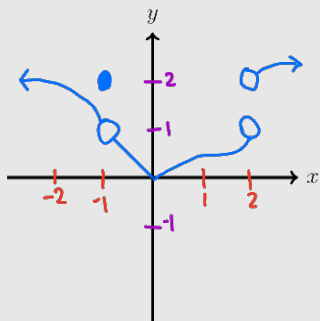
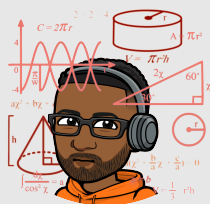




Applied Calculus

Math H105

Instructor Info —



Reginald L. McGee II, Ph.D.



Pronouns: He/Him/His



Student Hours: Tues. 10am-12pm, Weds. 3-4pm, Fri. 1-2pm or by appt.



Hilles 209D



<https://mcgeerb.sites.haverford.edu>



rmcgee@haverford.edu

Course Info —



Monday & Wednesday & Friday



11:30am-12:25pm



Stokes 10

Equity and Inclusion



You are all welcome and belong here. I will always work to make our classroom a safe place for everyone to contribute, learn, and grow no matter your identity, background, or circumstances. Please do not hesitate to reach out if I can do anything to improve the classroom climate. In addition, I expect our classroom to be a place where we respect one another and support each other's learning.

Overview

MATH 105 is a one semester introduction to single variable calculus and its applications. The course focuses on properties of functions defined on subsets of the real numbers and that take values in the real numbers. Two new concepts, *continuity* and *differentiability*, form the heart of the course. Chapter 1 of the text discusses the several types of functions, and their properties, that will be regularly encountered this semester. Chapters 3 and 4 introduce calculus concepts and applications.

Learning Objectives

- Demonstrate understanding of the core concepts of calculus
- Demonstrate proficiency with algebraic manipulations, exact calculations, graphical analysis, basic functions and their properties
- Exercise written and verbal communication of mathematics
- Develop both independent and collaborative problem solving skills

Material

Required Texts

Strang, G., & Herman, E. J. *OpenStax Calculus (v. 1)*. 2016.

https://assets.openstax.org/oscms-prodcms/media/documents/Calculus_Volume_1_-_WEB_68M1Z5W.pdf

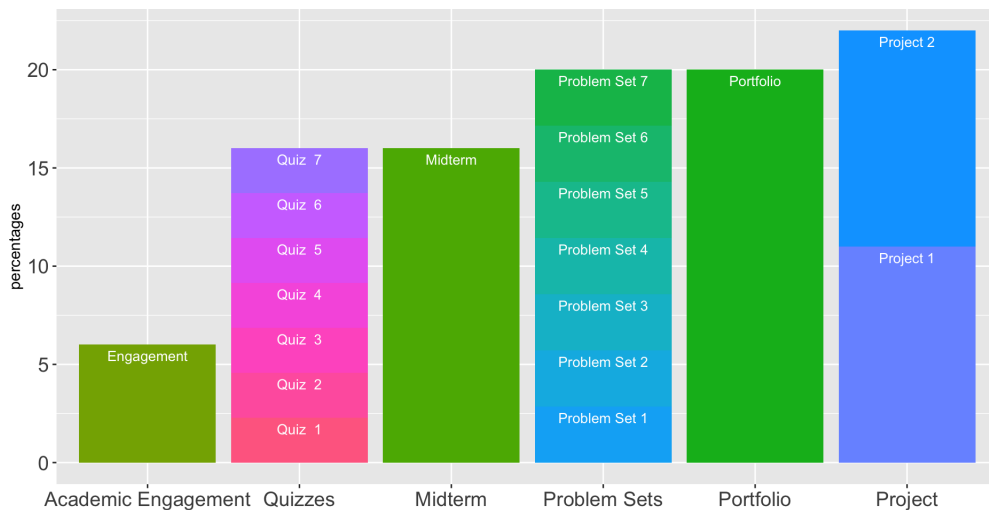
Strang, G., & Herman, E. J. *OpenStax Calculus (v. 2)*. 2016.

https://assets.openstax.org/oscms-prodcms/media/documents/Calculus_Volume_2_-_WEB.pdf

Other

We will be using the *free* online package WebWork. Online assignments can be accessed from the Moodle course page.

Grading scheme overview



Wellness

- If you feel sick, do not come to class.
- For the safety of everyone, if you ever have an active cough please wear a mask over your nose and mouth during class and/or student hours. You will be asked to leave if you are noncompliant.

