NEW YORK CITY COLLEGE OF TECHNOLOGY
The City University of New York

DEPARTMENT:	Mathematics
COURSE:	MAT 1475
TITLE:	Calculus I
DESCRIPTION:	Topics include functions, limits, differentiation, and tangent lines, L'Hôpital's Rule, Fundamental Theorem of Calculus and Applications.
TEXT:	Calculus, version 2.0 G. Hartman, B. Heinold, T. Siemers and D. Chalishajar http://www.apexcalculus.com/s/Calculus_Version2_BW.zip or http://www.apexcalculus.com/s/Calculus_Version2.zip
CREDITS:	4 (4 class hours)
PREREQUISITES:	MAT 1375 or scores of 35 or higher on the Pre-Algebra, 65 or higher on the Algebra, 50 or higher on the College Algebra, and 36 or higher on the Trigonometry sections of the ACT placement exam.

Prepared by:
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Samar ElHitti
Thomas Tradler
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Spring 2015

A. Testing Guidelines:

The following exams should be scheduled:

1. A one session exam at the end of the First Quarter.
2. A one session exam at the end of the Second Quarter.
3. A one session exam at the end of the Third Quarter.
4. A one session Final Examination.

B. A graphing calculator is required.

Course Intended Learning Outcomes/Assessment Methods

Learning Outcomes	Assessment Methods
1. Solve problems related to limits and continuity.	Classroom activities and discussion, homework, exams.
2. Find the derivative of functions using the definition, sum rule, product rule, quotient rule, and the chain rule.	Classroom activities and discussion, homework, exams.
3. • Use the derivative of a function to find an equation for the tangent line at a point. • Use L'Hôpital's Rule to evaluate limits. • Sketch the graph of functions. • Solve optimization problems. • Solve related rates problems.	Classroom activities and discussion, homework, exams.
4. Evaluate definite and indefinite integrals of polynomials, trigonometric and exponential functions.	Classroom activities and discussion, homework, exams.

General Education Learning Outcomes/Assessment Methods

Learning Outcomes	Assessment Methods
1. Understand and employ both quantitative and qualitative analysis to solve problems.	Classroom activities and discussion, homework, exams.
2. Employ scientific reasoning and logical thinking.	Classroom activities and discussion, homework, exams.
3. Communicate effectively using written and oral means.	Classroom activities and discussion, homework, exams.
4. Use creativity to solve problems.	Classroom activities and discussion, homework, exams.

Mathematics Department Policy on Lateness/Absence

A student may be absent during the semester without penalty for 10% of the class instructional sessions. Therefore,

If the class meets:	The allowable absence is:
1 time per week	2 absences per semester
2 times per week	3 absences per semester

Students who have been **excessively absent and failed the course at the end of the semester will receive either**

- the WU grade if they have attended the course at least once. This includes students who stop attending without officially withdrawing from the course.

- the WN grade if they have never attended the course.

In credit bearing courses, the WU and WN grades count as an F in the computation of the GPA. While WU and WN grades in non-credit developmental courses do not count in the GPA, the WU grade does count toward the limit of 2 attempts for a developmental course.

The official Mathematics Department policy is that two latenesses (this includes arriving late or leaving early) is equivalent to one absence.

Every withdrawal (official or unofficial) can affect a student's financial aid status, because withdrawal from a course will change the number of credits or equated credits that are counted toward financial aid.

New York City College of Technology Policy on Academic Integrity

Students and all others who work with information, ideas, texts, images, music, inventions, and other intellectual property owe their audience and sources accuracy and honesty in using, crediting, and citing sources. As a community of intellectual and professional workers, the College recognizes its responsibility for providing instruction in information literacy and academic integrity, offering models of good practice, and responding vigilantly and appropriately to infractions of academic integrity. Accordingly, academic dishonesty is prohibited in The City University of New York and at New York City College of Technology and is punishable by penalties, including failing grades, suspension, and expulsion. The complete text of the College policy on Academic Integrity may be found in the catalog.

