Contents

MAT 1120: Calculus II and Analytic Geometry
Dr. Sarah J. Greenwald

1.1 Course Goals and Course Map

- Catalog description: A study of the logarithmic and exponential functions, circular functions and their inverses, techniques of integration, improper integrals, infinite series, Taylor polynomial and power series. Prerequisite: MAT 1110 (with a grade of "C-" or higher). (NUMERICAL DATA) (CORE : MATHEMATICS) (ND Prerequisite: passing the math placement test or successful completion of MAT 0010.)
- Continue the investigation of quantifiable change begun in Calculus, using a variety of representations (verbal, numerical, symbolic, and graphical) through pattern exploration assisted by appropriate technology, including the computer algebra system Maple.
- Develop an understanding of sequences and series, a deeper understanding of integration, and skill in calculating by hand and using computer algebra systems. We'll focus on content from Chapters 7–11 in the book.
- Apply integrals, sequences and series appropriately to various problem-solving situations, within a variety of contexts.
- Practice critical and creative thinking and effectively communicate the mathematics of the course verbally and with words, with numerical data, with symbolic notations, and with graphs to fellow peers and the instructor.
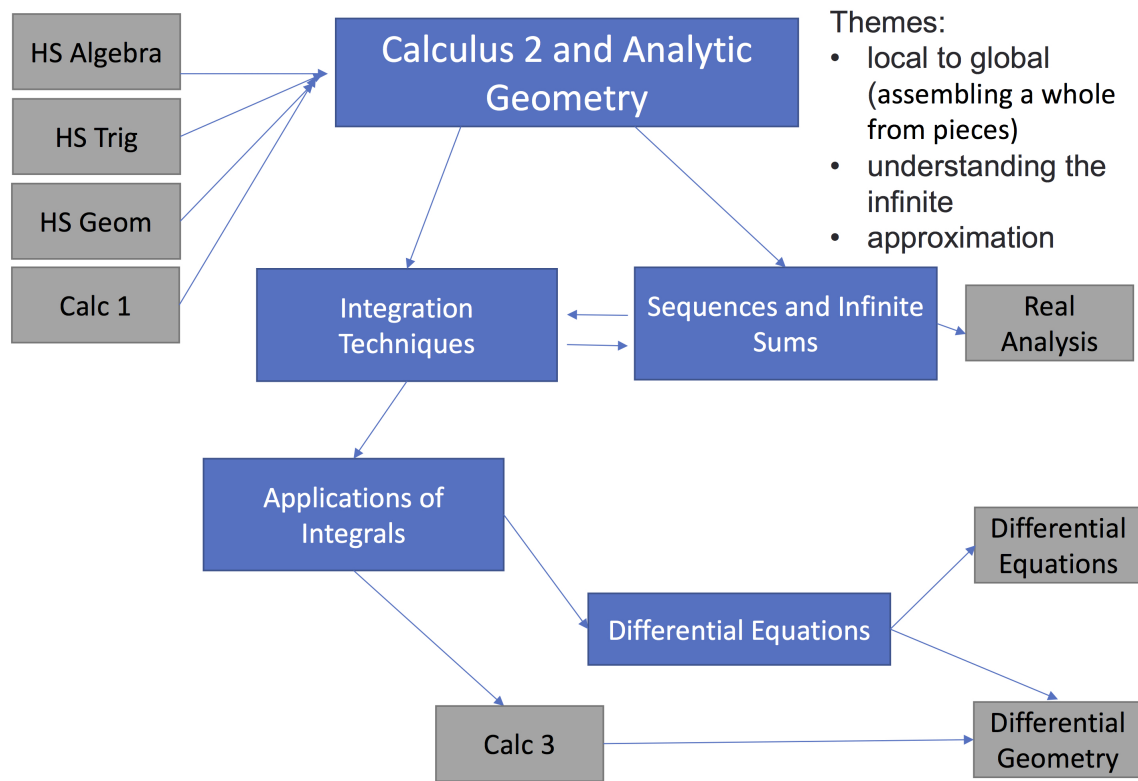
1.2   Course Communication

- Office Hours and ASULearn: My office hours are daily 9:45-10:10 and and 2:20 in 304 or 326. I am always around and happy to help you during office hours unless otherwise posted to the web page. You do not need to make an appointment to use office hours—just drop by! If you can't make office hours, contact me on ASULearn, which I'll try to answer at least once a day, including the weekends. I?ll also add some extra Zoom videoconference hours at times, which will be posted in class and on the web. The access link is on ASULearn.

