

Math 152 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.

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 152 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 152 is using a homework management system, WebAssign which is optional for instructors. See notes below.

Suggested Review: Section 4.5 integration by substitution from Math 151.

Chapter 5	Inverse Functions	4 classes
	5.1 Inverse Functions	
	5.2 Natural Logarithmic Function	
	5.3 Natural Exponential function	
	5.4 General Logarithmic and Exp functions	
	5.5 Exponential growth & decay	
	5.6 Inverse Trig Functions	
Chapter 6	Techniques of Integration	6 classes
	6.1 Integration by Parts	
	6.2 Trig Integrals & Substitutions	
	6.3 Partial Fractions	
	(6.4 Integration with Tables and CAS optional)	
	6.5 Approximate Integration	
	5.8 L'Hospital's Rule	
	6.6 Improper Integrals	
Chapter 7	Applications of Integration	4 classes
	7.1 Area between Curves	
	7.2 Volumes	
	7.3 Volumes by Cylindrical Shells	
	7.4 Arc Length (use TI-84 to evaluate some of these integrals. Don't over-emphasize examples where $(1+(f')^2)$ happens to be a perfect square)	
	7.7 Differential Equations	
Chapter 8	Series	10 classes
	8.1 Sequences	
	8.2 Series	
	8.3 Integral & Comparison Tests	
	8.4 Other Convergence Tests	
	8.5 Power Series	
	8.6 Representing functions as Power Series	
	8.7 Taylor & Maclaurin Series	
	8.8 Applications of Taylor Polynomials	

In Chapter 8, students should be familiar with manipulation of power series and the creation of new power series from well known examples. Error estimates using Taylor's remainder formula should be discussed. Care must be taken to leave sufficient time to cover the topics at the end of Chapter 8.

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 (e.g., the TI-89 or TI-92). In addition to the routines covered in Math 151, the following topics from the List menu should be covered:

2. entering a sequence using the LIST OPPTS menu
3. Storing and retrieving sequences
4. Applying arithmetic operations or functions from the Y= menu to sequences
5. Finding the sum of a stored sequence using the LIST MATH menu

These routines can be taught in the course of one lecture. They are very useful for estimating limits of sequences, for estimating sums of series, and for evaluation of Riemann sums. As always, instructors should take care to also demonstrate examples where numerical estimates are misleading. Alternatively, instructors can use SEQUENCE mode routines. Final exams in Math 152 should include some problems that require use of the graphics calculator.