Grading and assignment notes

"The test of a good teacher is not how many questions he can ask his pupils that they will readily answer, but how many questions he inspires them to ask him which he finds it hard to answer." -Alice Wellington Rollins

Your final course percentage will be computed as follows:

Academic Engagement	6 %
Quizzes	16 %
Midterm	16 %
Written Problem Sets	20 %
Final Portfolio	20 %
Projects	22 %
Total	100 %

- (i) The aggregate score on each assignment and summative assessment will receive a numerical score which will contribute to the appropriate percentage. At the end of the semester, total course percentages will be used to determine final grades. I do not use an absolute scale to determine letter grades.
- (i) Academic engagement includes effort observed throughout the course, contributing to a positive learning environment by asking questions and collaborating during in-class problem solving, attending student hours, participating in Canvas discussions, proper mask wearing in student hours, answering questions, completing WebWork assignments, submitting Creativity in Progress Reflections after in-class problem solving, attending class, etc. You should aim to be doing many of these activities "most of the time" or "all of the time" as opposed to "some of the time" or "none of the time."
- (ii) The online problem sets are implemented through WebWork and are assigned to promote proficiency with routine calculus calculations. For an 80% on the online problem sets you need to do 5 problems for every WebWork assignment. For a 90% you need to do 8 problems on every WebWork assignment. The first four WebWork assignments will close at 10pm on Sat. October 25th and the rest will close on Sat. December 6th. The online problem sets will count towards your academic engagement.
- (iii) Written problem sets consists of less routine problems, and are meant to challenge you to synthesize concepts and expose you to new aspects of the material. Written problems are generally quiz or exam level problems. A portion of the written problem sets will be writing assignments, readings, and reflections. Written problem sets will usually be due on Wednesdays at 4pm. The lowest written problem sets will be dropped at the end of the semester.
- (v) Quizzes are summative assessments consisting of less routine problems. There will be ~7 quizzes on the syllabus. Quizzes cover material since the preceding quiz or hour exam. The lowest quiz will be dropped at the end of the semester.
- (vi) Projects are generally tasks that apply the course material and are supplemental to the problem sets. There are two projects on the syllabus. You will be assigned to a small groups will be assigned for the first and will have a choice to work alone or in a group for the second. A portion of the assignment will be evaluating how you and your groupmates contributed to the assignment.
- (vii) The midterm exams will held on Monday November 17th in the evening at Time TBD timed for 60 minutes and held in Room TBD.
To promote the development of a growth mindset and an environment of collaboration in our class, and not one of competition, the exam will have a revision/reflection opportunity in the final portfolio.
- (viii) Instead of a final exam, the course will culminate with a final portfolio consisting of a midterm exam reflections, a mathematical communication assignment, a graphical interpretation assignment, and a final problem set. The communication assignment will require explanation of a problem through written (such as a paper), graphical (such as a poster or a meme), or audio/visual (such as a podcast or video) means. The graphical interpretation assignment will require you to identify a graph related to your (intended) major or a subject of interest and describe the graph's behavior using concepts from our course. More information on these assignments will be provided throughout the semester.
- (ix) Submissions should be uploaded to Moodle/Gradescope in Portable Document Format (PDF) and the filename for the PDF document should be:
LASTNAME-FIRSTNAME-YEAR-COURSENAME-SECTION-ASSIGNMENTNAME
These filename guidelines are in part to build good submission habits for when you need to send documents for jobs, interviews, internships, etc.

NOTE: There is a 24-hour, no-questions-asked grace period for written problem set submissions. Problem sets turned in during this grace period will be marked late for the course records, but there will not be any grade penalty.

NOTE: Out of class meetings for group assignments should be in public spaces on campus and not in any student's dorm or residence.

NOTE: I will follow universal design principles and build-in time and a half for any exams and quizzes.

NOTE: LATE problem sets will NOT be accepted once solutions are posted nor are individual WebWork extensions granted. If you anticipate you may need to turn in your problem sets late you should arrange that ahead of time.