- Check the main calendar web page often for homework and for access to the other class web pages.

- Communicating about Work for Missed or Excused Absences: If there is some reason you must miss a class, then keep me informed, with any appropriate documentation, and obtain the assignment and class activities from the web pages to turn the work in early or on time, if possible (you can send it with another student to class, slide it under my office door sometime before I leave for class, or even turn it in on ASULearn if need be, but I prefer printed work). These include responses to *i-clicker* questions and other class activities.

- Inclement weather: If the university cancels classes, check the class web pages for updated info, which may include plans for the missed class such as additional readings, problems, video meetings, Chat, and/or Forum sessions in ASULearn. Homework may still be due onto the private ASULearn forum.

1.3   Prerequisites

- I will assume you have facility with standard functions from algebra and trigonometry, including numerical, symbolic, and graphical representations and manipulations (equivalent to completion of MAT 1025 with a grade of at least B).

- I will also assume you have facility with differentiation, anti-differentiation, and analytic geometry (Calc 1: Chapters 3–6). If you did not complete MAT 1110 recently or do not feel comfortable with the material, you should work through those chapters again in the text.

1.4   Required Resources

- Hughes-Hallett, Gleason, McCallum, et al. (2013). *Calculus: Single Variable* (6th ed.). Hoboken, NJ: John Wiley and Sons and access code for Wileyplus

- Technology: Access to the course webpages, including the calendar page, which is used to access the other pages and Wileyplus. A calculator is highly recommended for homework practice. A computer algebra system (Maple) is available in all the labs on campus. The mathematics department is providing *i-clickers* for our use, but we must share them with other classes. You can pick one up at the start of each class, but must return it by the end of each class.

1.5   Assignment Types and Grades

- Effective Class Engagement 5%
  You are expected to contribute to discussions, activities, and i-clicker questions in a meaningful way and actively engage the material in class. You must be prepared for each class and check the main web page regularly for hw. Appalachian's General Education Program prepares students to employ various modes of communication. Successful communicators interact effectively with people of both similar and different experiences and values and in this class you will practice oral and written communication during class by interacting with your peers and me. Paper homework exercises and in-class group worksheets also count here and I mark a good faith effort rather than for accuracy. These kinds of baseline activities will result in a participation grade of 3.5/5. Other activities can increase or decrease this grade. Utilizing office hours and ASULearn, asking and answering thought-provoking questions, coming up with creative ways of thinking about the material, and explaining the material to others are some examples of positive participation

that will increase your grade. On the other hand, performing activities that detract from the professional classroom environment or distract your neighbors or me will result in a lowered participation grade. Many activities and class discussions are designed to be completed during class. Thus, attendance is required at ALL classes, and will form a portion of your grade. If you must be late to a class, or must leave early, then do still attend.

- Online Practice Problems 15%
  We will be using WileyPlus for homework—the link will be on the main calendar page. Each assignment will have 2 parts that make up the grade.
  Part 1 (Repeatable): Shows instant feedback with hints always available, solutions after the first try, and retries. You may work with others and use any resources you find helpful on this portion.
  Part 2 (Self-reliance): Designed to further develop your familiarity with the material and independence in critical thinking. You will have one try, which you are to complete on your own without any help.
  A given WileyPlus assignment will (eventually) be computed as: $91\%\times$Part 1 + $9\%\times$Part 2, where that score will be rounded up to the nearest multiple of 5 in order to try to minimize frustrations with typos or formatting, and instead have you focus on your understanding (for example a score that is greater than 80 up to 85 is rounded to 85). Late submissions will receive at most half credit. If you have problems with the online system, you can turn in the problems (early or on time) by-hand.

- Create a Video 2%
  Practice communication skills and review and solidify a concept from class as you create a short real-time video aimed at your classmates.

- Learning Goals 3%

  You'll have multiple chances to meet each learning goal. To satisfy a learning goal you must identify a proficient majority (70%)correctly on an individual quiz or test.

