STEM FOUNDATIONS

GSSM'S ONLINE DIPLOMA PROGRAM

COURSE CATALOG, 2022-2023

Classes in the STEM Foundations Program are taught online synchronously via Zoom. Students in this program take 5 courses each semester together with a seminar series. In their junior year, each student takes biology, chemistry, English, history, and math. In their senior year, students take computer science, engineering, English, math, and physics. For the lab sciences, students will be provided with materials for safe labs that will be completed at home. In addition to the typical semester courses, students participate in an Interim course each year. All students will participate in a mentored research & inquiry experience during their time in the program. Details about the courses, Interim, and mentored research & inquiry experience are provided below.

Junior Year Courses

The following table gives a summary of the courses that students will take each semester, full course descriptions are provided below.

	Fall	Spring
Biology	BIO 111 Core Principles of Cell and Molecular Biology & Lab (Dual Enrolled)	BIO 110/110L Core Principles of Organismal Biology & Lab (Dual Enrolled)
Chemistry	CHE 100 & 101/101L General Chemistry I (Honors in Fall; Dual Enrolled in Spring)	
English	ENG 111 English Composition and Rhetoric I (Dual Enrolled)	ENG 112 English Composition and Rhetoric II (Dual Enrolled)
History	HIS 101 AP US History -or- ECON 211 Principles of Economics: Microeconomic Concepts (Dual Enrolled)	POL 201 American Gov and Politics (Dual Enrolled)
Math	MAT 111/112 Pre-Calculus (Honors) -or- MAT 230/231 Calculus I (Honors in Fall; Dual Enrolled in Spring)	

Senior Year Courses

	Fall	Spring
Computer Science	CS 190 Programming Fundamentals (Dual Enrolled)	CS 226 Programming and Algorithmic Design (Dual Enrolled)
Capstone		RES 412 Research & Inquiry Capstone (Honors)
Engineering	ENGIN 101 Pre-Engineering I (Honors)	
English	ENG 205 The Major Forms of Literature (Dual Enrolled)	ENG 201 Creative Writing (Dual Enrolled)

Math	MAT 230/231 Calculus I (Honors in Fall; Dual Enrolled in Spring) -or- MAT 229/232 Calculus II (Honors in Fall; Dual Enrolled in Spring)	
Physics	PHY 163/163L General Physics I and Lab (Dual Enrolled)	PHY 164/164L General Physics II and Lab (Dual Enrolled)

Interim: Interim occurs in January after winter break and before spring semester starts. During interim, students engage with a single creative elective course for 2.5 weeks. Students in the GSSM STEM Foundations Program take this class together. Depending on the comfort level of all students, interim could involve optional travel around the state of SC.

Mentored Research & Inquiry Experience: All students participate in a mentored research & inquiry experience. For most STEM Foundations students, their experience will take in the RES 412 class in the spring semester senior year. STEM Foundations students will also have the option to request to do a summer research project. Students who request a summer research project will be accommodated as space allows and will complete a six-week mentored research project. Students doing a summer research will also complete a research & inquiry portfolio and present their work at the GSSM Annual Research Colloquium. GSSM facilitates the placement of students into research & inquiry experiences. Research & inquiry experiences may be completed in person or remotely depending on student preferences and availability. Both RES 401 and RES 412 fulfill the Research & Inquiry requirement.

Seminar Series

Students are required to enroll in the following courses in our seminar series. These classes meet once a week. These classes provide students with support in their transition to GSSM as well as preparation for the college application process. In order to receive their GSSM diploma, students are expected to attend and pass each of the seminar courses.

	Fall	Spring
Junior Seminars	LLS 102: Academic Transition	LLS 103: College Planning I
		LLS 107: Preparing for Research (4 weeks; asynchronous)
Senior Seminar	LLS 104: College Planning II	

COURSE DESCRIPTIONS

COMPUTER SCIENCE COURSES

CS 190 Dual Enrolled with FMU

Programming Fundamentals (FALL Semester)
Introduction to problem-solving and algorithm development techniques based on the program development process. Study of basic computer concepts and computer systems; elementary data types and data structures; input and output processing; control structures; modular program design; elementary file processing; algorithm design and evaluation. Students will apply these ideas by analyzing specifications, designing solutions, and implementing programs based on this analysis and design.

