



MAT 361: Numerical Analysis
Spring 2022

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Course Information

Instructor Information

Name: Dr. Caleb McWhorter
Office: MAG 129
Phone: 845.398.4077
Email: cmcwhort@stac.edu
Office Hours: See 'Mathematics Help'

Class Information

Dates: January 31 – May 13
Time: TR 11:25 am – 12:50 pm
Classroom: SPEL G 16

Course Description

Computer arithmetic, solutions of nonlinear equations; solving systems of linear equations, splines; numerical differentiation and integration; numerical solution of differential equations.

Prerequisites: MATH 301 and 302, one programming language or permission of instructor.

Course Objectives

After this course, among other things, students should be able to . . .

- Describe what numerical analysis is, broadly speaking, and some real life applications.
- Be able to implement a variety of numerical analysis concepts and algorithms using a computer system to both mathematical and ‘real world’ problems.
- Explain the concepts of error, loss of significance, stable/unstable problems, condition numbers, and norms.
- Be able to understand and explain big O notation and its relation to computational complexity.
- Be able to explain to the problem of root finding along with a variety of algorithms that can be used to solve these problems.
- Be able to explain and implement the bisection method and Newton’s method to find roots along with their error and convergence rate.
- Be able to understand and explain the concept of interpolation.
- Be able to implement a variety of interpolation techniques, especially Lagrange and Newton polynomials, to a data set as well as discuss their computational aspects and error bounds.
- Be able to explain the concept of Chebyshev nodes and use them in practice.
- Be able to explain the concept of splines and be able to interpolate points using splines.
- Be able to explain and implement a variety of techniques to approximate derivatives to functions along with their errors, especially Taylor series based methods.
- Be able to explain and implement gradient descent to minimize functions as well as discuss its real world applications.
- Be able to explain and implement a variety of numerical integration techniques along with the ability to discuss their computational aspects and errors.
- Be able to approximate integrals using composite trapezoid and Simpson’s rule and discuss the errors associated with these approximations.
- Be able to compute and use quadrature-based approximations, especially Gaussian quadrature.
- Be able to discuss and implement a number of numerical linear algebra techniques, e.g. Gaussian elimination, LU decomposition, SVD decompositions, Power/Jacobi Method, etc. as well as discuss computational aspects and associated errors.
- Be able to explain and implement a variety of algorithms to fit models to a given dataset, e.g. least square regression, least square parabolas, power fitting, etc.

- Be able to explain and implement a variety of techniques to approximate solutions to initial-value problems and general differential equations.
- Be able to existence and uniqueness to solutions of differential equations as well as identify when a differential equation has a solution and when it is unique.
- Be able to explain and implement Euler's Method and Runge-Kutta to approximate solutions to initial values problems as well as discuss error and step size issues.

Furthermore, students should. . .

- Improve their ability to engage in mathematical thinking, reasoning, communication, and problem solving.
- Develop a matured perspective on how to approach mathematical problems and concepts.
- Be able to state ways Mathematics applies to real world problems.
- Learn to properly utilize technology to explore, expand upon, or answer mathematical questions.
- Refine their cognitive skills by improving their ability to learn independently, approach problems imaginatively, solve problems methodically, and communicate solutions intelligibly.
- Feel more comfortable writing code/programs, especially in Mathematica, and applying Mathematics to real-world problems.

Course Materials

Textbook. The primary reference for course topics will be lecture notes and related materials provided by the instructor. Student's wanting a consistent text reference should consult with the instructor on an appropriate text reference.

Technology. Student's will be required to having a working copy of Mathematica. However, students will not have to purchase and download the actual program. Wolfram offers monthly access to an online version of Mathematica for a small fee. Students should create an account and get a monthly subscription to get access to Mathematica at <https://www.wolfram.com/mathematica/>. Student's wanting to purchase their own student copy of Mathematica may do so, but it is not required.

Course Policies

Grading Components

Course grades are determined by the following components:

Project Presentation	10%
Project Paper	15%
Quizzes	15%
Mathematica Homework	20%
Written Homework	40%

Grading Scale

The grade scale is the standard St. Thomas Aquinas College grading scale and is as follows:

A	95 – 100	C+	77 – 79
A–	90 – 94	C	73 – 76
B+	87 – 89	C–	70 – 72
B	83 – 86	D	65 – 69
B–	80 – 82	F	0 – 64

Course Format

The course consists of two lectures per week. Each class will begin with a quiz followed by lecture. Lectures will may include some time for individual and group problem solving. However, due to the large number of course topics, students will spend the majority of their time working with problems outside of lecture. Weekly lectures may not cover all aspects of a particular topic, so students will be required to do outside reading. Students are expected to typically spend approximately 3 hours per credit outside of class on course materials. However, some weeks this may be more or less. The primary method of evaluation in the course will be homework.

