**The City College of NY**

**Department of Mathematics**

**Fall 2019**

**Calculus I, Math 20100**

**Section: EC**

**Date and Time**: Mo-Th, from 11:00-11:50, Room NAC 5/123

**Instructor:** Dario Cardenas

**Phone:** (212) 650-6749

**Email:** dacardenas@ccny.cuny.edu

**Office:** NAC: 6/273

**Office hours**: We from 09:45 to 10:55 AM and by appointment.

**COURSE LEARNING OUTCOMES**

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| **COURSE #: 20100**  **COURSE TITLE: Calculus I**  CAREER: undergraduate  CATEGORY: regular  TERM OFFERED: Fall, Spring, Summer  PRE-REQUISITES: C or better in Math 19500 or placement  PRE/CO-REQUISITES:  HOURS/CREDITS: 4HR/WK; 4 CR  DATE EFFECTIVE:08/01/18  COURSE SUPERVISOR: Prof. Thea Pignataro | | | | | | **CATALOG DESCRIPTION:**  Limits, continuity, derivatives, differentiation and its applications, differentials, definite and indefinite integrals.    Text: Thomas' Calculus: Early Transcendentals, 14th Edition, by Joel R. Hass, Christopher E. Heil, Maurice D. Weir. | | |
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|  | |  | | Topics and Allotted Times | | | |
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| Suggested Periods | | Section | Topics | | |
| 1 | | 1.1 | Functions and Their Graphs | | |
| 1 | | 1.2 | Combining Functions; Shifting and Scaling Graphs | | |
| 1 | | 1.3 | Trigonometric Functions | | |
| 1 | | 1.5 | Exponential Functions | | |
| 2 | | 1.6 | Inverse Functions and Logarithms | | |
| 0.5 | | 2.1 | Rates of Change and Tangents to Curves | | |
| 2 | | 2.2 | Limit of a Function and Limit Laws | | |
| (1 opt.) | | 2.3 | The Precise Definition of a Limit (optional) | | |
| 1 | | 2.4 | One-Sided Limits | | |
| 1.5 | | 2.5 | Continuity | | |
| 1.5 | | 2.6 | Limits Involving Infinity; Asymptotes of Graphs | | |
| 2 | | 3.1 | Tangents and the Derivative at a Point | | |
| 1 | | 3.2 | The Derivative as a Function | | |
| 3 | | 3.3 | Differentiation Rules | | |
| 1 | | 3.4 | The Derivative as a Rate of Change | | |
| 1 | | 3.5 | Derivatives of Trigonometric Functions | | |
| 2 | | 3.6 | The Chain Rule | | |
| 1 | | 3.7 | Implicit Differentiation | | |
| 2.5 | | 3.8 | Derivatives of Inverse Functions and Logarithms | | |
| 1 | | 3.9 | Inverse Trigonometric Functions | | |
| 1.5 | | 3.10 | Related Rates | | |
| 1 | | 3.11 | Linearization and Differentials | | |
| 1 | | 4.1 | Extreme Values of Functions | | |
| 1 | | 4.2 | The Mean Value Theorem | | |
| 1 | | 4.3 | Monotonic Functions and the First Derivative Test | | |
| 2 | | 4.4 | Concavity and Curve Sketching | | |
| 2 | | 4.5 | Indeterminate Forms and L’Hôpital’s Rule | | |
| 1 | | 4.6 | Applied Optimization | | |
| 1.5 | | 4.8 | Antiderivatives | | |
| 1 | | 5.1 | Area and Estimating with Finite Sums | | |
| 1.5 | | 5.2 | Sigma Notation and Limits of Finite Sums | | |
| 1 | | 5.3 | The Definite Integral | | |
| 1.5 | | 5.4 | The Fundamental Theorem of Calculus | | |
| 2 | | 5.5 | Indefinite Integrals and the Substitution Method | | |
| 2 | | 5.6 | Substitution and Area Between Curves | | |

**OCOURSE LEARNING OUTCOMES**

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| **After taking this course, the student should be able to:** | **Contributes to Departmental Learning Outcome(s):** |
| 1. Evaluate limits, including the use of L’Hôpital’s Rule. | a, b, e1, e2 |
| 2. Differentiate algebraic and transcendental functions. | a, b, e1, e2 |
| 3. Solve Maximum and Minimum problems. | a, b, c, e1, e2 |
| 4. Solve Related Rates problems. | a, b, c |
| 5. Apply methods of calculus to sketch curves. | a, b |
| 6. Anti-differentiate algebraic and trigonometric functions. | a, b, c, e1, e2 |
| 7. Approximate integrals by Riemann sums. | e1, e2, g |
| 8. Evaluate elementary integrals using substitution. | a |

**COURSE ASSESSMENT TOOLS**

1. Term average, based mostly on in-class examinations: 60% of grade

2. Comprehensive written final exam: 40% of grade.

**The Math Department Website** is located at <http://math.sci.ccny.cuny.edu> There you will find assorted information including old departmental final exams and under the link to Math 201.

**Grading:**

Quizzes (10) 20% (Drop the lowest two quizzes)

In-class exams (3): 40% (Drop the lowest test)

Final Exam: 40%

Total 100%

Numerical grade/ Letter grade. You will need a grade of C, or better, to go on to Math 202.

