MATH 191: CALCULUS I (SUMMER 2012)

Course number: MAT 191

Course title: Calculus I

Credits: 3

Prerequisites: Grade of at least C in MAT 151 or an acceptable score on the mathematics placement test. You are responsible for all of the material from Chapter 1 of the textbook.

Instructor information:
       Instructor: Dr. Dan Yasaki   d_yasaki@uncg.edu
       Homepage: http://www.uncg.edu/math/faculty/d_yasaki/teaching.html
       Office Hours (146 Petty): by appointment.

For whom planned: This is a GE core course (GMT). This course is the first course in the Calculus sequence.

Catalog description: Limits and introductory differential calculus of the algebraic and transcendental functions of one variable.

Student learning outcomes: MAT 191 provides students an opportunity to appreciate certain concepts in fundamental mathematics, especially functions, limits, and differential calculus. The emphasis is on abstract reasoning, not routine manipulations, and this course satisfies the Mathematics (GMT) requirement of the General Education Program. Upon successful completion of this course, students will be able to:

- employ problem solving strategies in fundamental mathematics that go beyond routine mathematics operations and data manipulation.
- reason in mathematical systems.
- formulate and use mathematical models and apply mathematical concepts effectively to solve real-world problems.
- evaluate decisions based on mathematically valid principles.
- communicate mathematical solutions clearly and effectively.

Teaching methods and assignments for achieving learning outcomes: Abstract reasoning is a part of every lesson and homework in this course. The student, through regular and frequent attention to the lessons and homework questions, will make progress through the learning objectives. Multiple homework questions are assigned for each lesson and are designed to reinforce the mathematics learning objectives. The student will demonstrate achievement of learning objectives through satisfactory completion of graded assignments and tests. The questions on graded assignments and tests are designed to evaluate specific parts of the learning objectives and in this way the grade reflects the attainment of the objectives.

Evaluation and grading: Semester averages are rounded to the nearest point, and letter grades are assigned on a 10 point scale.

A+ : 97–100	B+ : 87–89	C+ : 77–79	D+ : 67–69	
A : 93–96	B : 83–86	C : 73–76	D : 63–66	F : 0 – 59
A− : 90–92	B− : 80–82	C− : 70–72	D− : 60–62	

- Homework assignments (10%)
- Quizzes (10%)
- Three tests (50%)
- Final exam (30%)

Required text:

Thomas' Calculus Early Transcendentals, 12/E

Online text and homework is available (course ID `yasaki64193`) at

`http://pearsonmylabandmastering.com/`

Topical outline:

Section	Material covered
2.	**Limits and Continuity**
2.1	Rates of Change and Tangents to Curves
2.2	Limit of a Function and Limit Laws
2.3	The Precise Definition of a Limit
2.4	One-Sided Limits
2.5	Continuity
2.6	Limits Involving Infinity; Asymptotes of Graphs
3.	**Differentiation**
3.1	Tangents and the Derivative at a Point
3.2	The Derivative as a Function
3.3	Differentiation Rules
3.4	The Derivative as a Rate of Change
3.5	Derivatives of Trigonometric Functions
3.6	The Chain Rule
3.7	Implicit Differentiation
3.8	Derivatives of Inverse Functions and Logarithms
3.9	Inverse Trigonometric Functions
3.10	Related Rates
3.11	Linearization and Differentials
4.	**Applications of Derivatives**
4.1	Extreme Values of Functions
4.2	The Mean Value Theorem
4.3	Monotonic Functions and the First Derivative Test
4.4	Concavity and Curve Sketching
4.5	Indeterminate Forms and L'Hôpital's Rule
4.6	Applied Optimization
4.7	Newton's Method
4.8	Antiderivatives[1]

Tentative Calendar

	Monday	Tuesday	Wednesday	Thursday
6/25	2.1, 2.2	2.3	2.4, Catch-up	2.5
7/ 2	2.6	3.1, Review 2	*Independence Day*	**Test 1**, 3.2
7/ 9	3.3, 3.4	3.5, Catch-up	3.6, 3.7	3.8, Catch-up
7/16	3.9, 3.10	3.11, Review 3	**Test 2**, 4.1	4.2, 4.3
7/23	4.4, Catch-up	4.5, 4.6	4.7, Catch-up	**Test 3**, Review
7/30	**Final Exam**			

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[1]If time permits.

Academic Integrity Policy: Each student is required to sign the Academic Integrity Policy on all major work submitted for the course.

> *I have abided by the UNCG Academic Integrity Policy on this assignment.*
> Signature _____ Date _____

More information can be found at `http://academicintegrity.uncg.edu/complete/`.

Attendance Policy: Attendance is mandatory. Two consecutive absences or four total absences during the semester may result in a failing grade, regardless of semester average. Attendance will be measured using quizzes.

`http://web.uncg.edu/reg/Bulletin/Current/AcaRegs/ClassAttendance.aspx`

Final examination: The Final Exam covers Chapters 2–4 of the textbook. The exam is 2 hours and will be given on Monday, July 30, 2012 at 12:20 PM.

Additional requirements:
(1) Assignments Policy:
   (a) Assignments are due at the beginning of class. Late assignments will be accepted as late as 5 PM on the due date for half credit and not accepted after that.
   (b) Written assignments must be
       (i) legible.
       (ii) stapled (if more than one page).
       (iii) not torn from a spiral bound notebook.
(2) Absence Policy: You are responsible for all missed material. Any missed assignment, test, or final exam will result in a score of 0. Make-up tests and final exam will be given only if you receive prior approval for a valid excuse by contacting me at least one week in advance.
(3) Copyright Policy: Selling or purchasing notes from classes for commercial gain is a violation of the UNCG Copyright Policy.

   `http://policy.uncg.edu/copyright/`

   Any student who sells notes taken in class for commercial gain, or who purchases notes taken by another student for commercial gain, is in violation of this policy and, by extension, is committing a violation of the Student Code of Conduct.

   `http://studentconduct.uncg.edu/policy/code/`

(4) Email Policy: All email correspondence should be made using your UNCG email account. You must check your email regularly for updates and announcements.
(5) Calculator Policy: Calculators are not allowed.