Attendance and Participation

Attendance. It is essential to your success in this course that you attend each lecture and participate in class discussions. It is also a federal requirement that students who do not attend or stop attending a class be reported at the time of determination by the faculty that the student never attended or stopped attending the class. Therefore, you are expected to attend each lecture and to show up on time. Address any absence(s), anticipated or unanticipated, with the instructor as soon as possible. Should you need to miss a class for any reason, you are to contact the instructor as soon as possible. Certain absences from lecture(s) may be excused, depending on the reason for the absence. Determinations are made on a case-by-case basis at the discretion of the instructor. The student should discuss the issue with the instructor as soon as possible; however, to excuse an absence, the reason(s) for missing lecture(s) must be documentable and presented, if requested.

If you miss a lecture, you are responsible for any material covered, any work assigned, any course changes made, etc. during the class. Do not assume or expect the instructor to provide you with anything, particularly lecture notes, from the class(es) missed. *Four or more unexcused absences from lectures could result in receiving an 'F' in the course.* Furthermore, excessive lateness will also count as an absence. If you are dismissed from lecture due to problems during the lecture, e.g.

disruptive behavior or unauthorized cell phone use, then this dismissal will be recorded as an absence for the lecture. If you cannot attend a class due to a mandated quarantine, inform your instructor immediately so that arrangements can be made. In this case, the student may be required to participate in lectures virtually and submit assignments online.

Participation. Students are expected to participate in the course—both inside and outside the classroom. Inside the classroom, this means attending class, paying attention, taking notes, asking and answering questions when appropriate, etc. However, course participation does not begin and end at the classroom door. Students are expected to review course material and complete course assignments. Typically, students can expect to spend approximately 3 hours per credit outside of class working for the course—although some weeks this could be more or less. Students are encouraged to break into groups throughout the semester. Group meetings should focus on discussing course material, working on appropriate course assignments, and generally support each other through the course.

Quizzes

There will be a quiz *every* class. Quizzes are meant to be short and simple. These quizzes serve more as a method of gauging whether you are keeping up with the material. It is important that if you are late that you obtain a copy of the quiz immediately. Quiz solutions will often be discussed following the quiz. Because quiz solutions will often be discussed in class, no make-up quizzes will be given, even in the case of an emergency. Unless otherwise instructed, there are no calculators, computational devices, notes, or outside assistance of any kind allowed on quizzes.

Homework

The only way to learn Mathematics is to do Mathematics! Therefore, there will be weekly homework assignments. It is essential for students to complete all of the assignments for the course. Working on homework is the best way of engaging with course concepts and gauging one's mastery of the material. Moreover, homework is an essential portion of the course grade. Assignments should be started as soon as possible. Do not delay working through homework; it is easier to keep up than it is to catch up. Students may request extensions on homework assignments. Requests for extensions should be submitted to the instructor in a timely fashion—do not delay! However, do not simply assume that you will be able to receive extra time on an assignment and plan your schedule carefully. Any extensions, due dates, and grade penalties for late assignments will be determined by the instructor on a student-by-student basis.

Often, written homework will be paired with a corresponding Mathematica homework. These homeworks will focus on the actual, practical implementation of course concepts. Student's are not expected to know much programming and little background will be assumed. However, as with all courses of this 'type', there is a learning curve to these programatic homeworks. It is natural to feel slightly overwhelmed. But do not allow yourself to become completely overwhelmed—ask for help! Students unfamiliar with programming should expect to spend a bit of time 'getting a feel' for how to use Mathematica. However, if you spend a sufficient amount of time without making progress on a problem, ask your instructor for assistance! Do not wait to ask for help.

You are encouraged to work with others on homeworks. Mathematics is a social activity! Work with others on assignments to help engage with course topics, see different perspectives, ask questions, and have others look over your work. However, do not simply use others to do your assignments. You should also not allow other students to use you to complete their assignments nor should you share entire computer code verbatim. Of course, using online solutions is a violation of the St. Thomas Aquinas College academic integrity policies. If you are unsure of whether a particular resource is appropriate to use on an assignment, consult with your instructor first.