  LG 1: Decide What Integral Test

  LG 2: Identify Physical and Geometric Components
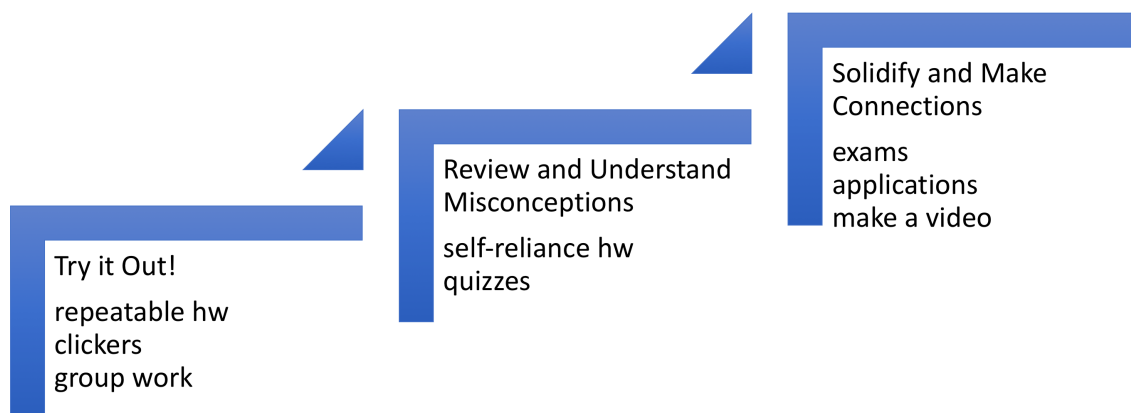
  LG 3: Decide What Series Test

- Quizzes 15%
  If there is some reason you must miss a class, then take the quiz early. No late quizzes allowed.* To accommodate issues that may arise, and help you view quizzes as a learning experience, the lowest 4 quizzes will be dropped—save this for emergencies.

- Exams 60%
  There are 3 tests over the course of the semester. No late tests allowed*.

* Accommodations in the determination of your final grade will be made for extenuating circumstances that are documented to prevent you from completing work early/on time. The grading scale is: $A \geq 93; 90 \leq A- < 93; 87 \leq B+ < 90...$

Try it Out!
repeatable hw
clickers
group work

Review and Understand Misconceptions
self-reliance hw
quizzes

Solidify and Make Connections
exams
applications
make a video

1.6   Academic Affairs Policies

We adhere to the University-wide syllabus and policy statements:
`https://academicaffairs.appstate.edu/resources/syllabi-policy-and-statement-information`

1.7   Tentative Calendar

Homework practice is due daily and quizzes are about once a week. Details are on the course web page `cs.appstate.edu/~sjg/class/1120/ss18.html`

    Week 1: Review, 7.1, 7.2, 7.4, 7.6
    Week 2: 7.5, Exam 1, 8.1, 8.2, 8.4, 8.5
    Week 3: 9.1, 9.2, 9.3, Exam 2, 9.4
    Week 4: 9.5 10.1, 10.2, 10.3, 10.4, 11.1, 11.2
    Week 5: 11.3, 11.4, 11.5, 11.6, Review, Any revisions to Create a Video are due, Exam 3

1.8   Where to Get Help and Additional Policies

I encourage you to talk to me often in class, office hours, and on the ASULearn forums. Asking questions, and explaining things to others, in or out of class, is one of the best ways to improve your understanding of the material and I am always happy to help. This course is to be an environment in which everyone feels comfortable asking questions, making mistakes, offering good guesses and ideas, and is respectful to one another. As per the University-wide Statement on Student Engagement with Courses you can expect to spend (on average) 2–3 hours outside of class for each hour in class. In this course, this means spending between 4 hours and 20 minutes and 6 hours and 30 minutes between each class, on average. You are responsible for all material covered and all announcements and assignments made at each class, whether you are present or not. Your other time outside of class should be spent reviewing course material, completing homework assignments, reading solutions on ASULearn, and in office hours or the math lab. You are also responsible for all assignments and announcements made on the web pages, so check them often. I prefer that you use office hours since it is easier to discuss material in person, but if you cannot make them, then ASULearn is a great alternative. I also want you to be informed about your choices regarding what you tell me about certain types of sensitive information. In situations where students disclose experiencing an act of interpersonal violence to their instructor, faculty are required to report what students tell us to the campus Title IX Coordinator, who then reaches out to the student by email offering support services. I care about you and want you to get the resources you need. I'm happy to talk with you if you decide you want that, but please be aware that if instead you'd like to explore options with someone who can keep your information totally confidential, I highly recommend the Counseling Center at 828-262-3180. They offer walk-in hours as well as after-hours coverage: `http://counseling.appstate.edu`.