CS 226 — Programming and Algorithmic Design (SPRING Semester)
Dual Enrolled with FMU
Introduction to problem-solving with algorithm and program development. Includes problem analysis, algorithm representation and verification, scalar and structured data types, file input and output, techniques for program design, coding, testing, and documentation and basic sorting, and searching algorithms. *PREREQ: CS190*

ENGLISH COURSES

ENG 111 — English Composition and Rhetoric I (FALL Semester)
Dual Enrolled with Coker
English 111 is the first half of the required two-course sequence in composition. This course introduces students to 3 hours of the modes of writing, with an emphasis on exposition and argumentation. The course also reviews basic processes college credit of composing: inventing, planning, drafting, and revising. Students will learn how to develop ideas in a clear and logical manner, communicate their ideas coherently to their intended audience, and write in a correct and effective way. In addition to writing several in-class essays and short papers, students will learn the techniques and conventions of academic research. They will participate in at least one session on library and information technology. Fiction and nonfiction readings will provide discussion material and starting points for their writing.

ENG 112 — English Composition and Rhetoric II (SPRING Semester)
Dual Enrolled with Coker
English 112 is the second half of the required two-course sequence in composition. This course advances 3 hours of students' critical reading and writing skills by exploring how writing creates knowledge and shapes meaning; college credit therefore, student writing will involve both print and digital formats. Throughout the semester students will define terms, conduct research, evaluate and synthesize evidence in order to create clearly written, sustained arguments. Readings for each section of ENG 112 will explore a specific and unifying theme or question, and may include readings in fiction and non-fiction. *PREREQ: ENG111*

ENG 205 — The Major Forms of Literature (FMU ENG 250 Introduction to Literature; FALL Semester)
Dual Enrolled with FMU
English 205 is the first half of the Senior English two-semester course sequence in literature. This course introduces a variety of fiction, poetry, and drama; helps students to appreciate, interpret, and analyze imaginative literature while understanding how literature relates to the human condition and the social and natural worlds around us. May be supplemented with multimedia and readings from other disciplines. *PREREQ: ENG112*

ENG 201 — Creative Writing (FMU ENG 252 Reading and Writing Fiction, Poetry, and Drama; SPRING Semester)
Dual Enrolled with FMU
English 201 is the second half of the Senior English two-semester course sequence in literature. This course examines literature through critical analyses of texts in conjunction with beginning-level fictional, poetic, or dramatic sketches. *PREREQ: ENG205*

HISTORY COURSES

HIS 101 — AP United States History
AP
This full-year advanced placement course traces the major events, trends, and themes of American life from the colonial era to the present. Outside reading assignments, including primary sources, enhance the understanding of America's past while showing its connection to our present time. The fall semester includes a study of the Constitution and the origins and functions of the federal government.

ECON 211 — Principles of Economics: Microeconomic Concepts (FALL Semester)
Dual Enrolled with FMU
Microeconomics gives students a thorough understanding of the principles of economics that apply to the functions of individual decision makers, both consumers and producers, within the economic system. It places primary emphasis on the nature and functions of product markets and includes the study of factor markets and of the role of government in promoting greater efficiency and equity in the economy

POL 201
Dual Enrolled with Coker

American Government and Politics (SPRING Semester)
A study of the American political institutions with special attention given to the reciprocal relationships between the individual, social and political spheres.

MATH COURSES

MAT 111 & 112
Honors

Concepts for Calculus Parts 1 & 2, Pre-Calculus
A two-semester sequence that is designed to prepare students for the study of calculus. First semester topics include linear functions, polynomial functions, rational functions, exponential functions, logarithmic functions, function composition and transformations. Spring semester topics include trigonometry, parametric and polar equations, and partial fractions.

MAT 230 & 231
Honors & Dual Enrolled with Coker

Calculus I (Fall Semester is Prep for DE Calculus I, Spring semester is Calculus I)
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. The fall semester of this class meets 3 hours per week and is an honors course. The spring semester meets 4 hours per week and receives dual enrolled credit for Calculus 1. ***PREREQ: Pre-Calculus***

MAT 229 & 232
Honors & Dual Enrolled with Coker

Calculus II (Fall Semester is Prep for DE Calculus II, Spring semester is Calculus II)
Topics include techniques of integration, applications of integrations, improper integrals, infinite series, and polar and parametric equations. The fall semester of this class meets 3 hours per week and is an honors course. The spring semester meets 4 hours per week and receives dual enrolled credit for Calculus 1. ***PREREQ: Calculus I or AP Calculus AB***