A+ 97-100

A 95-96

A- 90-94

B+ 87-89

B 84-86

B- 80-83

A+ 77-79

A 75-76

D 60-69

F Below 60

**Homework**

You are expected to **read the textbook**, preferably in advance of covering a section in class. It is part of the homework to do so.

We will be using MyMathLab (MML) online homework system for the required homework problems. Once a section is covered in class, the corresponding assignment should be completed before the next Monday class meets.

Total MML score  will count as follows:

 add 5 points to in-class exam average,

 add 3.5 points,

 add 2.5 points,

 add 1.5 points,

 add 0.5 points,

 no upgrade

**Quizzes**

Ten in-class quizzes will be scheduled during the term and it will be given every Th, except weeks for in-class exams. I will drop the lowest two quizzes.

**Exams**

Three in-class exams will be scheduled during the term. I will drop the lowest exam. There are no make-ups for in-class exams.

Test #1 will be given on 09/26/19, Test #2 will be given on 10/31/19, and Test #3 on 12/11/19.

If you miss an exam, you must (a) telephone me before the start of the exam and (b) upon your return, submit appropriate documentation of your reason for missing the exam.

**Final Exam**

Final Exam will be given on December 20th.

**Tutoring:**

The Math Department provides tutoring in MR 418S, i.e. in the Marshal Science building on the fourth floor. The hours are M, T, Th. 12-7pm, W 10am-4pm, and F 10am-3pm.

**If you will need to be absent for a religious holiday**, notify me no later than the end of this week as to the date(s) of the holiday.

**Attendance and Lateness:**

YOU are obliged to come to class promptly and to end your class at the designated time.

Lateness or unexcused absences will impact your grade. Three lateness will be considered the equivalent of an absence.

A student can be dropped from my class for excessive absences, more than 10 absences.

In order for absence or lateness to be excused you need to email me on the same day with the reason.

**Academic Integrity** (Cheating policy). Any act of academic dishonesty will be dealt with by applying the most stringent penalties permitted. Cheating includes but is not limited to receiving help during exams and submitting homework without properly acknowledging persons who assisted you. Please read carefully the Policy on Academic Integrity posted on the CUNY website with UR [http://www.cuny.edu/about/integrity](http://www.cuny.edu/about/integrityf)

**Course Supervisor:** Prof. Thea Pignataro, [thea@ccny.cuny.edu](mailto:thea@ccny.cuny.edu)

**Course Webpage:** <http://math.sci.ccny.cuny.edu/course/show/7>

**Text and Supplements**

Thomas' Calculus: Early Transcendentals, 14th Edition, by Joel R. Hass, Christopher E. Heil, Maurice D. Weir, with MyMathLab online homework system.

**To register for Math20100-EC:**

1. Go to [www.pearson.com/mylab](http://www.pearson.com/mylab).

2. Under **Register**, select **Student**.

3. Confirm you have the information needed, then select **OK! Register now**.

4. Enter your instructor’s course ID: cardenas28382, and **Continue**

5. Enter your existing Pearson account **username** and **password** to Sign In.

» You have an account if you have ever used a MyLab or Mastering product.

» If you don’t have an account, select **Create** and complete the required fields.

6. Select an access option.:  **Get temporary access. We urge you to get temporary access only!!!!**

7. From the **You're Done!** page, select **Go To My Courses**.

8. On the **My Courses** page, select the course name **math201EC** to start your work.

**Purchasing options:**

There will be a two week trial before which a purchase must be made. You have two options. Please read both of them carefully, and decide which one works best for you.

**Option 1:** Before the end of your free trial period, purchase MyMathLab (which includes the e-text) using your own account at MyMathLab.

**Option 2:** If you would like to **ALSO** have a loose-leaf paper copy of the book (together with MyMathLab access card).

**Please follow these steps**:

- Go to URL:  [http://www.mypearsonstore.com/stores/CCNY/Math201](https://urldefense.proofpoint.com/v2/url?u=http-3A__www.mypearsonstore.com_stores_CCNY_Math201&d=DwMFaQ&c=4NmamNZG3KTnUCoC6InoLJ6KV1tbVKrkZXHRwtIMGmo&r=4F2OKfWCU2CE842VgXhBdbNtbpCp8Q4ebUlKaeXMdXs&m=cQJFar5BWZKnWa4YoquQCsmkMw425rWOm6izQhTaIHQ&s=6SBxhDowmMs_GdqCnE8L29hV-LuzZkSUBv2H07zoQQ8&e=)

- Enter the following username/password:   
- **Username**: CCNY   
- **Password**: Math201

- Click on the title link " **Thomas' Calculus: Early Transcendentals Package for City College of New York**”. This package includes the    paper copy of Thomas Calculus: Early Transcendentals along with a MyMathLab access card. You will use this card to obtain full access to MyMathLab.

- Click on the **Add to Cart** button to complete the purchase.

You will receive your copy of the book together with the MML card in the mail. Question? Ask to Marcus Scherer, [marcus.scherer@pearson.com](mailto:marcus.scherer@pearson.com) .