- Appalachian Cares is a place to find updates about matters of student health and safety. It also functions as the most up-to-date clearinghouse of information, resources and support available. `http://appcares.appstate.edu/`.
- Any student who has difficulty affording groceries or accessing sufficient food to eat every day, or who lacks a safe and stable place to live, and believes this may affect their performance in the course, is urged to contact the Dean of Students, 324 Plemmons Student Union, for a list of resources and support. The ASU Food Pantry and Free Store is a free resource with pantry and personal care items, located in the Office of Sustainability on the bottom floor of East Hall.
- The library offers Research Advisory Program (RAP) sessions. `http://library.appstate.edu/gethelp/rap`
- The Learning Assistance Program provides core services including University Tutorial Services, Academic Strategy Instruction, As-U-R, ACCESS, Student Support Services, and Academic Services for Student Athletes/ `http://lap.appstate.edu/welcome-learning-assistance-program-1`
- AppSync is your one-stop connection to engagement and leadership opportunities at Appalachian State. `https://appsync.appstate.edu/`

You should explore the course material and write out your thinking in a way that can be shared with others. Academic integrity is a fundamental part of the course, which includes meeting deadlines, regular communication, and giving proper reference where it is due. These are essential to course integrity. Be sure to give acknowledgment where it is due. Submitting someone else's work as your own (PLAGIARISM) is a serious violation of the University's Academic Integrity Code, which defines: "Plagiarism includes, but is not limited to, borrowing, downloading, cutting and pasting, and paraphrasing without acknowledgement, including from online sources, or allowing an individual's academic work to be submitted as another's work."

Use of interactive technology is allowed only when it is related to our class. Otherwise put cell phones away or place them face down and set them to vibrate. Photos or video or audio recordings may not be taken in class without prior permission. Food and beverages are allowed as long as they aren't distracting, but e-cigs, chewing tobacco/spit cups and other products are not allowed.

The purpose of homework is to learn and practice computational strategies, concepts, and develop critical thinking and problem-solving skills. In this course, you will be challenged with problems that you have never seen before. I do not expect you to be able to solve all the issues immediately. Instead, I want to see what you can do on your own. Out in the real world, this is important, since no matter what job you have, you will be expected to seek out information and answers to new topics you have not seen before. This may feel uncomfortable and frustrating. I understand this and want to help you through the process. It helps to remember that there are no mathematical dead-ends! Each time we get stuck, it teaches us something about the problem we are working on, and leads us to a deeper understanding of the mathematics. In the real world though, you are not expected to face your work alone. You will be allowed to talk to other people and you may even be expected to work with other people. In this class, you are also not expected to face your work alone. I am always happy to help you and will try to give you hints and direction to help you understand the material. At times though, to encourage the exploration process, I may direct you to rethink a problem and to come back to discuss it with me again afterwards. This occurs when I believe that the struggle to understand is imperative for your deep understanding of the material.

1.9 Advice from Prior Students

- Come to class!
- make sure to be prepared for the quizzes
- practice, practice, practice
- make sure you review calc 1 material if you aren't comfortable with it
- Don't be afraid to go to office hours and ask questions. Don't settle for not understanding something—you're better than that.
- Go through homework and class notes before quizzes. study.
- attend office hours and work through problems there as it's a lot easier than trying to remember a question for class. If you have poor skills from past courses, get a tutor ASAP with University Tutoring Services.
- make sure to take good notes, don't be afraid to ask questions, and definitely do all the online homework
- Use quizzes to help you on tests. They are good study guides.
- make sure you have time outside of class to put in effort to practice and understand the material.
- Wileyplus doesn't always show all the algebraic steps in solutions so be sure to ask Dr. Sarah if you don't understand them.
- Review algebra heavily, go to class, go to tutoring or office hours
- Come to class every day, take good notes. Also I think participating in class discussion is very important.
- If you didn't do well in Calc 1, study more than you do for other classes, and study what you learned there
- Completing the assigned Wileyplus homework can be a very beneficial way to be successful in this course. Pay attention/go to class and you will also be very successful.

1.10 Instructor Bio

My PhD is from the University of Pennsylvania in the Riemannian geometry of orbifolds. I am a full Professor of Mathematics, and I am also an affiliate of Gender, Women's and Sexuality Studies (GWS), investigating the connections between mathematics and society. I am married to the bassist Joel Landsberg. In our spare time, we like to travel, hike and conduct genealogy research. In addition to my own personal genealogy, I like to give back to the broader community, and in this context, I am affiliated with ASU's center for Judaic, Holocaust and Peace Studies. Some of what I like about mathematics is also what I enjoy about genealogy—the sense of exploration, discovery and aha moments that come with lots of patience and effort.