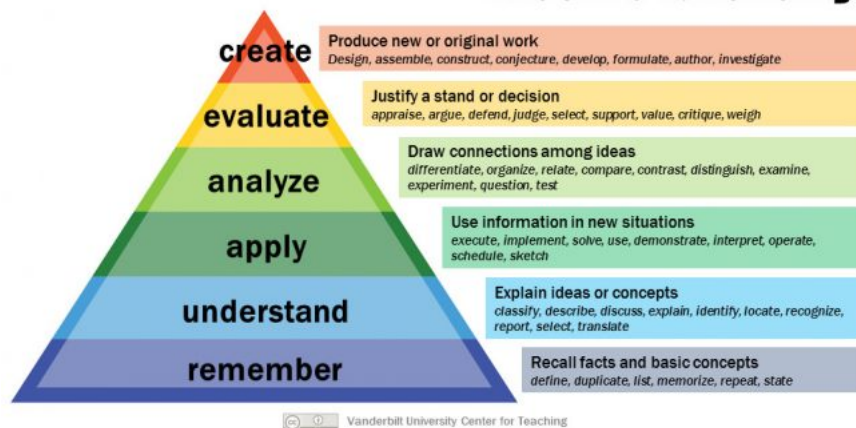
When life happens

Life happens to all of us, and it is important to recognize each other's humanity. Moreover, it is important to emphasize that your health and well-being are the most important outcomes of this class. The grace period on the problem sets is an example of a support built-in to the course for exactly when life happens. In general, please be in touch if there is anything that prevents you from engaging in the course and/or completing an assignment or assessment. The more advance notice helps the amount of options that can be considered. If there is an ongoing situation in your life, please let me and your Class Dean know as soon as possible so that we can try to accommodate and make an optimal plan forward.

How to do well in this course

- Attend class, participate, and ask questions. Having questions means that you are processing the material, never hesitate to ask questions.
- Go over your lecture notes as soon after class as possible. Google Ebbinghaus forgetting curve for more on why.
- Start working on problem sets as soon as they are assigned.
- Visit student hours, even if you don't have questions it's good to simply discuss material.
- Read and work through the textbook and previous notes in preparation for class.
- Study topics iteratively and work towards developing a growth mindset.
- The Calculus Resource Center (CRC) is a space dedicated to collaboration among Math 105 students and tutoring from Math 105 course assistants. The CRC is open on Monday and Tuesday evenings; please see the "Resources and Weekly Schedule" document for times and places.
- The Math Question Center (MQC) is place you can go to discuss problem sets with your classmates and ask questions of upperclass student tutors. The MQC is open Sunday through Thursday evenings; please see the "Resources and Weekly Schedule" document for times and places.
- Free peer tutors are available through the Office for Academic Resources; see <https://www.haverford.edu/academic-resources/peer-tutoring>.

Bloom's Taxonomy



A last note on high school mathematics versus collegiate mathematics:

"[Bomani] Jones is constantly testing a series of if this, then that propositions, writing proofs in his head, trying to find the most elegant answer at the bottom of a series of self-contradictory explanations. I view things pretty coldly and rationally, says Jones. Everything I hear is a cost-benefit analysis to a degree. There was one college course that changed everything for him. It was a theoretical math course, and it was designed to help incoming students let go of their high school notions of math: plug and chug, memorizing and executing steps without really understanding the concepts beneath them. He became fascinated with the art of simplicity, and the elegance and efficacy of reducing things to their simplest form."

Eve L. Ewing, "Bomani Jones Has a Funny Joke for You", GQ May 15, 2018

Collaboration

Collaboration on problem sets is welcomed, but should be approached carefully. There is a fine balance between learning from working with your fellow students and finding your own way through the material. What you turn in for written problem sets should reflect your personal understanding of the problems, so you must write the solutions yourself without referring to notes from your collaborative work. If you find you are not able to do this, then that is likely a sign that you have not yet fully understood that particular problem and you should pause and seek advice from us or one of the other help resources. Please indicate on your assignment who your collaborators were.

So as to ensure productive collaborative work, you should not be working in groups larger than four people on any given problem at any given time. Two- or three-person groups are better than four. Large groups of people “working together” are not really working together. If at any time in the semester you want to be working in a group but do not have a group of students to work with, please let us know and we will help you find a working group. If at any time in the semester, you find yourself in a group of students in which people are not feeling respected, please let me know as well.

Note that you are not allowed to use materials aside from the text, materials from Moodle, reserves in the library, and, of course, class notes in this course. These materials have been carefully curated to help you learn. In particular, do not use resources from the internet without express permission. Please help us ensure that we can maintain an environment of trust and respect throughout the semester by working with integrity and coming by if you have any questions.

