# Loyola Marymount University
# Math 131 - Calculus I

Fall 2019 Section 02

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## Course Information

**Meet Times:** MWF: 9:45 am – 11:00 am *(Foley Annex 160)*
**Dates:** Aug 26 – Dec 11
**Text:** *Calculus for Scientists & Engineers: Early Trancendentals* by Briggs, Cochran, Gillet, 2013
**Calculator:** A graphing calculator is recommended, but not required.
**Prerequisites:** Passing grade in MATH 120 (grade of "C" or higher strongly encouraged) or mathematics placement examination.

## Course Description

Math 131 is a calculus course for mathematics and engineering majors, and includes the topics of limits, continuity, derivatives of algebraic and transcendental functions, applications of the derivative, antiderivatives, introduction to the definite integral, and the Fundamental Theorem of Calculus.

## Learning Outcomes

Upon successful completion of the course students should be able to:

- Understand how the concepts of continuity and limits are used to define the derivative.
- Use various rules for finding derivatives.
- Apply theorems presented in class to justify analytical properties of functions.
- Use knowledge of differentiation to solve practical problems in related rates, linear approximation, and optimization.
- Demonstrate basic proficiency with a computer algebra system.
- Show a beginning familiarity with the idea of the antiderivative and integral calculus, including the Fundamental Theorem of Calculus.

A secondary objective is to help improve skills in clearly communicating mathematical ideas and work.

## Email Communication

At times the instructor will communicate with the entire class using campus email systems, so it is essential that students check their lion.lmu.edu email address or have it forwarded appropriately.

## Grades

The course is not graded on a curve. Letter grades will be determined by percentages rounded to the nearest whole percent.

| | |
|---|---|
| Homework (11) | 6% |
| Knowledge Checks | 4% |
| Quizzes (8) | 12% |
| Exams (4) | 48% |
| Final Exam | 30% |

| | | | |
|---|---|---|---|
| A | 93% or above | C+ | 77% – 79% |
| A- | 90% – 92% | C | 73% – 76% |
| B+ | 87% – 89% | C- | 70% – 72% |
| B | 83% – 86% | D | 60% – 69% |
| B- | 80% – 82% | F | 59% or below |

## Homework

Homework will be assigned throughout the semester. Each homework assignment will consist of an online portion via WebWork and a written portion posted on the course website (http://faculty.lmu.edu/robertomartinez).

The WebWork portion will be due by midnight (11:59 PM) on the due date and will be given credit based on completeness. The login specifics for WebWork are as follows:

**Website:** https://courses1.webwork.maa.org/webwork2/lmu-math131a/
**Username:** Firstname.Lastname
**Password:** 9-digit student ID

WebWork usernames are case sensitive where Firstname and Lastname are as they appear on PROWL, without any spaces. For example, the username for Joseph-Louis Lagrange is Joseph-Louis.Lagrange and the username for Pierre de Fermat is Pierre.deFermat.

The written portion will be due at the beginning of class on the due date. **No late homework will be accepted**. If a student cannot attend class on the day an assignment is due, it is their responsibility to submit it beforehand or arrange for a classmate to turn it in. The written portion of homework sets will be graded for correctness and completeness. Students need to show enough work to demonstrate thought process and understanding. It is at the discretion of the grader to not accept an assignment if it is illegible, disorganized, or solutions lack sufficient work or justification. Solutions that appear to be copied from another student, from a solutions manual, or lack sufficient work or justification will be returned to the student(s) with **zero** credit. **Use a stapler** to keep pages together. **Do not** triangle fold and slit the corner of the pages.

For each homework set, the WebWork and written portions are worth 85% and 15%, respectively.

The lowest single homework score will be dropped.

## Knowledge Checks

Knowledge check worksheets will be given throughout the semester during class meetings. Worksheets will be completed in and out of class. Knowledge checks are an opportunity for students to monitor their understanding and ability to complete course topics prior to quizzes and exams.

## Quizzes

Quizzes will be at the beginning of class. Each quiz will be approximately 5 - 10 minutes. If students pay attention in class, begin homework in a timely manner, and complete the knowledge check worksheets there should be no surprises on the quizzes. There are no make-up quizzes. The lowest two quiz scores will be dropped.

