Math 170 – Calculus and Analytic Geometry I
Fall 2009 Syllabus (Section D)

Instructor: Kevin Hartshorn
Class Meetings: PPHAC 335, MWF 11:45am-12:55pm
Office: PPHAC 215
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1   Required Materials

James Stewarts *Calculus: Early Transcendentals* (6th Edition) is the only required text. This course will cover most of the first 5 chapters of the text. Note that Math 171 (Calculus II) covers chapters 6–12 of the text.

A graphic calculator will also be needed for this course. The TI-83 is the standard used here at Moravian. Students using a different calculator will bear the responsibility of making it emulate the TI-83.

2   Goals and Objectives

Calculus is the key tool to understanding and modeling many aspects of the real world. Measuring rates of change, speed, area, length, and volume are all in the purview of calculus, as is computing averages, finding centers of mass, or plotting trajectories. It is arguably the most important intellectual tool developed in the past 400 years, finding use in virtually every area of science, including physics, chemistry, biology, sociology, business, medicine, architecture, engineering, psychology, and astronomy.

In this course you will be learning the mathematical language of change. In particular you will learn

- differentiation and integration methods and the concepts behind them,

- how to work with functions graphically, algebraically, numerically, and verbally,

- how to apply the methods of calculus to real world problems, and

- how to discuss and present solutions to mathematical problems in written and oral form.

To help meet these goals, your study will be focused through problem sets, quizzes, midterms, and group projects. Homework and quizzes will be given regularly. There will be several group projects that will provide you the opportunity to explore some of the central concepts of calculus. Finally, two midterms, two proficiency exams, and a final exam will assess your mastery of the material.

3   Grading and Assessment

Your course grade will be computed based on a raw percentage score, broken down as shown in the table below. Note that these numbers are to serve only as a general guide and your grade may be adjusted based on the judgement of your professor.

10%	Reading and review
15%	Homework
10%	Labs (based on average of lab scores)
5%	Culture Points
5%	Limit proficiency exam
10%	Derivative proficiency exam
25%	Exams (2 over the course of the semester)
20%	Final Exam
100%	**Total**

Generally, an A (+ or –) is given to a score of 85% or above, a B (+ or –) to a score between 70% and 85%, a C (+ or –) to a score between 60% and 70%, and a D (+ or –) to a score between 50% and 60%.

4   Reading and review

Throughout the semester, you will be asked questions based on readings of the text or based on pre-calculus material (i.e.: material from chapter 1 of the text). All such assessments will be scored on a 10 point scale.

    Note that if you are late to class, you will not be given extra time to make up the assessment. Please inform me if there is a specific reason why you will not be able to get to class on time.

5   Homework and Quizzes

Calculus is not a spectator sport. Your only chance to learn the subject is to practice on a daily basis. It is expected that you spend **at least 8 hours per week** outside of class working on calculus. To help you in your study, I will regularly assign homework. Note that for you to succeed in this course, you should complete all homework assigned. Homework will be collected at least twice a week.

    When preparing homework for submission, keep the following requirements in mind. *Failure to meet these requirements will incur a penalty on your homework grade.*

- Homework should be neat, legible and written on clean standard-sized (8.5 by 11 inch) paper. I do not want to see your scratch paper. As with any assignment at Moravian, your homework should be demonstrative of your best work.

- Your problems should be presented in the order they are assigned. In completing your homework, be sure that it is clear where work from one problem ends and the next begins.

- Unless told otherwise, you should show your work. The correct answer is only one objective. I do not grade homework to see if you got the right answer (there are computerized multiple

choice tests for that). I grade to ensure that you demonstrate a mastery of the tools and techniques introduced in the course.

- Your full name should be on first page of the submitted homework, clearly readable in the top right-hand corner of the page.

- If your homework has multiple pages, it must be stapled. Folding over the corner of the paper or using a paper clip is not sufficient. Staplers are available in the Math/CS office (PPHAC 216) and in the Math/CS reading room (PPHAC 238).

- Homework should be handed in at the beginning of class on the date due. If you are unable to turn your homework in when it is collected (e.g.: if you are sick, forgot your homework, or are late to class), then I will accept homework until 4:00pm of the due date. Homework will not be accepted after 4:00pm of the due date.