RESEARCH & INQUIRY COURSES

RES 401
Honors

Mentored Summer Research & Inquiry (SUMMER/FALL – 0.5 unit)
Students will conduct a six-week, research & inquiry project under the guidance of a research mentor with experience & expertise in their field. Students are responsible for meeting any requirements of the project site (e.g., documentation, participating in a poster presentation, etc.). The mentor and project must be approved or assigned by GSSM. Students prepare their GSSM Research & Inquiry Portfolio prior to the start of the Fall Semester. During the Fall semester, students work at a seminar level with a GSSM Research Advisor to complete preparation to present at the GSSM Annual Research Colloquium. This presentation is required to receive credit. The course does not count toward course load for the Fall Semester of the senior year. ***PREREQ: Preparing for Research Experiences Seminar in Spring of Junior Year***

RES 412
Honors

Research & Inquiry Capstone (SPRING)
Students will work in collaborative teams under the mentorship of the instructor to develop, test, and apply solutions to address challenges in on-going interdisciplinary projects. Students will work with their instructor to develop hypotheses, design tests, evaluate progress, troubleshoot difficulties, analyze data, and contextualize their discoveries within their field. Students will create and present a portfolio representing the challenge addressed, their methods, and their findings. This course fulfills the Research and Inquiry requirement at GSSM. ***PREREQ: Preparing for Research Experiences Seminar in Spring of Junior Year***

SCIENCE COURSES

BIO 110 & 110L
Dual

Core Principles of Organismal Biology and Lab (SPRING Semester)
A study of the diversity of organisms, their phylogeny, characteristic architectural features, physiological processes, and human importance. The nature of scientific inquiry will be explored through examples of how biologists acquire and continuously modify the understanding of organismal biology. BIO 111L is a

Enrolled with Coker	laboratory based study of organismal biology. This course will emphasize the diversity of organisms and the differences and similarities among organismal lineages.
BIO 111 Dual Enrolled with Coker	Core Principles of Cell and Molecular Biology and Lab (FALL Semester) An in-depth introduction to the principles of cell and molecular biology with emphasis in physiology of the cell, biochemistry, molecular biology and molecular genetics. The fundamental principles of thermodynamics and physical chemistry will be reviewed and their relationships to cell structure and function will be studied. The historical progression of discoveries and the framework of the major concepts of cellular and molecular biology will be discussed. BIO 110L accompanies BIO 110 and is a laboratory-based study of cell and molecular biology.
CHE 100 & 101/101L Honors & Dual Enrolled with Coker	General Chemistry I and Lab (Fall Semester is Prep for DE Chemistry; Spring Semester is General Chemistry I) A course in basic chemical principles. Topics include: periodicity, stoichiometry, chemical and nuclear reaction types, coordination chemistry, atomic and molecular nomenclature, structure, and properties. Additional topics in this course for STEM Foundations students include liquid properties, acid/base chemistry, equilibrium, and kinetics. This course includes a lab component. Development of laboratory and mathematical skills through experiments designed to illustrate chemical concepts. The fall semester of this class will be taught at the honors level and the spring semester will be dual enrolled.
ENGIN 101 Honors	Pre-Engineering I (FALL Semester) This course offers students an introduction to engineering, discussing careers and highlighting South Carolina-based industries. Introduces professional, ethical, and societal issues appropriate to engineering. Various forms of technical communication are emphasized. Provides a solid foundation of skills to solve engineering problems.
PHY 163/163L Dual Enrolled with Coker	General Physics I & Lab (Coker University PHY 201/201L; FALL Semester) 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.
PHY 164/164L Dual Enrolled with Coker	General Physics II & Lab (Coker University PHY 202/202L; SPRING Semester) 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. ***PREREQ: 163/163L***

SEMINAR DESCRIPTIONS

LLS 102	Academic Transition (FALL semester; junior year) This seminar is designed to assist students with the academic transition to GSSM. Students will be introduced to the resources and opportunities available to them at GSSM and will learn how to develop the skills and mindset necessary to thrive in the fast-paced and challenging GSSM academic environment.
LLS 103	College Planning I (SPRING semester; junior year) The College Planning Seminar I course is designed to teach students how to navigate both the college search and college application processes. The course will emphasize the importance of self-awareness and reflection in the process. Students will also learn how to identify college/universities that match what they

are looking to gain in a collegiate experience. The tools and resources shared in the course will allow students to have a thoughtful and guided college search experience.

LLS 104 College Planning Seminar II (FALL Semester; senior year)
The College Planning Seminar II course continues the college application process for the fall of senior year. Students will confirm their college application list, complete college applications and essays, and submit requests to have official documents sent to colleges. Completion of financial aid forms (FAFSA and CSS Profile) will also be covered. This fall seminar focuses on time management skills, organizational skills, submission of college applications and communication with colleges as an applicant. The seminar meets once a week; students may be excused from attending once their applications have been submitted to colleges.