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Session	Calculus I	Homework Exercises
1	**1.1** An Introduction to Limits (**pages** 1 – 7)	**P. 8**: 1, 3, 4, 7-23 odd
2	**1.3** Finding Limits Analytically (**pages** 16 – 25)	**P. 26**: 4, 7-33 odd
3	**1.4** One Sided Limits (**pages** 27 – 31)	**P. 32**: 1-21 odd
4	**1.5** Continuity (**pages** 34 – 40)	**P. 41**: 1-31 odd
5	**1.6** Limits Involving Infinity (**pages** 43 – 51)	**P. 52**: 5, 9-27 odd
6	**2.1** Instantaneous Rate of Change: The Derivative (**pages** 55 – 66)	**P. 67**: 1, 3, 5, 6, 8, 10, 12, 13-23 odd, 25-27 odd, 30
7	**2.2** Interpretations of the Derivative (**pages** 69 – 74)	**P. 75**: 3, 4-11 all, 13, 14, 15
8	**First Examination**	
9	**2.3** Basic Differential Rules (**pages** 76 – 81**)**	**P. 82**: 5, 11-19 all, 21, 26-31 all, 32-35 all (tangent line only)
10	**2.4** The Product and Quotient Rules (**pages** 83 – 90)	**P. 91**: 1, 2, 7-15 odd 16, 18, 19, 20, 23, 25, 29, 31+32 (tangent line only), 34, 39
11	**2.5** The Chain Rule (**pages** 93 – 101)	**P. 102**: 3, 5, 6-11 all, 13, 15, 16, 18, 19, 21, 23-26 all, 27+29 (tangent line only)
12	**2.6** Implicit Differentiation (**pages** 103 – 111)	**P. 112**: 3, 4, 5-8 all, 9-21 odd, 25(a), 26(a), 33-37 odd
13	**2.7** Derivatives of Inverse Functions (**pages** 114 – 118)	**P. 119**: 3-9 odd, 13, 15-19 all, 21, 23, 29
14	**6.7** L'Hôpital's Rule (**pages** 313 – 319)	**P. 320**: 3, 9, 14, 17, 21, 22, 23, 25, 29, 31, 33, 36, 37, 41, 47
15	**Midterm Examination**	
16	**3.1** Extreme Values (**pages** 121 – 126)	**P. 127**: 3-9 odd, 13-23 odd
17	**3.2** The Mean Value Theorem (**pages** 129 – 132)	**P. 133**: 1, 2, 5, 7, 9, 13-19 odd
18	**3.3** Increasing and Decreasing Functions (**pages** 134-140)	**P. 141**: 7, 9, 13, 15, 19, 21, 22, 23

19	**3.4** Concavity and the Second Derivative (**pages** 142-147)	**P. 148**: 1, 2, 7, 11, 15, 17, 19, 23, 25, 27, 30, 32, 36, 38, 40, 43, 45, 49, 51, 53 (**Hint:** Try solving problems 17 through 53 in the following order: 17, 30, 43; 19, 32, 45; 23, 36, 49; 25, 38, 51; 27, 40, 53.)
20	**3.5** Curve Sketching (**pages** 149-154)	**P. 155**: 3, 4, 5-17 odd, 18, 21, 23
21	**4.2** Related Rates (**pages** 164-168)	**P. 169**: 3-11 odd
22	**4.3** Optimization (**pages** 171-176)	**P. 177**: 1, 2, 3-17 odd
23	**4.4** Differentials (**pages** 178-183)	**P. 184**: 7-13 odd, 15, 16, 18-29 all, 31, 33
24	**Third Examination**	
25	**5.1** Antiderivatives and Indefinite Integration (**pages** 185-192)	**P. 193**: 2, 6, 7, 8-21 all, 23-26 all, 29, 31
26	**5.2** The Definite Integral (**pages** 194-200)	**P. 201**: 3-6 all, 9-12 all, 18, 19, 20
27	**5.3** Riemann Sums (**pages** 204-218)	**P. 219**: 2, 4, 5-21 odd, 27, 29, 31
28	**5.4** The Fundamental Theorem of Calculus (**pages** 221-230)	**P. 231**: 1, 5, 8, 9, 13-20 all, 31-37 odd, 41, 49, 51, 53, 54
29	**Review**	
30	**Final Examination**	

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