6   Lab Projects

There will be several lab projects through the semester that will require you to work in small groups. Each will have both an in-class experimental portion and a reflective write-up portion. Details will be provided when the first project is assigned.

7   Exams

There will be two exams in the course and a final exam. The dates for the midterms are **Wednesday, October 7**, and **Monday, November 23**. Details on the midterms will be provided as these dates approach. The final exam will be on **Friday, December 18 at 1:30pm**.

Be sure to mark these dates on your calendar. Remember, *flight or vacation plans are not acceptable reasons to miss an exam date.* As a general rule, make-up exams are not given. If you have a truly exceptional situation, be sure to see me **before** the exam date to discuss your dilemma.

Proficiency Exams

In addition to the regular exams, there will be two proficiency exams: a *Limit Proficiency* and a *Derivative Proficiency*. You may retake the exam as often as you want within 4 weeks of the original exam – the gradebook will reflect the highest score you achieved on the exam. In order to pass this course, you must pass each proficiency exam with a score of 80% or higher.

The Limit Proficiency exam will be on Friday, September 25, and retakes may be done through Friday, October 23. The Derivative Proficiency exam will be on Friday, October 30, and retakes may be done through Wednesday, December 2.

8   Culture Points

An important aspect of the calculus sequence is to introduce you to the idea of what a "mathematician" is and does. Frankly, this is not effectively done within the classroom — calculus is but a tiny portion of mathematical thought, and we are only studying the topmost surface of calculus. To

provide a broader perspective on the role of calculus in mathematics (and the role of mathematics in the world), I will be asking you to participate in mathematically-oriented activities throughout the semester. Details on this will be provided on a separate handout.

9   Attendance and other Issues

9.1   Attendance

There are 40 class meetings this semester. Each class is important – each class covers vital information for the course.

Attendance is your responsibility. If you miss a class, you will receive a 0 on any quiz or in-class activity that takes place. If your homework is not handed in on time, I will not let you turn it in late because you missed class.

If you know that you will be missing a class (due to sports or other activities), let me know ahead of time. Together, we will decide whether alternate arrangements can be made for quizzes or exams or other activities.

Get to know your classmates! If you will miss a class due to a family emergency or sickness, have a classmate bring your homework in for you. As a rule, late work will not be accepted.

In all cases, you are responsible for any missed work.

9.2   Academic Honesty

Students will be expected to adhere to the standard of the Academic Honesty policy as described in the Student Handbook (pages 33–38). Any violations of this will result in severe penalties on the assignment, a report to the Dean, and the very real possibility of failing the course.

Honesty in Homework

When faced with difficulty in mathematics, it helps to work through problem with a colleague. Thus I welcome and encourage you to work with friends, tutors and myself in finding solutions to homework problems. You are also welcome and encouraged to take advantage of the *Student Solutions Manual* for the calculus text. Copies of the *Student Solutions Manual* can be found in my office (PPHAC 215) or in the Math/CS reading room (2nd floor of PPHAC).

HOWEVER: when *writing up* your homework solution, you should work on your own. Without help from friends, neighbors or tutors, you should sit down with your scratch work and write up a complete solution in your own words. Remember: the exam will be based on what you can do on your own!

9.3   Final reminders, tips, and disclaimers

- **Visit my office!** I would love to help address individual issues or answer questions you have about the course. I would love to hear feedback about which aspects of the course are or are not going well. You have a great deal of power to determine the path this class takes – take advantage of it.

  You can also communicate with me via e-mail (hartshorn@math.moravian.edu). Drop me a line and let me know how the course is going.

- **Do LOTS of homework!** The best way to succeed in this class is to do *at least* 90 minutes of homework *EVERY NIGHT*. This is in addition to any time you spend with me or the tutors. There is no substitute for putting in the hours to be successful.

- Take advantage of the tutoring center. Beginning around the second week of class, the math tutoring center is generally open Monday through Thursday evenings in the Math/CS reading room (PPHAC 238).

- This syllabus is subject to change through the semester. The most recent version of the syllabus can be found at `http://www.math.moravian.edu/hartshorn/math170/`.

- If you are in need of special accommodations due to a disability, please contact the Learning Services Office as soon as possible. We can only accommodate your special needs if we are made aware of them.

- Final determination of your course grade is subject to my discretion as professor of the course.