

Course Information

Meeting Time: This course is delivered face-to-face and meets at the Governor's School. Meeting times are listed below.

- Period 1: MTThF 7:10-7:55 AM, W 7:10-7:50 AM
- Period 7: MTThF 1:00-1:45 PM, W 1:10-1:50 PM

Credit Hours: (3 credits per course) Students are required to have a graphing calculator for this course. The TI-83 or TI-83 Plus is recommended. Prerequisite(s): Algebra 2

Course Description: This is a two semester modern pre-calculus sequence.

Pre-Calculus I: The general purpose of this one-semester course is to prepare students for a course in statistics or applied calculus sequence by providing them with the necessary competencies in algebra and functions. Precalculus I can also be applied in conjunction with Precalculus II in preparation for a course in calculus with analytic geometry. Lecture 3 hours per week. THIS IS AN APPROVED UCGS/PASSPORT COURSE.

Pre-Calculus II: The general purpose of this one-semester course, in conjunction with Precalculus I, is to prepare students for the skills and level of rigor needed for successful study in a sequence of courses in calculus with analytic geometry. Lecture 3 hours per week. THIS IS AN APPROVED UCGS/PASSPORT COURSE.

Intended Audience: Students intending to pursue an undergraduate degree in engineering, mathematics, statistics, computer science, or physical sciences.

Instructor Information

Name: Rimma Feygelson

Email: rimma.feygelson@nhrec.org

Office Hours: 2:35-3:00 PM

Office Location: A70 or via Zoom

Text(s) and Materials

Title: [Pre-Calculus Mathematics for Calculus](#)

Authors: Stewart

Publisher: Cengage

Edition: 7th

Required or Recommended: Require

Course Materials: You do NOT have to purchase the textbook! You'll occasionally need a calculator in this course. I recommend a graphing calculator, but a scientific calculator will suffice.

Course Attendance Policy: Since this is a face-to-face class, attendance is measured in the traditional way: by attending class. Regular attendance is expected.

Calendar of Course Activities: A calendar of course activities is available through Canvas. Note that the calendar is a living document and is subject to change as the class progresses.

Instructor Email Response Policy: Email from students will be returned by the instructor within 24 hours during weekdays and within 48 hours on weekends.

Communication Policies: Students are encouraged to communicate with their instructors via Canvas. When communicating outside of Canvas by email, students must use their GSST e-mail account when contacting their instructor or interacting with classmates. When communicating with instructors outside of Canvas, students should include the course and section number in text of the message. Students are responsible for checking their Canvas inbox and their GSST/VCCS e-mail account regularly, daily at a minimum.

Course Policies

- Homework assignments will be assigned regularly. Check your course calendar.
- Quizzes will be paper and pencil based. There will be a minimum of 1 quiz per unit.
- There will be three tests per quarter (only two in the fourth quarter). There will be no retests. Students are NOT allowed to use calculators on exams.
- Labs are designed to provide hands-on activities and explorations of applications of differential equations.

Grading/Evaluation Policy: Your final course grade is determined as the weighted average of the following:

Category	Weight
Homework	10%
Lab	15%
Quizzes	30%
Tests	45%

The following grade average scale will be used to determine your final grade:

Percent	90-100%	80-89%	70-79%	60-69%	Below 60%
Letter Grade	A	B	C	D	F

Semester Grade - Quarter 1 (50%) + Quarter 2 (50%)

Year Grade = Semester 1 (50%) + Semester 2 (50%)

[Grade Change Appeals Process](#)

Late Work Policy: All assignments are to be turned in on time. Homework that is late loses 10% per day. Late assignments outside of the homework category will be handled by the instructor's discretion.

Make-Up/Missed Test Policy: Students are expected to take tests in class, on the specified date (exceptions made for students with accommodation letters). If there are mitigating circumstances, contact me BEFORE the test if possible and provide documentation. In general, no make-up tests will be given (an exception may be made if the circumstances warrant it and you notify me before or on the test date, and you are able to take the test within two days of the scheduled date). No make-up test will be given to any student who does not show up on the test date and has not contacted the instructor. With the instructor permission make-ups be given after the tests have been returned.

