

Calculus I

56-2720-02, Fall 2011

Department of Science & Mathematics
Columbia College Chicago
600 S. Michigan Ave.
Chicago, IL 60605

course title	Calculus I	instructor	Dr. Christopher Shaw
document date	Fall 2011	office	623 S. Wabash, 500-M
course number	56-2720	phone	312-369-7732
section number	02	email	cshaw@colum.edu
credits	4.0	website	http://schris.com
designation	MA	department phone	312-369-7368
meeting day and time	Tu/Th 10:30–12:20	department fax	312-369-8075
meeting room	623 S. Wabash room 600H	office hours	Tu/Wed. 1:30–3:30

required text *Thomas' Calculus Early Transcendentals*, Thomas, Weir, Haas (12th edition); ISBN: 0321648420 (includes a code for online access)

required software You must purchase a license for the My Pearson Course Compass page, which is detailed in your textbook. In order to add this course, use the course ID **shaw61682**. You may also purchase the access code by itself from the bookstore, which comes with access to a searchable PDF copy of the text.

prerequisite College Algebra with Trigonometry, or consent of instructor

course fees \$40.00

course description Introductory course to higher mathematics examines fundamental principles of calculus-functions, graphs, limits, the derivative and its applications, anti-derivatives, area, and the integral with additional applications in business, the arts, and the social sciences. Students will be exposed to critical analysis and computational tools to further explore their field.

course rationale Mathematics is an integral part of a well-rounded liberal arts education. What mathematics entails is critical analysis of quantitative phenomena occurring in the physical world. Calculus deals with the rate of change and its applications are unlimited. Very few systems are devoid of change; almost everything includes the topics of Calculus. From transportation, integrated circuits, photography, electricity, dance motion, multimedia animation, acoustics, money market, pollution, to countless numbers of applications. It is much harder to think of an example that does not include Calculus. Most interesting systems exhibit a rate of change.

General mathematics objective

Students will be proficient in the mathematical skills and concepts to support their chosen career and to function effectively in society.

Liberal arts and sciences core objectives

This course satisfies the Mathematics requirement of the Liberal Arts and Sciences Core Curriculum. Students will be able to:

- understand and use basic mathematical concepts; and
- utilize various tools of analysis to enable critical thinking.

Learning outcomes

At the conclusion of this course, students will be able to:

- utilize the concept of instantaneous rate of change to solve problems.

- differentiate polynomial, rational, trigonometric, exponential and logarithmic functions algebraically.
- comprehend the proofs behind differentiation techniques.
- understand the relationship between the algebraic and geometric properties of the derivative.
- find the equation of the tangent line to the graph of a function at a point by using the derivative of the function.
- solve related rates problems.
- solve applied optimization problems.
- compute the area below the graph of a function by using a limit of a Riemann sum and/or by using a definite integral.
- compute certain antiderivatives using techniques such as integration by substitution.

Grading and evaluation

Your final grade will be assigned using the scale below.

A-	90-93	A	94-100		
B-	80-82	B	83-86	B+	87-89
C-	63-69	C	70-76	C+	77-79
		D	56-62		
		F	0-55		

Calculation of your grade Your numerical grade is weighted equally on four metrics by which your understanding of the material will be measured:

Homework	25%
Quizzes	25%
Midterm	25%
Comprehensive final exam	25%

Attendance policy

Missing class will have an adverse effect on the learning process and on your course grade.

Late work and makeup policy

- *Late homework.* Most homework assignments will be completed online using the Course Compass system outlined above. In order to receive full credit, online homework should be turned in on the date due; late homework will be accepted up to five days past the scheduled due date, but late assignments will incur a penalty of 10% per day late. The instructor also may assign several homework sets to be completed and scored by hand.
- *Quizzes and exams.* You must be present for the quizzes and exams (no makeup exams, unless there is a documented emergency). Your lowest quiz score will be dropped.

Academic integrity

Students at Columbia College enjoy significant freedom of artistic expression and are encouraged to stretch their scholarly and artistic boundaries. However, the college prohibits all forms of academic dishonesty. For present purposes, “academic dishonesty” is understood as the appropriation and representation of another’s work as one’s own, whether such appropriation includes all or part of the other’s work or whether it comprises all or part of what is represented as one’s own work (plagiarism). Appropriate citation avoids this form of dishonesty. In addition, “academic dishonesty” includes cheating in any form, the falsification of academic documents, or the falsification of works or references for use in class or other academic circumstances. When such dishonesty is discovered, the consequences to the student can be severe. (Taken from the Columbia College Chicago Student Handbook.)

Services for students with disabilities

Columbia College Chicago seeks to maintain a supportive academic environment for students with disabilities.

Students who self-identify as having a disability should present their documentation to the Services for Students with Disabilities (SSD) office. After the documentation has been reviewed by the SSD office, a Columbia College accommodation letter will be provided to the student. Students are encouraged to present their Columbia accommodation letters to each instructor at the beginning of the semester so that accommodations can be arranged in a timely manner by the College, the department, or the faculty member, as appropriate. Accommodations will begin at the time the letter is presented. Students with disabilities who do not have accommodation letters should visit the office of Services for Students with Disabilities, Room 304 of the 623 S. Wabash building (312-369-8296).

Learning Studio

The Learning Studio, located at 618 S. Michigan Avenue, first floor, is a relaxed, open, and personal environment. Tutors can help you with a wide range of subjects at all levels. The environment of the learning studio is non-judgmental when working with a tutor. Using the Learning Studio is a good idea for working in a number of disciplines, including Accounting, Math, Science, and with writing assignments. You can make an appointment through Oasis (using the Make Appointments tab) or call the Learning Studio at 312-369-8130. Please visit the website at www.colum.edu/learningstudio. It's super helpful and free!

Tentative class schedule

<i>Week 1</i>	Introduction & review, functions and their properties Trigonometric functions & identities
<i>Week 2</i>	Last day to add classes Sept. 12 Inverse, exponential, and logarithmic functions
<i>Week 3</i>	Last day to drop classes Sept. 19 Limits, derivatives as rate of change, tangents and the derivative Quiz 1 Thursday Sept. 22
<i>Week 4</i>	The derivative as a function Differentiation: product & quotient rules
<i>Week 5</i>	Derivative of trigonometric functions Chain rule Quiz 2 Thursday Oct. 6
<i>Week 6</i>	Implicit differentiation
<i>Week 7</i>	Derivatives of inverse functions and logarithms Inverse trigonometric functions Quiz 3 Thursday Oct. 20
<i>Week 8</i>	Review Midterm Thursday Oct. 27
<i>Week 9</i>	Last day to withdraw Oct. 31 Related rates
<i>Week 10</i>	Differentials, extreme values of functions Mean value theorem Concavity & derivative tests Quiz 4 Thursday Nov. 10
<i>Week 11</i>	Optimization
<i>Week 12</i>	Estimating with finite sums The definite integral Fundamental theorem of calculus Quiz 5 Tuesday Nov. 22
<i>Week 13</i>	Indefinite integrals and the substitution rule
<i>Week 14</i>	Area between curves Quiz 6 Thursday Dec. 8
<i>Week 15</i>	Review Final exam Thursday Dec. 15

Disclaimer statement

This syllabus may be amended as the course proceeds. You will be notified of all changes.