Project

There will be a project and paper in this course. These are ‘paired.’ The project will consist of examining more advanced aspects of topics seen in the course, general topics that were not covered in the course, or a specific application and implementation of numerical analysis techniques to a ‘real world’ problem. Students may choose a topic that fits their interest and students may even choose the same topic, with permission. However, projects are to be completed independently. Before choosing a topic, you must confirm your selection with your instructor.

Once a topic is selected, you will write a 3–5 page paper (the paper should *not* be under 3 pages and likely should not be more than 5) on the topic. The paper should motivate why one would care about the topic. Then the paper should motivate the underlying mathematics and derive any results required, balancing detail with good exposition. The paper should then address applications of the algorithm to mathematical problems, including at least one ‘real world’ problem. Students having trouble finding or constructing examples should ask their instructor for help. Finally, the paper should conclude with what a reader might want to investigate next. The paper should be typeset as a single spaced paper with one-inch margins and size 11 font. With permission, some mathematical ‘typesetting’ may be hand-written into the document. Do not procrastinate in working on the project. For topic ideas, consult with your instructor. More details and grading scales will be released later in the semester.

There will also be a presentation in the course. The presentation is based on the paper topic that a student selects. These presentations will occur during the last week of classes. These presentations should be 10–15 minutes. They should *not* be less than 8 minutes nor should they be longer than 15 minutes. The presentation should motivate the topic that was covered in their paper—including the general motivation for applications and the general theory. It should also include at least one explicit example of the topic, e.g. algorithms, approximations, etc. along with a discussion of its applications. The presentation should also demonstrate a computer implementation of the topic at least once. The presentation can be made in any format, e.g. slides or board work. Think of the presentation as a ‘mini lecture’ on the topic to their fellow classmates. The presentation should be clear and engage the audience. Your fellow classmates should be able to clearly summarize your topic after your presentation. The best presentations are well thought out and practiced. So do not procrastinate in starting to work on the presentations! More details and grading scales will be released later in the semester.

Mathematics Help

Be proactive about your success in the course! If you need help, there are many resources available to help you. Your first primary contact for help is the instructor. If you are struggling, attend office hours or send an email. The instructors office hours for this semester can be found below:

Mon.	1:30 p.m. – 2:30 p.m.
Tues.	1:30 p.m. – 2:30 p.m.
Wed.	1:30 p.m. – 2:30 p.m.
Thurs.	1:30 p.m. – 2:30 p.m.
Fri.	11:00 a.m. – 2:00 p.m.

Do not wait to bring issues, course related or otherwise, to the attention of the instructor. If you cannot attend office hours, send an email to the instructor to try to make other arrangements. There are also a number of resources available to you at St. Thomas Aquinas College: Center for Student Success, Academic Recovery Program, Writing Center, etc. Students looking for extra mathematics help should consult with the Academic Services Office in Spellman 106, via email at academicservices@stac.edu, or on the web at <https://www.stac.edu/academics/academic-services>. The Center for Student Success website is <https://www.stac.edu/academics/academic-services/center-student-success> and can be found at Spellman 111 or contacted at 845.398.4090.

Respect Policy

Learning requires a healthy academic environment. A key component to this is respecting everyone's time—especially giving everyone time to fail, ask questions, and learn. Therefore, everyone should abide by the following respect policies:

The instructor will respect student's time:

- They will come prepared to help you understand the course material and prepare students for quizzes/exams.
- They will listen to student feedback on how to best help them succeed.
- They will return assignments, respond to emails, and give feedback in a timely fashion.
- They will be patient during the student learning process and will treat all students fairly.

Students will respect the instructor's time:

- They will be on time to class. Moreover, they will come prepared and pay attention during class.
- They will ask for help and communicate with the instructor in a timely fashion.
- They will keep track of assignments—completing them on time and to the best of their ability.
- They will read and follow course policies.

Students will respect each other's time:

- They will not be disruptive in class. If you need to call or text someone, take it outside of the classroom.
- They will work with each other to find solutions and understand course material. However, they will not simply solve problems.
- They will allow each other to make mistakes, ask questions, and participate in the learning process.
- They will use respectful language when speaking to or about one another.