Required Time-on-Task: This course is very intensive; 5 hours (outside of lecture) per week to study are required for successful completion of this course . Plan your semester so that you have enough time to be successful and time to get help when needed.

GSST Policies: Students should refer to the [Student Handbook](#) for the full list and explanation of GSST policies related to students.

Accessibility Accommodations: GSST operates in compliance with the Americans with Disabilities Act.

Test Replacement Policy: At the end of the quarter, students may opt to take the semester assessment to replace their lowest test grade.

Student Learning Outcomes Pre-Calculus I

Upon completing the course, the student will be able to:

- Relations and Functions
 - Distinguish between relations and functions.
 - Evaluate functions both numerically and algebraically.
 - Determine the domain and range of functions in general, including root and rational functions.
 - Perform arithmetic operations on functions, including the composition of functions and the difference quotient.
 - Identify and graph linear, absolute value, quadratic, cubic, and square root functions and their transformations.
 - Determine and verify inverses of one-to-one functions.
- Polynomial and Rational Functions
 - Determine the general and standard forms of quadratic functions.
 - Use formula and completing the square methods to determine the standard form of a quadratic function.
 - Identify intercepts, vertex, and orientation of the parabola and use these to graph quadratic functions.
 - Identify zeros (real-valued roots) and complex roots, and determine end behavior of higher order polynomials and graph the polynomial, and graph.
 - Determine if a function demonstrates even or odd symmetry.
 - Use the Fundamental Theorem of Algebra, Rational Root test, and Linear Factorization Theorem to factor polynomials and determine the zeros over the complex numbers.
 - Identify intercepts, end behavior, and asymptotes of rational functions, and graph.
 - Solve polynomial and rational inequalities.
 - Interpret the algebraic and graphical meaning of equality of functions ($f(x) = g(x)$) and inequality of functions ($f(x) > g(x)$)
- Exponential and Logarithmic Functions
 - Identify and graph exponential and logarithmic functions and their transformations.
 - Use properties of logarithms to simplify and expand logarithmic expressions.
 - Convert between exponential and logarithmic forms and demonstrate an understanding of the relationship between the two forms.
 - Solve exponential and logarithmic equations using one-to-one and inverse properties.
 - Solve application problems involving exponential and logarithmic functions.
- Systems of Equations
 - Solve three variable linear systems of equations using the Gaussian elimination method.

Student Learning Outcomes Pre-Calculus II

Upon completing the course, the student will be able to:

- Trigonometric Functions

- Identify angles in standard form in both degree and radian format and convert from one to the other.
- Find the arc length.
- Find the value of trigonometric functions of common angles without a calculator using the unit circle and right triangle trigonometry.
- Use reference angles to evaluate trig functions.
- Find the value of trigonometric functions of angles using a calculator.
- Use fundamental trigonometric identities to simplify trigonometric expressions.
- Graph the six trigonometric functions using the amplitude, period, phase and vertical shifts.
- Use trig functions to model applications in the life and natural sciences.
- **Analytic Trigonometry**
 - Use the fundamental, quotient, Pythagorean, co-function, and even/odd identities to verify trigonometric identities.
 - Use the sum and difference, double angle, half-angle formulas to evaluate the exact values of trigonometric expressions.
 - Determine exact values of expressions, including composite expressions, involving inverse trigonometric functions.
 - Solve trigonometric equations over restricted and non-restricted domains.
- **Applications of Trigonometry**
 - Solve right triangles and applications involving right triangles.
 - Use the Law of Sines and Cosines to solve oblique triangles and applications.
- **Conics**
 - Identify the conic sections of the form: $Ax^2 + By^2 + Dx + Ey + F = 0$.
 - Write the equations of circles, parabolas, ellipses, and hyperbolas in standard form centered both at the origin and not at the origin.
 - Identify essential characteristics unique to each conic.
 - Graph equations in conic sections, centered both at the origin and not at the origin.
 - Solve applications involving conic sections.
- **Sequences and Series (Optional unit at the discretion of the department, not required for transfer.)**
 - Identify the terms of geometric sequences.
 - Find a particular term of geometric sequence.
 - Determine the formula for the n th term of geometric sequences.
 - Find the sum of first n terms of finite geometric series.
 - Find the sum of infinite geometric series.
 - Introduce arithmetic concepts as time allows.