## Exams

There will be four chapter exams during the semester. If students pay attention in class, understand the homework, and study the quizzes there should be no surprises on the exams. Exams must be taken in class. There are no make-up exams. Students have the option of replacing the lowest single exam score with the score on the final exam. The use of books, notes, unauthorized electronics, or other unauthorized aid during an exam will be considered cheating and result in a score of zero. An exam score of zero due to cheating is exempt from the option of being replaced by the score on the final exam.

## Final Exam

The final exam is cumulative and mandatory. The final will be given on **Wednesday, December 11$^{th}$ from 8:00 am to 11:00 am in Foley Annex 160** . No make-ups!

## Expectations

Ask questions! It is not sufficient to simply copy notes and complete the homework assignments. It will be required that you understand and learn concepts and strategies from lecture and homework exercises.

Some homework exercises may follow directly from lecture examples but more problems will require extensions of understanding and combination of multiple topics. Similarly, some exam exercises will require a combination of topics and strategies addressed in lecture examples, homework assignments, knowledge check worksheets, and quizzes. Knowledge check worksheets and quizzes will provide regular checks of concept understanding and it will be beneficial to review the related homework assignments beforehand.

## Attendance

Students are expected to attend class regularly and participate in in-class activities. Although attendance will not directly affect the final grade, it is the student's responsibility to obtain missed announcements, notes, and assignments from a classmate or office hours. Absence is not an excuse to miss work unless prior permission or documented emergencies exist.

## Academic Honesty

Academic dishonesty will result in **zero** credit on the assignment or examination in question. Incidents will also be referred to the Chair of the Department and may result in failure to pass the course, regardless of the weight of the assignment or exam in question, or expulsion from the University. It is never permissible to

submit any work that has not been authored by the student, such as work that has been copied from another student or copied from a source (including Internet) without properly acknowledging the source. Students are free to discuss ideas on how to solve the problems with other students. However, students must write solutions independently. It is not permissible to copy solutions worked out in a group, or from students who took the class before, or found on the web.

Students should ask the instructor for any clarification regarding cheating, plagiarism, or academic dishonesty if there are any questions. Examples of cheating include but are not limited to:

- Exchanging (giving or receiving) information with another person during an exam.
- Using aids/notes/digital devices not permitted during an assignment or exam.
- Using false excuses to obtain extensions of time or special privileges.
- Copying work from another person, an answer key, or solution manual and turning it in as your own.
- Helping someone else cheat.

It is the student's responsibility to read, understand, and abide by the Loyola Marymount University "Academic Honesty Policy" (http://academics.lmu.edu/honesty/).

## Additional Resources

Free drop-in tutoring in the Mathematics Department is available and will begin on Tuesday, September 3rd. Tutoring for Math 131 will take place on MTW: 7:00 pm – 9:00 pm in University Hall 2711.

## Classroom Conduct

Students may **quietly** excuse themselves if they need to leave the classroom at any time. Although during an exam you should ask the instructor first. **Please be courteous and make sure all electronic devices are silenced and put away during class.** Do not wear headphones/earbuds during class. Students that are disruptive to the class (excessive talking, repeatedly leaving the classroom, making loud noises, etc.) may be asked to leave the classroom

## Calculators

The use of calculators or other graphing utilities may be necessary for lecture examples and homework assignments. Calculators or any other electronic devices are not allowed (nor necessary) on quizzes and exams.

## Withdrawal Deadline

It is the responsibility of the student to withdraw from the course. The University deadline to withdraw from a course or to apply for Credit/No Credit grading is **Friday, November 1st**.

## Americans with Disabilities Act

Students with special needs as addressed by the Americans with Disabilities Act who need reasonable modifications, special assistance, or accommodations in this course should promptly direct their request to Disability Support Services (DSS). Any student who currently has a documented disability (physical, learning, or psychological) needing academic accommodations should contact DSS as early in the semester as possible. DSS is located in Daum Hall, 2nd floor and can be contacted via phone at 310 - 338 - 4216 or their website at www.lmu.edu/dss. All discussions will remain confidential.

## Disclaimer

Policies stated on this syllabus are subject to change during the course of the semester at the sole discretion of the instructor. Any changes will be announced in class.

