



GSSM Online Courses Course Catalog 2024-2025

About GSSM Online Courses

The SC Governor's School for Science and Mathematics (GSSM) offers **live virtual** courses **tuition-free** to students across the state of SC. Students in these classes take one or more GSSM classes from their home or home high school. During class time, students participate in engaging classroom discussions, small group conversations, and problem-solving time with peers from across the state. Classes are taught via Zoom by GSSM instructors. Textbooks, lab kits, and other instructional materials are provided by GSSM free-of-charge to students.

Students/parents who are interested in any of these classes or have questions should email Dr. Nicole Kroeger (kroeger@governors.school).

Prerequisites: All of the GSSM Online Courses require students to have completed Honors or AP PreCalculus with an 80 or higher.

2024-2025 Course Schedule

	Fall 2024	Spring 2025
9:00am-9:53am	<u>Dual Enrolled General Physics I & Lab</u> Monday, Tuesday, Wednesday, Friday	<u>Dual Enrolled General Physics II & Lab</u> Monday, Tuesday, Wednesday, Friday
10:00am-10:53am	<u>Dual Enrolled Calculus 2</u> Monday, Tuesday*, Wednesday, Friday *Tuesday class is in the spring only	
11:00am-11:53am	<u>Abstract Algebra (Honors)</u> Monday, Wednesday, Friday	<u>Linear Algebra (Honors)</u> Monday, Wednesday, Friday
1:15pm-2:10pm	<u>Fundamentals of Electrical Engineering (Honors)</u> Monday, Wednesday, Thursday	<u>Introduction to Civil Engineering 1 (Honors)</u> Monday, Wednesday, Thursday
2:00pm-2:53pm	<u>Dual Enrolled Calculus 1</u> Monday, Tuesday*, Wednesday, Thursday *Tuesday class is in the spring only	

Course Descriptions

Math Courses

Dual Enrolled Calculus 1

Course Description: Topics include limits and continuity, the derivative, differentiation of algebraic and trigonometric functions, applications of the derivative, indeterminate forms, basic integration techniques, and the Fundamental Theorem of Calculus.

Additional Course Information: A year-long course where a college level calculus class is spread out over the course of the year—the fall semester receives honors credit for an elective course and the dual enrolled credit is earned in the spring semester class. The spring semester class is dual enrolled with Coker University MAT 231.

Dual Enrolled Calculus 2

Prerequisite: Completion of AP Calculus AB or DE Calculus 1 with an 80 or higher. To continue with the spring semester of the class, students need to complete the fall semester with an 80 or higher.

Course Description: Topics include techniques of integration, applications of integrations, improper integrals, infinite series, and polar and parametric equations.

Additional Course Information: A year-long course where a college level calculus class is spread out over the course of the year—the fall semester receives honors credit for an elective course and the dual enrolled credit is earned in the spring semester class. The spring semester class is dual enrolled with Coker University MAT 232.

Abstract Algebra: An Introduction to Mathematical Cryptography - Honors; FALL Semester

Corequisite: Students enrolled in this class must have completed or be concurrently enrolled in AP Calculus AB or an equivalent class.

Course Description: Have you ever wondered how your smartphone protects you from hackers? Why the world's first computer was invented? What secret saved an island in WWII? We'll answer these and many other questions.

We'll learn to harness mathematics to solve difficult puzzles and also explore the history and mathematics behind code making and breaking. Through class discussions, problem solving, and group activities, students will learn a variety of encryption schemes ranging from ancient Roman codes to modern public key encryption used to secure digital communications online. Students will learn abstract algebra including sets, groups, and equivalence relations and use these techniques to discuss modern cryptosystems and identify weaknesses that allow secret messages to be read without a key.

Linear Algebra - Honors; SPRING Semester

Corequisite: Students enrolled in this class must have completed or be concurrently enrolled in AP Calculus AB or an equivalent class.

Course Description: This course includes solving systems by matrix methods, matrix operations, matrix algebra, determinants, Cramer's rule, vector algebra, the dot and cross products used in projections and geometric applications, lines and planes in 3-space, vector spaces, linear independence, linear transformations, eigenvalues, and eigenvectors.

Physics Courses

Dual Enrolled General Physics I & Lab (PHY 201/201L)-FALL Semester

Course Description: An algebra-based introduction to classical mechanics and dynamics. Topics include 1D and 2D kinematics, vector notation, Newton's laws of motion, circular motion, gravity, work, energy, and linear momentum. Students will develop analytical thinking, reasoning, and scientific critical thinking skills through in-class activities, weekly experiments, and regular homework assignments. Includes a weekly lab that can be done from home. Students will be provided with a lab kit.

Additional Course Information: This course is dual enrolled with Coker University's PHY 201 & 201L.

Dual Enrolled General Physics II & Lab (PHY 202/202L)-SPRING Semester

Course Description: An algebra-based continuation of Newtonian mechanics and introduction to waves, electricity, and magnetism. Topics include rotational motion, statics, vibrations, mechanical waves, sound, electrostatics, DC circuits, magnetism, and optics. Students will develop analytical thinking, reasoning, and scientific critical thinking skills through in-class activities, weekly experiments, and regular homework assignments. Includes a weekly lab.

Additional Course Information: This course is dual enrolled with Coker University's PHY 202 & 202L.

Engineering Electives

Fundamentals of Electrical Engineering- Honors; FALL semester

Course Description: This course is designed to provide a foundational understanding of electrical engineering, introducing students to the study and practice of the field. Students explore the wide variety of disciplines associated with electrical engineering, with focus on topics important to electrical, electronic, and computer engineering. Through activities, laboratory modules, and design projects, students learn first-hand how engineers use mathematics and science to solve problems. Topics include circuits, electronics, microcontrollers, and signals.

Introduction to Civil Engineering 1- Honors; SPRING semester

Course Description: This course provides fundamental concepts in each of the disciplines of Civil Engineering including Architecture and City Planning, Environmental, Geotechnical, Water Resources and Harbor, Coastal and Ocean, Structural, Surveying, Remote Sensing and GIS, Transportation, and Construction Engineering. Critical thinking skills are fostered.