

Math 151 Syllabus Summer 2022
Text: Essential Calculus Second Edition by Stewart
Homework Management System: WebAssign
Calculator: TI-83 or TI-84

This course satisfies the Mathematical and Quantitative Reasoning (MQR) requirement of the Pathways General Education Required Core. Below is the Learning Outcomes that all MQR courses satisfy:

MQR 1: Interpret and draw appropriate inferences from quantitative representations, such as formulas, graphs, or tables.
MQR 2: Use algebraic, numerical, graphical, or statistical methods to draw accurate conclusions and solve mathematical problems.
MQR 3: Represent quantitative problems expressed in natural language in a suitable mathematical format.
MQR 4: Effectively communicate quantitative analysis or solutions to mathematical problems in written or oral form.
MQR 5: Evaluate solutions to problems for reasonableness using a variety of means, including informed estimation.
MQR 6: Apply mathematical methods to problems in other fields of study.

NOTE

Some students who register for Math 151 are unaware that a calculus requirement in their intended major can also be satisfied by the Math 141 sequence. Instructors should announce this option in the first week of the semester, while students can still adjust their programs.

The chapter sections given below are in Essential Calculus, Second Edition. The suggested number of classes for each chapter represent 100 minute units, 2 classes/week for 14 weeks = 28 classes, 4 classes are reserved for tests & review. All sections of Math 151 should include instruction in the use of the TI-84 graphics calculator. (Guidelines below). The calculus committee recommends 3 in-class exams equally spaced in the semester. Math 151 is using a homework management system, WebAssign which is optional for instructors. See notes below.

Chapter 1	Functions & limits 1.1 Functions 1.2 A Catalog of functions (At most 1.5 hours should be devoted to 1.1 and 1.2. Students who have any difficulty with this material should be strongly directed to either Math 141 or Math 122.) 1.3 Limit of a function (epsilon/delta definitions page 31-32 are optional) 1.4 Calculating Limits 1.5 Continuity 1.6 Limits involving infinity	4 classes
Chapter 2	Derivatives 2.1 Derivatives and Rates of Change 2.2 The Derivative as a function 2.3 Basic Differentiation formulas (2.3, 2.4 and 2.5 each require several hours) 2.4 The product & quotient rules 2.5 The chain rule 2.6 Implicit Diff. 2.7 Related Rates 2.8 Linear Approximation	7 classes
Chapter 3	Applications of Differentiation 3.1 Max & Min Values 3.2 MVT 3.3 Derivatives & the Shapes of Graphs 3.4 Curve Sketching 3.5 Optimization (Word Problems) (3.6 Newton's method. Optional) 3.7 Antiderivatives	7 classes
Chapter 4	Integrals 4.1 Areas & distance Appendix B: Sigma Notation 4.2 The Definite Integral 4.3 Evaluating Definite Integrals 4.4 FTC 4.5 The substitution rule (reserve enough time to cover u-substitution)	6 classes

Role of Theory in Math 151:

All students are expected to know the definition of the derivative at a point, and of continuity at a point. They should be able to state these definitions and use them to solve a problem. They should be able to compute the derivative of simple functions from the definition, and integrals by limits of Riemann sums. They should also understand and be able to state correctly and use the Intermediate Value Theorem, the Extreme Value Theorem, the Mean Value Theorem, and the Fundamental Theorem of Calculus. However, students are not required to prove any theorems on departmental finals.

Textbook

The physical bookstore at Queens College has closed and been replaced with an on-line service here: <http://qc.textbookx.com/institutional/index.php> This site sells textbooks without the WebAssign HMS.

The publisher of our textbook (Cengage) offers sales direct to students here <https://www.cengage.com/c/essential-calculus-2e-stewart/9781133112297PF/> (reportedly more affordable.)

HMS Guidelines

Website: <http://webassign.net/> Instructors can get logins here: <http://webassign.net/>

In addition to online homework, the web site offers an e-book version of our text, a personal study guide for students, and videos of lectures linked to each section of the book. All students self-enroll in WebAssign.

If you are using WebAssign for on-line homework you will need to create a Course in your account for your section. Once you create this section the system will give you a class key, which your students will use to enroll in your section. Later you can find this code in Class View by clicking on “class key settings” in the Class Tools menu.

To create your section: Choose “Create” in the top left menu below “Home”, then “Course”, and select the textbook. Click “enable personal study plan” and the textbook certification. Once you set the start date of the course, students have a 2-week grace period after that date during which they can log in without having paid for access. After you save the course settings, set “How will students be placed on your roster” to self-enrollment.

Calculator Guidelines TI84:

On departmental finals students are not permitted to use calculators which do symbolic differentiation and integration (for example, the TI-89 or TI 92).

All sections of Math 151 should cover the following calculator operations

Graphing: Y= menu, WINDOW, TRACE, GRAPH, ZOOM menu

Use of the FORMAT and MODE menus

Table Menu: TBLSET, Using TABLE to approximate limits, and finding more digits than the table displays

CALC menu: VALUE, ZERO, MIN, MAX

VARS menu: using Y-VARS to patch in functions from y= menu

Finding roots numerically Using CALC → ZERO within graph window

Finding numerical values of definite integrals on the CALC menu or the MATH menu

Evaluating Riemann sums using the LIST menu or SEQUENCE MODE

LIST menu Routines:

1. Entering a sequence using the LIST OPPTS menu
2. Storing and retrieving sequences
3. Finding the sum of a sequence using the LIST MATH menu

Instructors should also demonstrate examples where numerical estimates can be misleading. Final exams in Math 151 should include problems that require use of the graphics calculator. The committee recommends that in class exams should also include some problems that require the calculator.