Math 131 Syllabus

Students will use a loose leaf version of the text plus an e-book on the Connect website

Calculator: TI-84+ (required)

Homework Management System: Connect from McGraw Hill

The suggested lecture hours below represent 50 minute units, 3 lecture hours/week for 14 weeks=42 lecture hours. 6 lecture hours are reserved for tests & review. The calculus committee recommends 3 in-class exams equally spaced in the semester. (For example, in the 5th, 9th and 14th weeks.) Throughout this course examples from business and economics should be emphasized. Rigorous proofs are not required, but students should gain an intuitive and geometric understanding of the basic concepts of calculus. (Linearity, tangent lines, and linear approximation).

Prerequisites for Math 131 are any of the following: ≥ C- in Math 122 (pre-calculus); ≥ B- in Math 115 (college algebra) ; ≥ 80 on Seq. 3 or Math B regents; ≥ 600 on math SAT; or placement via the math placement exam.

In Fall 2012 Math 131 used an HMS for the first time. Use of on-line homework is optional for each instructor, but students will need to use the website to access the e-book version of the textbook. see HMS notes below

Chapter 1 1.1 - 1.4 Functions, graphs, linear functions, models (review) 7 hours
Students who have difficulty with 1.1⇒1.4 should be directed to Math 122.
1.5 Limits
1.6 One-sided Limits & Continuity.

Chapter 2 2.1 The derivative 10 hours
2.2 Techniques of differentiation
2.3 Product and quotient rules; higher order derivatives
2.4 Chain rule
2.5 Marginal analysis & approximation using increments
2.6 Implicit differentiation & related rates (implicit differentiation is an important technique in applications, so examples should be covered thoroughly)

Chapter 3 3.1 Increasing & decreasing functions, Relative Extrema 10 hours
3.2 Concavity and points of inflection
3.3 Curve sketching
3.4 Optimization; Elasticity of Demand
3.5 Additional Applied optimization

Chapter 4 4.1 Exponential functions (including compound interest & exp growth) 9 hours
4.2 Logarithmic functions
4.3 Differentiation of log and exp functions
TI-84+ Guidelines for Math 131

Two departmental lectures on the use of the TI-84 will be given in the first few weeks of each semester. Please announce them to your students. 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 131 should cover the following basic calculator operations

**Graphing:**
- Y= menu, WINDOW, TRACE, GRAPH
- ZOOM: zoom in, zoom out, zoom box, zoom standard
- Use of the FORMAT and MODE menus

**TABLE Menu:** TBLSET, Using TABLE to find limits numerically
- Obtaining more digits than table display allows
Since the treatment of limits in Math 131 is very compressed, the table function can be very useful to help students develop the correct intuition.

**CALC menu:** VALUE, ZERO, MIN, MAX

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

Finding roots numerically:
1. Using CALC → ZERO within graph window
2. Using TRACE and ZOOM with graph

Final exams in Math 131 should include some problems which demonstrate mastery of the graphics calculator. The calculus committee recommends that in-class exams should also include some problems which require the calculator.

**Connect Homework Management System**

Connect HMS offers on-line homework assignments and other resources for students, including the e-book version of our text book.


Use of the on-line homework is voluntary for instructors, but all students will need to use the Connect web site. For students whose instructors are not participating in on-line homework, the following master section provides access to the e-book and the other resources: **Math 131 Master Section**

If you would like an instructor’s login to Connect, you can contact the chair of the calculus committee [mmaller@qc.cuny.edu](mailto:mmaller@qc.cuny.edu) or you can directly email our McGraw Hill Representative Jennifer Herbst [JENNIFER.HERBST@mheducation.com](mailto:JENNIFER.HERBST@mheducation.com).

Ms Herbst has also offered to provide a brief First Day of Class introduction in class to introduce the system to your students.