COVID Discussion Policy

At the time of writing, there have been over 72.9 million cases of COVID-19 in the United States with over 876,063 deaths; moreover, there have been over 362 million cases with 5.6 million deaths worldwide. It is an understatement to say that these are trying times not just for students, including their friends and family, but for our broader community. While many of us use humor to cope with difficult situations, we are often able to do so without great offense because we can choose our words and our actions to fit an audience with which we are familiar—be it friends or family.

However, this luxury may not be available to us in the classroom. You will likely not know all your classmates and their circumstances. It is not unlikely that at least one of your classmates in at least one of your classes has lost an acquaintance, friend, or family member to COVID-19. Worse yet, because of social distancing, they may not have been able to properly mourn them. Even if a classmate has not lost someone, they or someone in their life may be experiencing financial hardships or other crises due to COVID-19.

All students are expected to respect and protect each other by abiding by the college's vaccination and mask policies. But protecting the health of others is the minimum that one can do during a pandemic. We need to go beyond basic physical health and support our community's mental health. By enrolling in this course, you agree to refrain from making jokes or other trivialization of the COVID-19 pandemic while participating in the course, both online and in-person.

Email Policy

All email communication in this course should be done using your @stac.edu email account. Similarly, any digital course access and file submissions should be made using your @stac.edu email account. Abiding by federal guidelines, emails coming from a non-STAC email may not receive a response. Emails should be properly written: contain appropriate subject line, possess an opening and closing address, be understandable and contain appropriate language, be grammatically correct, have appropriate font style and size, etc. Emails which do not follow these guidelines may not receive a response.

Electronic Device Policy

Students are expected to complete the course without the use of calculators or other computational devices on assignments, quizzes, exams, etc., unless otherwise instructed. Any unauthorized use of such devices are considered a violation of the academic integrity policies. During the course, <http://www.wolframalpha.com/>, <https://www.symbolab.com/>, and Mathematica will be used to demonstrate concepts give students an opportunity to be able to check work. However, these should only be used as instructed, and never during a quiz or exam. All electronic devices should be turned off and put away during class unless otherwise instructed or given specific permission. Use of such devices can result in dismissal from class.

Mental Health and Counseling Services

If at any point during the semester, you feel overwhelmed with your class work, feel thoughts of depression/suicide, experience sexual assault/rape, experience problems with substance abuse or relationship abuse, or have any other struggles with physical/mental health, **please seek help!** The Counseling & Psychological Services (CAPS) at St. Thomas Aquinas College is a resource offering assistance with any issue you might have. There is **never** any shame in seeking help. If you or someone you know is struggling with any of these issues, **speak out!** The CAPS website can be found at <https://www.stac.edu/student-life/counseling-psychological-services>. CAPS is located in the upper level of the Romano Student Alumni Center and can be contacted at 845.398.4065. If you or someone you know is having issues with gender or sexual identity issues, CAPS is also there to create a safe space for those with marginalized genders and sexualities or those who might be struggling with these issues. Know that my office is a safe space and should you prefer any gender specific pronoun/name, please be sure to make me aware! Students may also make use of the College Health & Wellness Services located in the McNelis Commons residence life complex, Apartment 2B which can also be contacted at stachealth@stac.edu or 845.398.4242, as well as the Campus Ministry and Volunteer Services, directed by Daniel Cummings, located in the Romano Student Alumni Center and can be contacted at dcumming@stac.edu or 845.398.4092.

Faith/Tradition Observances Policy

The instructor recognizes the diversity of faiths and traditions represented in the campus community. Students should have the right to observe religious holy days according to their faith and traditions. Accordingly, students may notify their instructor, no later than the end of the second week of classes, of any classes that they will be missing due to religious or traditional observances. Students following this guideline will be excused from these classes. Under this policy, students should have an opportunity to make up any examination, study, or work missed due to these observances or have an equitable and appropriate substitution made. All policy and procedural decisions are made at the discretion of the instructor on a student-by-student basis.

Use of Student Work

In compliance with the federal Family Educational Rights and Privacy Act (FERPA), registration in this class is understood as permission for assignments prepared for this class to be used anonymously in the future for educational purposes.

Course Materials Policy

All course materials (defined to include, but not limited to, course handouts, video/audio lectures, assignments, quizzes, exams, etc.) are the intellectual property of the instructor or St. Thomas Aquinas College, unless the copyright is already explicitly held by some other individual, group, or other entity. Therefore, course materials are protected by United States copyright law, see Title 17 USC. Students in this course are permitted to download some course materials for personal use.