Inclement Weather Policy: In the event of inclement weather, the GSST provides delay and cancellation information to local radio and television stations. If a student is still experiencing difficulties in transmission of Canvas assignments due to power or other outages, they should contact the instructor as soon as it is safe to do so via email, or call the instructor by phone, to resolve questions and concerns in a timely manner.

Technology Policy: Students in all modalities (face-to-face, hybrid, and online) will need access to a desktop or laptop computer and an internet connection suitable for using Canvas and other online resources necessary for success in their courses. Students who experience unexpected outages or other technology issues should contact their instructor as soon as possible. If email is unavailable, students should use other communication methods, such as the instructor's phone number.

College Math Expectations: In order for you to be successful in your mathematics courses, the faculty of the mathematics department has developed the following common expectations of all students in mathematics Courses.

College mathematics is different from high-school mathematics. College mathematics courses cover at least triple the material in the same time frame as do high school mathematics courses. A certain amount of material has to be covered during each class and over the semester. To maintain this pace, you need to take responsibility for your own learning. This includes, but is not limited to:

- Having all required materials (e.g. textbook, a calculator required in the course syllabus, software course registration code, an access to a reliable computer with internet available at GSST or at home) the first day of class.
- Reading the syllabus/Calendar/Assignments documents completely.
- Logging in on CANVAS at least twice a week to check for Announcements, Assignment updates, and your grades, and checking TNCC email daily.
- Reading the textbook section to be covered before coming to class, viewing any video lecture if available, listening to the lecture and taking notes, reviewing notes provided on CANVAS for each section.
- Assign for study at least 5 hours outside of class per week for each week.
- There is no substitute for continued and ongoing studying and doing homework problems. If you do not do all the assigned homework problems, your chances of success in any math class are very low.

It is your responsibility to keep your homework up-to-date and monitor your success. If you are having difficulty with the course material, then you need to take action right away – do not wait until you have lost all hope! There are several options to get assistance:

- Talk to your instructor during office hours.
- Form a study group with your classmates - this is the best thing you can do for yourself whether you are struggling or not.
- Visit Brainfuse online using myVPCC website to access tutors. Tutor information and hours are available at <http://libguides.tncc.edu/tutoring>
- No Generative AI Usage Permitted. For the duration of this course, the use of Generative AI in assignments is strictly prohibited.
- Assignments are opportunities for personal growth, critical thinking, and applying your acquired knowledge. Your individual effort and creativity are essential in demonstrating your understanding of the course material. Dependence on AI undermines these objectives and compromises the integrity of the learning process. We appreciate your commitment to academic honesty and dedication to upholding this course's principles by refraining from using Generative AI in your assignments.

Academic Honesty: All students are required to take responsibility for upholding everyone's honesty in the classroom. All students will sign a copy of the GSST Honor Pledge during the first week of school.

***The Pledge:** "I pledge to support the Governor's School for Science and Technology (GSST) Code for Academic Work. I will refrain from any dishonesty or deception, such as cheating or plagiarizing, which are honor code violations, on any and all academic work. I am further aware that as a member of the academic community, I should report any suspected violations to an instructor."*

No form of cheating, copying, or plagiarizing will be tolerated. Homework and class assignments are independent work and should not be copied from any source, including AI sources, such as ChatGPT. Students may share lab data collected by members of their group, however lab reports and all other written assignments are to be done independently unless the assignment clearly states that it is group work. The level of collaboration allowed between students will be indicated on each assignment. In addition, students will read and sign the Appropriate Collaboration form to clarify types of assistance that are encouraged vs. not tolerated in this course.

