2014

MATH 170-01 Calculus II

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Course Description

Calculus is the mathematical study of limit and change. It serves as the foundation for many mathematical results which are routinely applied in disciplines such as physics, chemistry, biology, engineering, statistics, and actuarial science. In MATH 170, the primary objective was to motivate and develop the concept of the derivative; in this course, approximately half of the course is focused on the integral. In particular, the mathematical objectives of MATH 171 are as follows:

- Develop a comprehensive understanding of integration, and understand the relationship between antiderivatives, area under a curve, and accumulated change.
- Develop proficiency with various integration techniques, such as u-substitution, integration by parts, partial fractions, trigonometric substitutions, and perhaps other methods.
- Compute or approximate the values of definite integrals, both algebraically and numerically, applying them sensibly to finding arc length, volumes of rotation, and other selected applications.
- Demonstrate a developing understanding and facility with ideas of limit and convergence as applied to Riemann sums, improper integrals, and infinite sequences and series.
- Demonstrate facility in estimating and computing limits and determining convergence of infinite sequences and series, including power series and Taylor Series.

With respect to the core curriculum at Xavier, this course provides the student ample opportunity to: (1) develop effective written and oral communication skills, and (2) develop his/her critical thinking ability.

Prerequisites

MATH 170 (or equivalent).

Required Text

Chapters 5–11 are covered in MATH 171. A few sections will be omitted, and the order of the sections may be varied at times. If necessary, supplementary material and problems will be provided by the instructor.

Technology

A TI graphing calculator is recommended, however, it is not a requirement. (Many MATH courses at Xavier require a TI–84 Plus, but you may use other models of calculators with graphics capability.) MATH 171 does not emphasize the use of graphing calculators. **NOTE:** Video and audio recordings of lectures and posting of MATH 171 course materials are strictly prohibited without instructor approval.

Course Structure & Grading

- Course materials and calendar can be found at the MATH 171 website: http://canvas.xavier.edu
- 10.0% Project
- 17.5% Homework, Quiz, and Small Group Activities
- 17.5% Exam #1 (selected sections of Chapters 5, 6, and 7)
- 17.5% Exam #2 (selected sections of Chapters 8 and 9)
- 17.5% Exam #3 (selected sections of Chapters 10 and 11)
- 20.0% Final Exam (cumulative)

  - **Project:** Specific details will be provided later in the semester. Project assignments are designed to meet the course objectives previously stated, and demonstrate the applicability of integral calculus in practical settings.
  
  - **Homework, Quiz, and Small Group Activities:** An essential key to success in MATH 171 is to keep up with the pace of the course. Homework, typically consisting of readings (and occasionally videos) and exercises, will be assigned on a weekly basis. Generally, a quiz will be given every week except on those weeks in which an exam is scheduled. As this class will have an enrollment between 12–15, small group activities will be regularly assigned: at these times, it is expected that students will be fully engaged and participate effectively.
  
  - **Exams:** Three in-class exams are scheduled for the semester. In addition, a final exam will be given. **The final exam is scheduled for Tuesday, May 6 at 8:30am.**

- Overall course grades will be determined by the following scale:

  \[
  A \equiv [93, 100] \quad A- \equiv [90, 93] \\
  B+ \equiv [87, 90] \quad B \equiv [83, 87] \quad B- \equiv [80, 83] \\
  C+ \equiv [77, 80] \quad C \equiv [73, 77] \quad C- \equiv [70, 73] \\
  D+ \equiv [67, 70] \quad D \equiv [63, 67] \quad D- \equiv [60, 63]
  \]
Although not guaranteed, it is possible that some type of curve will be applied. The curve will reward diligent students (e.g., those who attend lectures regularly, seek help during office hours, etc.) and/or students who have shown marked improvement over the semester; they will be more positively affected by the curve. In addition, the instructor reserves the right to significantly reduce the final grade depending on the number of unexcused absences accumulated by the student during the semester.

**Academic Integrity**

- In accordance with the policies described in the Xavier University Catalog, students are expected to follow the following policies.

  - **Classroom/Attendance Policy**: Students are expected to attend all scheduled lectures. You are responsible for making up any work you miss if you are not in class. Please practice good classroom etiquette: come to class on time, turn off cell phones, refrain from disruptive behavior, and be respectful of your fellow classmates.

  - **Honor Statement**: Students will be requested to sign the following MATH 171 Honor pledge on certain assignments:

    > As a student at Xavier University, I have neither given nor received unauthorized aid on this assignment/exam.
    > (Student signature)

    What constitutes “unauthorized” and “authorized” aid will be detailed in each assignment or exam. In general, students are encouraged to work together and discuss homework exercises. However, the solution write-up must be done individually, and should not be copied from someone else. IMPORTANT: Copying solutions from any other person or source without disclosure, will be treated as cheating. Any outside sources (e.g., study group members, other textbooks, internet sites) should be cited and referenced. During exams, absolutely no collaboration with other persons is permitted.

**Some Friendly Advice**

- Invest about 30 minutes after every class to review your lecture notes. Do your assignments while the relevant ideas are still fresh in your mind, and keep pace with the course material. Highlight or make additional notes in the margin where you feel important terms or concepts were described. To help you do this, ask yourself the following:

  1. What was the most important point in the lecture?
  2. What was the muddiest point?
  3. What would you like to hear more about?

These questions comprise the “Muddiest Point in the Lecture” feedback device,
which was introduced by Harvard statistician Frederick Mosteller.

- Write down any questions about anything that you aren’t quite clear on. As far as the ideas you are comfortable with: how do they relate to your question?

- Bring your questions to lecture, or to the instructor’s office hour. (If you cannot make the scheduled office hours, contact the instructor to set-up a meeting time, or check the availability of the Math Tutoring Lab, located in Conaton Learning Commons Room 419.) If you have a study group, use your questions to stimulate discussion.

- An ideal solution to a MATH 171 problem should not only include all the mathematical steps needed to arrive at the final solution, but also a few sentences which summarize the main ideas used in your answer. If you can explain a solution in words, then you probably have a good understanding of both the problem and solution.

- Try not to be overly concerned with you grades, and only try to “get by”. If you really understand ideas and concepts, then I will do my best to ensure that your performance on class assignments reflects that.

• Disclaimer •

Please be aware that although this syllabus provides a general guideline/description of Max Buot’s MATH 171 course, it is still subject to change. Official changes concerning the items contained in this document will be announced in class or posted on the course website.