However, students are not permitted to (in print, digitally, or otherwise) share, distribute, sell, or publish course materials, either in part or in whole, without the instructor's explicit written and signed permission along with a personal usage code. Unauthorized reproduction or distribution of course materials is a violation of intellectual property law, and is a violation of the student code of conduct. The instructor, or agent acting on behalf of the instructor with written and signed permission, also reserves the right to delete or disable any link to any course materials. In enrolling in the course, the student agrees to abide by this course materials policy in perpetuity.

Syllabus Policy

The instructor reserves the right to revise, including substantially revise, the course syllabus at any time—with or without notification. By enrolling in this course, students agree to all the policies found in the syllabus. Wherever applicable, students also agree to follow syllabus policies in perpetuity, e.g. students may not provide unauthorized assistance, materials, etc. to students enrolled in future versions of this course.

Tips for Success

- Be proactive about your success in the course.
- Do not procrastinate! Begin your assignments and studying early!
- Attend every lecture.
- Address issues immediately. Ask questions during class, recitation, office hours, etc.
- Form a study group! Working together will help you and others better understand the course material as you can work through different difficulties and offer each other clarifications on concepts.
- Do problems! Reading through your notes is not enough. Seek out new problems and work through them carefully. When you are done, check your answer. If you are wrong, examine carefully what misunderstanding occurred and how to avoid it in the future. If you were correct, examine if there was a faster way, check to see if your solution 'flowed' and was easy to read, and think over what concepts/computations were used and what 'type' of problem was the exercise.

Important Dates

- 02/04: Academic Add/Drop Deadline
- 04/01: Mid-semester
- 04/14: Academic Withdrawal Deadline
- 05/13: Last day of classes/exams

College Policies

Academic Integrity

Academic integrity is a commitment to honesty, trust, fairness, respect, and responsibility within an academic community. An academic community of integrity advances the quest for truth and knowledge by requiring intellectual and personal honesty in learning, teaching, research, and service. Honesty begins with oneself and extends to others. Such a community also fosters a climate of mutual trust, encourages the free exchange of ideas, and enables all to reach their highest potential.

A college community of integrity upholds personal accountability and shared responsibility, and ensures fairness in all academic interactions of students, faculty, and administrators. While we recognize the participatory and collaborative nature of the learning process, faculty and students alike must show respect for the work of others by adhering to the clear standards, practices, and procedures contained in the policy described below.

Academic integrity is essential to St. Thomas Aquinas College's mission to educate in an atmosphere of mutual understanding, concern, cooperation, and respect. All members of the College community are expected to possess and embrace academic integrity.

Academic Dishonesty

Academic dishonesty is defined as any behavior that violates the principles outlined above. St. Thomas Aquinas College strictly prohibits academic dishonesty. Any violation of academic integrity policies that constitutes academic dishonesty will be subject to harsh penalties, ranging up to and including dismissal from the College.

For all Academic Integrity violations, faculty must file a Student Conduct Academic Dishonesty Report, which will be shared with the Dean of the appropriate School, the Provost, and the student. The student will also have to file a Student Academic Integrity Violation Report. Please view the full policy and the associated forms at <https://www.stac.edu/academics/academic-integrity-policy>.

Electronic Use Policy

Faculty members at St. Thomas Aquinas College have the discretion to regulate the use of electronic devices in their classes, and students should not use such devices without the expressed permission

of the professor. This policy covers cell phones, tablets, laptop computers, or any other device the use of which might constitute a distraction to the professor or to the other students in the class, as determined by the professor. Students with documented disabilities should discuss the use of laptops and/or other electronic devices with their professor at the beginning of the semester.

When a professor designates a time during which electronic devices may be used, they are only to be used at the discretion of the faculty member and in accordance with the mission of the college. Professors may develop specific and reasonable penalties to deal with violations of these general policies. For more extreme cases of classroom disruption, refer to the College's Disruptive Student Policy.

Please note that a browser lockdown system may be implemented in order to prevent cheating during assessments such as exams and quizzes. Faculty are expected to confirm that these systems will work with students' laptops before requiring their use.

Recording of Lectures: Class meetings that include course content or identifiable student information are protected by the Family Education Rights and Privacy Act (FERPA), found at <https://www2.ed.gov/policy/gen/guid/fpco/ferpa/index.html>. At times throughout the semester, the faculty member may record their lecture. It is a best practice for faculty to notify participants that their session is going to be recorded. This recording **CANNOT** be shared with anyone who is not enrolled in this specific course section.

