yourself off of the “help” and can do problems, including those
                in the book and on worksheets and practice tests, without help. I recommend also doing
                problems in the book, worksheets, old tests, etc., to help you assess your mastery.
                Class Key:  uncw 6543 4395

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 (CAS), such as TI-89, 92, and Inspire, are
not allowed on tests. They can do calculus that I want to see if YOU can do.

MAPLE 14 Classic,  is a powerful symbolic manipulation program capable of performing sophisticated
calculations and graphing. As a UNCW student, you can access it free of charge, anywhere you have an Internet
connection, by logging into UNCW TealWare. We will use MAPLE in the lab from time to time, and you are
welcome to use it outside of class to check your work, as well for more sophisticated problems than can be done
by hand, to eliminate tedious work by hand, and give you a feel for what is possible with complicated functions
that are beyond the scope of this course. Exercises that require a computer algebra system such as MAPLE are
identified in the textbook by a CAS icon. You will not be tested on Maple.

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 in the language of calculus.

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, you 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>Test</th>
<th>Approximate Test Date</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Functions and Models (Algebra, Trig Review)</td>
<td>1-6</td>
<td>Test 1</td>
<td>(Monday, Feb 9)</td>
</tr>
<tr>
<td>2</td>
<td>Limits and Derivatives</td>
<td>1-8</td>
<td>Test 2</td>
<td>(Friday, March 6)</td>
</tr>
<tr>
<td>3</td>
<td>Differentiation Rules</td>
<td>1-11</td>
<td>Test 3</td>
<td>(Wednesday, April 1)</td>
</tr>
<tr>
<td>4</td>
<td>Applications of Differentiation</td>
<td>1-9</td>
<td>Test 4</td>
<td>(Friday, April 24)</td>
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<tr>
<td>5</td>
<td>Integrals</td>
<td>1-5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Applications of Integration</td>
<td>1-5</td>
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Semester Grade Calculation:

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.

Category: Weight:

Tests (4) 4 x 20% = 80%.
Final Exam 4 parts, one for each previous test: 5% each = 20%

My Policy on Mastery: Since you will need to truly master this material, it is important to keep working all semester towards a goal of better mastery of everything. If you study well, your final exam should show improvement over previous tests, and I believe your semester grade should reflect that improved mastery. As a result, the final exam will be very thorough. For every part of the final exam that shows improvement, I will lower to 5% the weight of the corresponding lower test and increase the weights of that portion of the final exam to 20%.
Attendance: 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. Otherwise, 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; do not expect your instructor to meet with you and reteach you what you missed. Go over my notes (posted on my faculty web page), learn the material, and stay caught up. If the day's notes have not been posted yet, similar notes can be found where I taught this course last spring.

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.

Classroom Etiquette: During class, computers are not for your own personal use. I do not tolerate web surfing, texting, etc. Even if you think you can learn and “multitask”, it is distracting to others and is viewed as immature and disrespectful by your instructor. I will call you out for it, and I do not care if I embarrass you or make you angry, because I want you on task at all times during class. If you must leave early, come in late, use the restroom, or take a call outside, do so quietly. Drinks are fine, if you clean up after yourself.

Amount and quality of work involved: Plan for a minimum of 3 hours per day outside class on average for reviewing notes, homework, additional practice, and synthesis. The goal is a 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.

Homework: I will recommend problems in the book and problems on WebAssign that are similar to many of the problems in the book. Webassign does not have every type of problem that you need to be able to do. Rework problems as needed until you understand them and have truly mastered them. Also do worksheets, practice tests, and old tests posted on my web page. Do these problems in your notebooks legibly so that you can review and synthesize the material. Your goal is understanding and mastery.

TESTS: Exact dates of all tests will be announced at least one week in advance. Don’t forget your calculator. Tests may contain 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. Contact me before the test or no later than the day of the test if you must be absent. Athletes are usually expected to take tests early if they have to be away for athletic events.

Final Exam: Comprehensive. Required. 4 parts, corresponding to the 4 tests. Dates and times on last page of syllabus. You can take it either time, if it does not conflict with your other exams.


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/ucl/appointmentinstructions.html

Help Sessions/Review Sessions: I will offer help/review sessions throughout the semester. I will try to come up with dates and times that work for as many of you as possible. These are scheduled on weekday evenings or Sunday afternoons or evenings. These may be led by me or by a graduate teaching assistant.

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.

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: The purpose of this course is to gain knowledge and skills needed in the future. Therefore your grade must reflect the degree to which you have reached the level of knowledge and skills needed. Cheating misrepresents a student's knowledge and skill level, compromising the student's integrity and making it appear that he/she has knowledge and skills that he/she does not have. While collaboration and discussion are
encouraged on work that is not for a grade, 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 UNCW instructors are required to report all incidents of cheating to the Dean of Students. First incident can result in an F for the course. Second incident of cheating at UNCW can result in expulsion from the university. The UNCW Academic Honor Code (see the UNCW Code of Student Life) applies at all times, and rests on this principle: “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.

**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/)

**Important Dates:**

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
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<tbody>
<tr>
<td>Jan 20, Tue</td>
<td>Last day to register, add, or drop a class w/o a grade</td>
</tr>
<tr>
<td>Feb 27, Fri</td>
<td>Last day to withdraw with a grade of W</td>
</tr>
<tr>
<td>Jan 19, Mon</td>
<td>Martin Luther King, Jr., state holiday; no classes</td>
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<tr>
<td>Week of March 8</td>
<td>Spring Break; no classes</td>
</tr>
<tr>
<td>Apr 2-3, Thu - Fri</td>
<td>Easter Break; No classes</td>
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<tr>
<td>Apr 29, Wed</td>
<td>Last day of classes</td>
</tr>
<tr>
<td>Apr 30, Thu</td>
<td>Reading Day (no classes – just reviewing for exams)</td>
</tr>
<tr>
<td>May 4, Mon, BR 161?</td>
<td>MAT 161-001 Final Exam, 8:00 – 11:00 AM</td>
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<tr>
<td>May 5, Tue, BR 206</td>
<td>MAT 161-003 Final Exam, 11:30 AM – 2:30 PM</td>
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