Honor Code: For the tests and quizzes in this class you must not give or receive any aid. For the homework and student examples you are encouraged to work with other students, but the work you turn in should be in your own words and should be understood by you.

Classroom format: For the academic part of the course we meet three times a week, M, W, F 9:00–9:50, HC 250.

In general, most days will start with some time for questions on the homework. Then I’ll present some new material, we’ll discuss it a little bit, and then have you practice it.

For the Messina Enrichment hour we will usually meet M, 1:00–1:50, Flannery 212 (see below for a separate syllabus).

Class material:

- The textbook is *Applied Calculus*, by Hughes-Hallett, Gleason, et al., fifth edition. We provide a custom edition, but you can buy the regular edition if you want.
- For homework and practice, I recommend using Desmos, the online graphing calculator. For quizzes and tests I will allow simple or scientific calculators such as the TI-30 calculators. These are scientific calculators but not graphing calculators.

Classroom: Please do not use your cell-phone (for talking or texting), iPad or laptop during class without talking to me ahead of time. If I see you using one of these I will stop and stare at you until you put it away.

Grade Breakdown: Your total grade will be based on the following weights

<table>
<thead>
<tr>
<th>Attendance/participation</th>
<th>Service Learning or Research Path</th>
<th>Homework</th>
<th>Quizzes</th>
<th>Midterms exams</th>
<th>Final exam</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>10%</td>
<td>10%</td>
<td>11%</td>
<td>10%, 13%, 18%</td>
<td>23%</td>
</tr>
</tbody>
</table>

Your letter grade will be based on the total number of points you have at the end of the class, as shown below

- 100 ≥ A ≥ 93.0, 92.9 ≥ A− ≥ 90.0
- 89.9 ≥ B+ ≥ 87.0, 86.9 ≥ B ≥ 83.0, 82.9 ≥ B− ≥ 80.0
- 79.9 ≥ C+ ≥ 77.0, 76.9 ≥ C ≥ 73.0, 72.9 ≥ C− ≥ 70.0
- 69.9 ≥ D ≥ 60.0, 59.9 ≥ F

Attendance/participation: Each day I will hand out an attendance sheet. Put your initials in the spot that matches up with your name and the day’s date. To get full attendance credit you need to present and on time.
Participation applies to both the Calculus part of the class and the Messina part. For Calculus, you need to be willing to discuss material, solve problems, etc. Also, on some days I’ll assign reading or a video to watch ahead of time, and for participation you’ll need to respond to questions or fill in the worksheet that I give for that reading or video. Finally, sometimes I’ll have worksheets in class that I’ll ask you to finish up at home. For Messina, there will sometimes be written responses to activities. These will be turned in on Moodle.

**Homework:** There will be two kinds of homework: written problems from the textbook and online problems in Webwork. The written problems will be handed in on paper and checked off (keep it neat and organized please). Please put work into the written material proportional to how much practice you need to learn the content. The online homework will be checked by the computer and need to be correct for full credit.

We’ll have one homework assignment per week, almost always due on Monday (except for when we have midterm exams, or a holiday on Monday).

Late homework: one class day late is −10%, after that not accepted. Homework is at the beginning of class. I’ll drop the lowest homework score so if you miss one, no big deal.

**Quizzes:** We will have 12 quizzes (probably), usually on Monday, about every two weeks. See the webpage for the (probable) dates.

About half the quizzes will be “Concept and Definition” quizzes. These will ask you to give definitions, or explain a simple concept. The other half will be “Problem” quizzes. These will have problems similar to homework and midterm problems.

On the first two problem quizzes you can use your homework. On the next two problem quizzes you will have 10 minutes before the quiz to review your homework. On the last two problem quizzes you will not have either of these aids.

**Tests:** We will have three midterms exams and one Final. The midterms will be every four weeks, on Fridays whenever possible. See the webpage for the dates.

**Calculators:** On the quizzes and exams I allow basic or scientific calculators. I recommend the TI-30, which is $10. You can buy an even cheaper one if you want, probably for around $5. I will bring a couple (2 or 3) extra ones if you forget to buy/bring one. I do not allow graphing calculators, or ones that can do algebra, or store images.

**Note cards:** On exams I allow note cards. For the midterm exams I allow one side of a 3 × 5 index card: that’s 15 square inches. It needs to be handwritten, in your own writing. For the final exam I allow both sides of the card, i.e. 30 square inches. For quizzes I do not allow note cards.

Service Path or Research Path: there are two ways to finish this class, and you will need to decide by week 4 which path you’ll choose. More details are at the end of this syllabus, but here’s a brief description of the differences.

- Service: Written reflections, approximately 2 hours of tutoring per week as part of the AVID program at Mervo high school.
- Research: three papers/math projects. Topics such as: Income inequality, red-lining in Baltimore, Gini Index for various Baltimore neighborhoods.

**Office Hours:** (Subject to change) My plan is to have regularly scheduled office hours (in my office, KH 301g) during the following times. (If I have to change these, I will announce and post the changes.)
Outside of office hours you are welcome to try coming by at other times, but I may be busy or out of the office.

**Disabilities:** I will happily accommodate any needs you have based upon a disability that is registered with the office of Disability Support Services (DSS). You need to contact me ahead of time for this accommodation. You can contact DSS at 410-617-2062, or mwiedefeld “at” loyola.edu.

**Outline** We’ll cover chapters 1–5, occasionally skipping a section. This includes standard material about limits, the definition of derivatives, various rules and formulas for the derivative, applications, and finally a little bit of integrals. We have roughly 37 days to cover the material, so on average, this is about 1 section a day.

## 1 Service Learning

- **Goals/Purpose of service:**
  - Learn more about the community Loyola is situated in.
  - Foster greater connection between Loyola and the community.
  - Increase the value you place in your own math skills by seeing how they can help others.
  - Increase your own math skills as you help other students practice them.

- **Tutoring:** make a commitment to approximately 20 hours (ideally 2 hours per week for 10 weeks) of tutoring at Mervo (Mergenthaler Vocational-Technical High School)

- **Reflections:** before tutoring starts, in the middle of tutoring, and after all the tutoring is done at the end of the semester. Each will be about 250–500 words. Basically they will be: What do you anticipate? How is it going? How did it go?

## 2 Research Track

- **Goals/Purpose of Research:**
  - Learn more about the community Loyola is situated in.
  - Learn about what it means to do a research paper.
  - Learn and write about wealth distributions, historic discrimination in banking, explore data about Baltimore census districts, incomes, Gini Index, etc.
  - Learn to analyze data using technical mathematical techniques, and to present this information.

- **Each paper will be about 1000–2000 words. Some will be open ended research on a topic, such as income inequality or redlining. Some will be more guided and mathematical, like how to calculate the Gini index of income inequality, but even these will have a significant component of writing.**

  Writing is included in these Calculus projects because it is an important part of all skills. Writing is communication, and a demonstration that you have understood something well enough to explain it in ordinary language.