The Internet

You're welcome to use internet sources for minor assistance, like looking up a definition or watching a video offering a general explanation of a concept, if they are effectively documented as you would with a collaborator. You shouldn't be solving entire portions of coursework with AI, search engines, and the like. If you're ever feeling the need to use internet sources beyond minor assistance or have a question about what constitutes minor assistance, please reach out so that I can support you in a way that will best promote your long term understanding of the material and will be in compliance with the College Honor code.

E-mail Policy

I will only respond to class-related emails from your “haverford.edu” or “brynawr.edu” address. In the subject line of your email, you helps to include the name or number of the course so that I know to respond in an appropriate timeframe. Please begin with a salutation and also identify yourself in your email, and do not send attachments without first discussing it with me. It is sufficient to send the attachment in a separate email after describing it in a prior email. Emails that do not follow basic email etiquette may be ignored.

Disclaimer

The schedule listed on the course calendar is tentative, and topics covered on a given day may change slightly depending on the pace set for the course. The following may be changed, but only in the event of an emergency such as school closure: due dates for problem sets, dates for exams, and topics covered on each exam. If this occurs, it will be announced as soon as possible electronically and in class. I reserve the right to correct typographical errors on this syllabus without comment.

Equal Access

ADS: We are committed to partnering with you on your academic and intellectual journey and recognize that you bring many strengths, perspectives and strategies as you navigate this journey. We encourage you to think proactively and strategically about leveraging these strengths, in partnership with the many resources on campus. These resources include CAPS (free and unlimited counseling is available), Office of Academic Resources, Writing Center, Student Diversity Equity and Access Team, Health Services, Professional Health Advocate, Religious and Spiritual Life, the GRASE Center, and the Advising Deans. At times you may experience challenges or stressors that impact your ability to fully engage intellectually. If the stressors are academic, we welcome the opportunity to discuss and address those stressors with you in order to find solutions together. If you are experiencing challenges or questions related to emotional health, finances, physical health, relationships, learning strategies or differences, or other related topics, we hope you will consider reaching out to the many resources here on campus. Additional information can be found at <https://www.haverford.edu/deans-office-student-life/offices-resources>.

Additionally, Haverford College is committed to creating a learning environment that meets the needs of its diverse student body and provides equitable access to students with disabilities. If you have (or think you may have) a disability related to mental health, chronic health, neurological state, and/or physical condition – please contact the Office of Access and Disability Services (ADS) at hc-ads@haverford.edu. It is never too late to request ADA accommodations – our bodies and circumstances are continuously changing. Please know that all inquiries and health-related information is handled in a sensitive and confidential manner.

Students who have already been approved to receive academic ADA accommodations and want to use these in this course should share their accommodation letter and make arrangements to meet with us as soon as possible to discuss how their accommodations will be implemented in this course. Please note that accommodations are not retroactive and require advance notice in order to successfully implement.

If, at any point in the semester, a disability or personal circumstances affect your learning in this course, please do not hesitate to reach out to us. We want to be sure you are aware of the full range of resources and options available to you.

It is a state law in Pennsylvania that individuals must be given advance notice that they may be recorded. Therefore, any student who has a disability-related need to audio record this class must first be approved for this ADA accommodation by Access and Disability Services and then must communicate approval to me. I will then make a general announcement to the class that audio recording may occur while respecting students' right to privacy by not identifying the individual(s).

Title IX: Haverford College is committed to fostering a safe and inclusive living and learning environment where all can feel secure and free from harassment. All forms of sexual misconduct, including sexual assault, sexual harassment, stalking, domestic violence, and dating violence are violations of Haverford's policies, whether they occur on or off campus. Haverford faculty are committed to helping to create a safe learning environment for all students and for the College community as a whole. If you have experienced any form of gender or sex-based discrimination, harassment, or violence, know that help and support are available. Staff members are trained to support students in navigating campus life, accessing health and counseling services, providing academic and housing accommodations, and more.

The College strongly encourages all students to report any incidents of sexual misconduct. Please be aware that all Haverford employees (other than those designated as confidential resources such as counselors, clergy, and healthcare providers) are required to report information about such discrimination and harassment to the Bi-College Title IX Coordinator: <https://www.haverford.edu/users/ktaylor4>

Information about the College's Sexual Misconduct policy, reporting options, and a list of campus and local resources can be found on the College's website: <https://www.haverford.edu/sexual-misconduct>