Students cannot personally record class sessions and then share them outside of the course, although they can maintain them for personal use.

Academic Accommodations for Students with Disabilities Statement

St. Thomas Aquinas College values diverse types of learners and is committed to ensuring that each student is afforded equal access to participate in all learning experiences. If you have a learning difference or a disability—including a mental health, medical, or physical impairment—that would hinder your access to learning in this class, please contact Disability Services. They will confidentially explain the accommodation request process and the type of documentation that may be needed to determine your eligibility for reasonable accommodations. To learn more about academic accommodations for students with disabilities, please contact Anne Schlinck, Director—Disability Services, at aschlinck@stac.edu or call/text 845.398.4087. Disability Services is located in Spellman Hall, Room 109.

If you've already been granted academic accommodations at St. Thomas Aquinas College, you have the right to receive the academic accommodations that are listed on your Letter of Accommodation. Please understand that it is your responsibility as a student registered with Disability Services to provide your Letter of Accommodation to your instructor if you wish to use your accommodations in this course. If you will need to use your testing accommodations, please be sure to review the Disability Services Testing Accommodation Policies—Academic Year 2021–2022 found at [Disability Services Testing Accommodation Policies](#).

Gender- or Sex-Based Misconduct Policy

Students should be aware that faculty members are required to report certain information to the STAC's Title IX Coordinator. If you inform your instructor about, or that person witnesses, gender- or sex-based misconduct, which includes sexual harassment, sexual assault, intimate partner or domestic violence, stalking, or any gender- or sex-based discrimination, the faculty member will keep the information as private as possible, but must bring it to the attention of STAC's Title IX Coordinator.

Students should also be aware that disclosing such experiences in course assignments does NOT put the College on notice and will NOT begin the process of STAC providing assistance or response to those experiences. If you would like to talk to the Title IX Coordinator directly, you can contact Ms. Maria Coupe at mcoupe@stac.edu or call 845.398.4044. Additionally, you also may report incidents or complaints to campus security by calling 845.398.4080. You can find more information at <http://www.stac.edu/titleix>.

Please remember that instances of gender- and sex-based misconduct that occur in virtual/online environments are covered by STAC's Title IX, Student Code of Conduct, and Faculty/Employee Conduct policies.

If you would like to report a private concern to a confidential counseling resource who is not required to initiate a Title IX report, you may contact the following people on a confidential basis:

Ms. Yanara Reda, MSN, RN
Director, Health Services
845.398.4242
yreda@stac.edu

Dr. Lou Muggeo
Director, Counseling &
Psychological Services
845.398.4174
lmuggeo@stac.edu

Dr. Alexa Gaydos
Licensed Clinical Psychologist,
Counseling & Psychological Services
agaydos@stac.edu

Elysse Sellers, LCSW
Licensed Clinical Social Worker,
Counseling & Psychological Services
esellers@stac.edu

The College also has an affiliation with the following organization, which will provide virtual office hours to STAC students weekly in addition to its other web-based programming:

Center for Safety and Change
<http://centerforsafetyandchange.org>
9 Johnsons Lane, New City, NY 10956
845.634.3344

Classroom Health and Safety Protocols

The health and safety of students, faculty, and staff on our campus is our top priority. In response to the current COVID-19 pandemic, the STAC community will be working together to support compliance with recommended health and safety standards to optimize the learning experience while minimizing health risks.