In the case of copying, there will be **no determination of who copied from whom; all students involved will receive no credit for the assignment and the students involved may be referred to the GSST administration for disciplinary action. Detection of AI generated responses will result in no credit for the assignment and a parent conference will be scheduled.** Regarding tests and quizzes, if students share information during an assessment or look at notes, internet sources, or other materials during the assessment, all students involved will receive no credit for the assessment and the students will be referred to the school's administration for disciplinary action.

To avoid plagiarism, all research sources must be cited properly to give the author(s) credit. In addition, **such information will be summarized or paraphrased, never just copied from its source.**

The goal of the Governor's School is not only to help students to gain acceptance to top colleges and access learning and career opportunities, but to thrive and excel once they have gained that entry. To this end, we take the academic integrity of each of our students very seriously.

For Dual Enrollment Courses: You will have the choice to dual-enroll for this course. The decision to dual-enroll in a course requires careful consideration. You have options, as you can see from the [DE module](#) on Faculty Advising Canvas course. You may wish to contact your top choice colleges to ask what the impact of taking a dual-enrollment course might be for your goals, particularly if you do not

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Pre-Calculus I/II
MTH 161/162

perform to your expectations in the course. Please be aware that you are generating a permanent college transcript with all the courses for which you are dual-enrolled. You can also use the dual-enrollment student guide from [Transfer Virginia](#) to help you determine the potential impact.

If you choose to dual-enroll, you must monitor your course grade. If you find you are not earning grades you want to have on your permanent college transcript, you may consider dropping the dual-enrollment portion prior to the Add/Drop date for the term of the course, or to withdraw from the dual-enrollment portion prior to the Withdrawal date. If you choose to withdraw from dual enrollment for the class, you will still earn high school credit and can plan to be well-prepared for the class in college. Dropping will have no record on your transcript, while withdrawal will leave a note on your college transcript indicating you withdrew, but no grade will be recorded on your college transcript. You can request a decline or withdrawal form from me or from Mrs. Yee.

No matter what you choose to do, I will respect your wishes. I want to work with you to support your learning, but I cannot learn the information for you; you will have to invest effort in the course in order to succeed. This may require you to learn new learning strategies that you haven't used in the past. I will do my utmost to support your personal learning in the class and encourage you to pursue your goals.

Students must keep in mind that enrollment in a college class, including dual-enrollment while in high school, entails consequences that can be significant and permanent including, but not limited to, the following:

- Final course grades on college transcripts become a permanent part of a student's college record.
- Graduate-level education programs may consider DE grades equally with traditional college courses in calculating GPA for admission (E.g. graduate, medical, veterinary schools).
- Grades of D and F and course withdrawals can negatively affect scholarship and financial aid requests.
- Once the withdrawal date has passed, students cannot withdraw from a class, except in extraordinary circumstances such as a medical emergency.

Important Dual Enrollment Dates

Fall 2024 Semester (MTH 263)

- Friday, September 27, 2024: Last day to register for college credit
- Thursday, October 3, 2024: Last day to drop dual enrollment and class will not appear on the student's college transcript
- Monday, December 2, 2024: Last day to drop dual enrollment and class will appear as a "W" on the student's college transcript
- Friday, January 31, 2025: Grades posted to SIS

Spring 2025 Semester (MTH 264)

- Friday, February 7, 2025: Last day to register for college credit
- Friday, February 14, 2025: Last day to drop dual enrollment and class will not appear on the student's college transcript
- Wednesday, April 16, 2025: Last day to drop dual enrollment and class will appear as a "W" on the student's college transcript
- Friday, June 13, 2025: Grades posted to SIS