LLS 107 Preparing for Research Experiences (SPRING Semester for four weeks; junior year)
This 4-week seminar series will provide an introduction to skills and concepts central to student research experiences. Students will work with peer-reviewed research papers to learn about scientific process, research narratives, how to read and understand research articles, develop annotated bibliographies, data analysis, basic statistics, and communication.

DUAL-ENROLLMENT AGREEMENT INFORMATION

GSSM has a dual-enrollment agreements with Coker University and Francis Marion University through which our students receive Coker University or Francis Marion University credit for certain courses.

- Dual-enrollment courses are those for which GSSM students simultaneously earn high-school and college credit. College credit for GSSM's dual-enrollment courses is granted by Coker University and Francis Marion University (FMU). Both are accredited by the Southern Association of Colleges and Schools Commission on Colleges (SACSCOC or SACS), which is the recognized regional accrediting body in the southeast.

- GSSM faculty teach our dual-enrollment courses in the same way they teach all our residential or virtual classes. GSSM faculty grade all work in the courses and assign students their grades. The courses are approved by Coker or FMU as meeting the same learning objectives as the Coker or FMU courses for which they receive credit.

- Dual-enrolled courses taken while enrolled at GSSM receive the same GPA credit as AP or IB courses, higher than courses designated as “honors.” One 3-hour dual-enrolled course (taken in one semester) earns one unit of high school graduation credit.

- As with credits from most SACS-accredited colleges, credits from Coker and FMU are transferrable to other similarly accredited institutions. In addition, most schools within South Carolina have agreements in place that allow for the transferring of college credits. For instance, credits earned through Coker or FMU can be transferred to, among other schools, the University of South Carolina and Clemson University. GSSM students who receive a "C" or higher (≥ 70/100) in their dual-enrollment courses are usually able to transfer their Coker University and FMU credits to other colleges and universities in South Carolina (and, in many cases, to other institutions across the Southeast). Letter grades below a "C" (≤ 70/100) are almost always ineligible for credit transfer, though they will most likely remain on the student's transcript when it is sent to the institution of matriculation. Colleges and universities set their own transfer policies so students should confer with the college about its specific transfer credit policies.

- Coker and FMU will issue a transcript showing the college credit earned at Coker or FMU for each dual-enrollment class a few weeks after final grades are submitted. Official transcripts may be requested for a small fee.

    - Follow the process here (https://www.coker.edu/offices-services/academic-records/) for Coker University transcripts. Note: Scroll down to How can I order a copy of my transcript? Follow the process here (https://www.fmarion.edu/registrar/transcript/) for Francis Marion transcripts. Note: FMU will also send students an official transcript each year.

Students should also be aware that grades earned in dual-enrolled courses are used in calculating eligibility for the LIFE Scholarship. See https://www.che.sc.gov/CHE_Docs/studentservices/life/FAQ-LIFE-3_2021.pdf for FAQ about the LIFE Scholarship.

The tables below specify the course equivalencies and credits granted by Coker University and Francis Marion University. Please see the student handbook for more information on dual enrollment.

University Course	Credit Hours	STEM Foundations Course
Francis Marion University ECON 204	3	ECON 211 Principles of Economics: Microeconomic Concepts
Coker University BIO 110/110L	4	BIO 110/110L Core Principles of Organismal Biology and Lab
Coker University BIO 111	4	BIO 111 Core Principles of Cell and Molecular Biology and Lab
Coker University CHE 101/101L	4	CHE 101/101L General Chemistry 1 & Lab
Francis Marion University CS 190	3	CS 190 Programming Fundamentals
Francis Marion University CS 226	3	CS 226 Programming and Algorithmic Design
Coker University ENG 111	3	ENG 111 English Composition and Rhetoric I
Coker University ENG 112	3	ENG 112 English Composition and Rhetoric II
Francis Marion University ENG 250	3	ENG 205 Major Forms of Literature
Francis Marion University ENG 252	3	ENG 201 Creative Writing
Coker University MAT 231	4	MAT 231 Calculus 1
Coker University MAT 232	4	MAT 232 Calculus 2
Coker University PHY 201/201L	4	PHY 163/163L General Physics I & Lab
Coker University PHY 202/202L	4	PHY 164/164L General Physics II & Lab

Coker University POL 201	3	POL 201 American Government & Politics