## Calendar

This calendar is tentative and subject to change as necessary. Changes to the calendar will be announced in class.

| Monday - August 26 | Wednesday - August 28 | Friday - August 30 |
|---|---|---|
| §2.1 - 2.2<br>The idea of limits. Definition of limits. | §2.3<br>Techniques for computing limits. | §2.3 - 2.4 / HW 01 Due<br>Techniques for computing limits. Infinite limits. |
| **Monday - September 02** | **Wednesday - September 04** | **Friday - September 06** |
| Labor Day - No Class | §2.4 - 2.5 / Quiz 01<br>Infinite limits. Limits at infinity. | §2.5 - 2.6 / HW 02 Due<br>Limits at infinity. Continuity. |
| Monday - September 09 | Wednesday - September 11 | Friday - September 13 |
| §2.6 - 2.7<br>Continuity. Precise definition of limits. | §2.7 - 3.1 / Quiz 02<br>Precise definition of limits. Introducing the derivative. | §3.1 / Review Ch 02 / HW 03 Due<br>Introducing the derivative. |
| **Monday - September 16** | Wednesday - September 18 | Friday - September 20 |
| Exam: Chapter 02 | §3.1 - 3.2<br>Introducing the derivative. Rules of differentiation. | §3.2 - 3.3<br>Rules of differentiation. The product and quotient rules. |

| Monday - September 23 | Wednesday - September 25 | Friday - September 27 |
|---|---|---|
| §3.3 - 3.4<br>The product and quotient rules. Derivatives of trigonometric functions. | §3.4 - 3.5 / Quiz 03<br>Derivatives of trigonometric functions. Derivatives as rates of change. | §3.5 / HW 04 Due<br>Derivatives as rates of change. |
| Monday - September 30 | Wednesday - October 02 | Friday - October 04 |
| §3.6<br>Chain rule. | §3.6 - 3.7 / Quiz 04<br>Chain rule. Implicit differentiation. | §3.7 - 3.8 / HW 05<br>Implicit differentiation. Derivatives of logarithmic and exponential functions. |
| Monday - October 07 | Wednesday - October 09 | Friday - October 11 |
| §3.8<br>Derivatives of logarithmic and exponential functions. | §3.9 / Quiz 05<br>Derivatives of inverse trigonometric functions. | Autumn Day - No Class |
| Monday - October 14 | Wednesday - October 16 | Friday - October 18 |
| §3.9 / HW 06 Due<br>Derivatives of inverse trigonometric functions. | §3.10<br>Related rates. | §3.10 - 4.1 / Quiz 06<br>Related rates. Maxima and minima. |
| Monday - October 21 | Wednesday - October 23 | Friday - October 25 |
| §4.1 / Review Ch 03 / HW 07 Due<br>Maxima and minima. | Exam Ch 03 | §4.2<br>What derivatives tell us. |
| Monday - October 28 | Wednesday - October 30 | Friday - November 01 |
| §4.2 - 4.3<br>What derivatives tell us. Graphing functions. | §4.3 - 4.4 / Quiz 07<br>Graphing functions. Optimization problems. | §4.4 / HW 08 Due<br>Optimization problems. |
| Monday - November 04 | Wednesday - November 06 | Friday - November 08 |
| §4.5 - 4.6<br>Linear approximation and differentials. Mean Value Theorem. | §4.6 - 4.7 / Quiz 08<br>Mean Value Theorem. L'Hôpital's rule. | §4.7 - 4.8 / HW 09 Due<br>L'Hôpital's rule. Newton's method. |
| Monday - November 11 | Wednesday - November 13 | Friday - November 15 |
| §4.8 - 4.9<br>Newton's method. Antiderivatives. | §5.1 / Quiz 09<br>Approximating areas under curves. | §5.1 / Review Ch 04 / HW 10 Due<br>Approximating areas under curves. |

| Monday - November 18 | Wednesday - November 20 | Friday - November 22 |
|---|---|---|
| Exam Ch 04 | §5.2 - 5.3<br>Definite integrals. Fundamental Theorem of Calculus. | §5.3 - 5.4<br>Fundamental Theorem of Calculus. Working with integrals. |
| **Monday - November 25** | **Wednesday - November 27** | **Friday - November 29** |
| §5.5 / Quiz 10 / HW 11 Due<br>Substitution rule. | Thanksgiving – No Class | Thanksgiving – No Class |
| **Monday - December 02** | **Wednesday - December 04** | **Friday - December 06** |
| §5.5 / Review Ch 05<br>Substitution rule. | Exam Ch 05 / HW 12 Due | Cumulative Review |
| | **Wednesday - December 11** | |
| | **Final**<br>**Foley Annex 160**<br>**8:00 am – 11:00 am** | |