1. **Follow quarantine and isolation guidelines.** If you feel ill, recently tested positive for COVID-19, or have come into contact with someone who has tested positive for COVID-19, do not come to campus or leave your residence hall until you have been cleared to do so by STAC Health Services (stachealth@stac.edu). It is important that you always contact STAC Health Services in any of these circumstances and follow the quarantine and isolation instructions given. **STAC Telehealth** can be used outside of normal business hours. Please also let your professor know if you cannot attend class.
2. **Wear face masks.** All members of the STAC community, regardless of vaccination status, are currently required to wear face masks while in public spaces, including classrooms, hallways, the library, and any other shared spaces. Your mask should cover your mouth and nose, and should not be removed while in class for any reason. Please be aware that this policy may change according to CDC guidance and local health and safety conditions.
3. **Sit in the same seat every class.** For contact tracing purposes, students will need to sit in the same seat every class.
4. **Maintain physical distancing where possible.** All students, faculty, and staff should maintain 3–6 feet of physical distance where possible.
5. **Minimize shared equipment.** Individuals should avoid sharing equipment where possible. However, if equipment does need to be shared, please wipe it down with provided disinfecting wipes in between users and maintain physical distancing as much as possible.
6. **Do not eat or drink in the classroom.** Individuals should avoid eating and drinking in classroom spaces, unless they have a documented accommodation.
7. **Disinfect your classroom space.** Students and faculty are encouraged to disinfect areas within their workspaces by cleaning these at the beginning and end of each class. This includes desk tops, seats, and equipment used during class. Disinfectant supplies will be provided.
8. **Practice good hand hygiene.** Individuals should wash their hands with soap and water for at least 20 seconds as often as possible or use personal hand sanitizers. Hand sanitizer stations are available throughout the campus.
9. **Respect each other.** Show concern for each other's health and safety, and remember that this is a stressful time for everyone.

Failure to comply with these health and safety protocols will be handled according to the College's Disruptive Student Policy.

Diversity and Inclusivity Statement

St. Thomas Aquinas College is committed to creating an inclusive environment. Our community actively seeks the inclusion and full participation of individuals from groups that have historically experienced discrimination and prejudice. We are committed to a climate of mutual respect and inclusion, one in which diversity is a source of pride rather than a source of division. We encourage all persons—students, faculty, and staff alike—to reflect on their own experiences to explore the ways in which others' experiences can and do differ; the goal is to use this reflection to learn about different values, cultures, and ways of thinking. Ultimately, a just and equitable society will be

easier to realize if we do not exclude those who are different from us and instead practice empathy and inclusivity.

To that end, if you experience or are aware of bias, mistreatment, or discrimination based on a person's (or your own) membership in a historically under-privileged or marginalized group, please contact one of the following individuals to share your concerns:

Samantha Bazile

Director of Admissions &
Chief Diversity Officer
845.398.4104
sbazile@stac.edu

Carolyn Fraker, Ph.D.

Assistant Professor of Sociology
845.398.4141
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Faculty reserve the right to provide open and honest readings and discussions in their classes about personal and institutional biases and prejudices and other topics that may cause discomfort to some.

More detailed information about the College's expectations and policies related to these matters can be found in the Student Handbook, specifically in the Student Code of Conduct, section D. Harassment and Abuse, the Anti-Harassment Policy, and Rules and Regulations for Maintenance of Order.

Attendance and COVID Policy

Attendance will be recorded every class and students must sit in the same seat every class.

The following students must contact Health Services and their faculty members as soon as possible:

- Those who have tested positive for COVID-19 or are exhibiting COVID-19 related symptoms.
- Those who have been instructed to quarantine because of close contact with someone who has tested positive for COVID-19.
- Those who have just returned from travel internationally or to a high risk state.

If a student cannot attend classes for any of the above reasons, they should:

1. Communicate this change with their instructor(s) via email. Contact instructors as soon as possible, preferably within 24 hours.
2. Keep up with coursework and participate in class activities as much as possible. Students are responsible for completing any work that they might miss due to illness, including assignments, quizzes, tests, and exams.

3. Reach out to the instructor if illness will require late submission or modifications of assignments; work with the instructor to reschedule exams and other critical academic activities before they are due.

Course Schedule

The following is a *tentative* schedule for the course and is subject to change.

Date	Topic(s)	Date	Topic(s)
02/01	Introduction & Motivation	03/24	Numerical Integration
02/03	Floating Point Numbers, Error	03/29	Numerical Integration
02/08	Conditioning, Big O, Stability	03/31	Numerical Integration
02/10	Root Finding	04/05	ODEs
02/15	Root Finding	04/07	ODEs
02/17	Root Finding	04/12	ODEs
02/22	Interpolation	04/14	ODEs
02/24	Interpolation	04/19	Numerical Linear Algebra
03/01	Interpolation	04/21	Numerical Linear Algebra
03/03	Interpolation	04/26	Numerical Linear Algebra
03/08	Numerical Differentiation	04/28	Numerical Linear Algebra
03/10	Numerical Differentiation	05/03	Numerical Linear Algebra
03/15	Spring Break	05/05	Numerical Linear Algebra
03/17	Spring Break	05/10	Selected Topics
03/22	Gradient Descent	05/12	Project Presentations