# Math 142 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:**

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| 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 75 minute units, 2 classes/week for 14 weeks = 28 classes, 4 classes are reserved for tests & review. All sections of Math 142 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 142 is using a homework management system, WebAssign which is optional for instructors. See notes below.

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| Integration | | | 8 classes |
| | 3.7 | Antiderivatives | |
| | | Appendix C Sigma Notation | |
| | 4.1 | Areas and Distances | |
| | 4.2 | The Definite Integral | |
| | 4.3 | Evaluating Definite Integrals | |
| | 4.4 | FTC | |
| | 4.5 | The substitution rule | |
| Chapter 5 | Inverse Functions | | 8 classes |
| | 5.1 | Inverse Functions | |
| | 5.2 | The Natural Logarithmic Function | |
| | 5.3 | The Natural Exponential function | |
| | 5.4 | General Logarithmic and Exp functions | |
| | 5.5 | Exponential growth & decay | |
| | 5.6 | Inverse Trig Functions | |
| Chapter 7 | Applications of Integration | | 8 classes |
| | 7.1 | Area between Curves | |
| | 7.2 | Volumes | |
| | 7.3 | Volumes by Cylindrical Shells | |
| | 7.4 | Arc Length (Don't over-emphasize examples where $(1+(f')^2)$ happens to be a perfect square) | |
| | 7.7 | Differential Equations | |

Section 5.8 L'Hospital's Rule is postponed to Math 143. Since we also postpone Chapter 6 Methods of Integration to Math 143, in Chapter 7 instructors should avoid homework problems that require that material

# 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). In addition to the routines covered in Math 141, all sections of Math 142 should cover the following calculator operations

I. Finding numerical values of definite integrals on the CALC menu or the MATH menu. E.g. examples from volume integrals and arc length in chapter 7

II. Numerical Evaluation of Riemann Sums, using LIST menus or SEQUENCE mode
LIST menu Routines:
    1. Entering a sequence using the LIST OPPS menu
    2. Storing and retrieving sequences
    3. Applying arithmetic operations or functions from the Y= menu to sequences
    4. Finding the sum of a stored sequence using the LIST MATH menu

These list menu routines can be taught in the course of one lecture and only require about 10 minutes of actual presentation. They are useful for evaluation of Riemann sums, and will also be useful for series in 143.

Instructors should take care to also demonstrate examples where numerical estimates can be misleading. Final exams in Math 142 should include some problems that require use of the graphics calculator.

Role of Theory:

All students are expected to understand the definition of the definite integral as a limit of Riemann sums. They should be able to use this definition to compute simple definite integrals. They should also understand, and be able to state correctly and use the Fundamental Theorem of Calculus, Parts I and II. Students are not required to prove any theorems on departmental finals.