STEM

FELLOWSHIP CHRISTIAN SCHOOL

STEM is an acronym that stands for Science, Technology, Engineering, and Math. It has become a widely-recognized term that reflects a nationwide academic initiative to enable the U.S. to remain the economic and technological leader in the global marketplace of the 21st century. A strong STEM program is foundational to our mission of "partnering to inspire academic curiosity, impeccable character, and Christian leadership grounded in Biblical truth." Over the last several decades, STEM related products have changed the very fabric of our social and economic lives. Managing technological change is now a required skill for an educated citizenry. FCS considers it a privilege to help train up a new generation of STEM educated people who live with purpose and lead with intent.

STEM Enrollment is available for all students but is best for rising 9th and 10th grade students. Students accepted into the track will engage in a demanding program of study focusing on STEM related competencies and hands-on experience.

We are blessed at Fellowship Christian School to have students with varying interests, talents, and goals. It is our desire that the STEM track be accessible for students who show an interest/aptitude in the STEM disciplines. STEM students may enroll in one of the following five pathways or begin a Core program of study.

- Engineering Pathway
- Computer Science Pathway
- Architectural/Industrial Design Pathway

The ‘Core’ program provides them with the necessary math and science foundational skills, making it possible for them to specialize in any of the pathways at a later date.

Each Pathway provides a structured course of study centered on that particular STEM discipline. Math and science courses are accelerated to support specialized courses as early as possible. This coursework is supplemented by internal and external internships providing students with hands-on experience. At least one year of computer science is required for all pathways as computational problem solving has become a foundational skill for any STEM field. Although the state of Georgia recognizes computer programming as a foreign language, many universities are still looking for students who demonstrate an international vision and interest. Therefore, at least two years of a spoken language is also required.

All STEM courses are inherently hands-on. Course delivery formats include independent study, instructor led lectures and labs, and project-based courses. Independent study enables a student to pursue a course under the supervision of a faculty member at their own pace. Our desire is that STEM students remain actively engaged in learning by doing rather than sitting. As such, project-based learning is a hallmark of our STEM program.

Regardless of the Pathway or program plan, students who are accepted into the STEM diploma track are joining a special group of like-minded individuals who have a passion for all things STEM. STEM students form an identity and bond, engage in extracurricular activities, and develop strong friendships. The STEM faculty invests in each student providing counsel, support, and encouragement. It is our goal that each STEM graduate will be well prepared for college and develop a love for learning that will last a lifetime.

The STEM program at FCS will be characterized by continuous change and improvement as associated with the technologies it represents. Our goal is to glorify God through our pursuit of excellence in STEM. God instructs us in Genesis 1 to be stewards of His creation_to subdue and rule over the earth. In the 21st century and beyond, the STEM disciplines will drive this effort.

Go Paladins! Go STEM!

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Which Pathway is right for me?

The STEM Track at Fellowship Christian School offers five different Pathways to accommodate the different interests, talents, and goals of our students. Each Pathway has the distinction of earning a STEM diploma upon graduation. The STEM diploma provides each student with the recognition of a unique accomplishment. It provides a rewarding and permanent record of the rigor and breath of study that was accomplished in high school.

Each Pathway requires a combination of on-level, honors, dual enrollment, and AP courses. Students are always encouraged to take the highest-level course available. The mathematical requirements for each Pathway differ slightly and should be taken into consideration when choosing a Pathway. Students who love math or find it easy, should always seek to take advantage of all the advanced math opportunities here at Fellowship. Regardless of Pathway, each STEM student will be well prepared for college. Learning how to learn is the hallmark of the STEM program. With that, the opportunities are endless.

The descriptions below provide general information for each Pathway. They are followed by course plans which outline the graduation requirements. Students may always begin with the STEM Core program and then declare a Pathway prior to their junior year.

Engineering Pathway – Engineers are the backbone of our modern society. From automobiles to airplanes, computers to smartphones, engineers are behind all of the multitude of devices that make life possible in the 21st century. By the same token, the discipline of engineering has grown by leaps and bounds, and now includes as many as a dozen sub-disciplines. An engineer's desire to figure things out is a close cousin to curiosity, but more focused on the how than the what. Future engineers are seen in the kid who takes apart his dad's watch to see how it works or the teenager who can fix mom's kitchen blender.

Computer Science Pathway – Employment of computer and information technology occupations is projected to grow 12 percent for the next few decades, faster than the average for all occupations. These occupations are expected to add about 488,500 new jobs, from about 3.9 million jobs to about 4.4 million jobs in 2024, in part due to a greater emphasis on cloud computing, the collection and storage of big data, more everyday items becoming connected to the Internet in what is commonly referred to as the “Internet of things,” and the continued demand for mobile computing. Students in this Pathway typically like computers. They may build them, modify/fix them, or are immersed in video gaming or web design. They typically are the ones who solve home internet connectivity issues or help family members update their computer or get rid of a virus. They may be interested in pursuing Computer Science, Information Technology, Software Engineering, or a programming field.

Architectural/Industrial Design Pathway – Architects are responsible for creating and designing the structures we use every day, from the smallest of homes to the tallest of skyscrapers. Industrial designers shape our world, from games and electronic devices, to bicycles, boats, planes, and cars. Both disciplines require a unique blend of artistic, mathematical, and personal skills. They are interested in the human interface, and seek a design harmony between physical,

emotional, psychological, safety, and environmental concerns. Students in this Pathway are drawn to math and science while also engaging in artistic pursuits. These students like to create visual art. They also like technology. Perhaps they enjoyed designing things with Lego, cardboard boxes, or other media as a young child. In addition to the normal suite of courses, students in this Pathway will develop a design portfolio and will gain a higher level of proficiency in Computer Aided Design tools.

Pathway Electives Overview
by Pathway

	9th	10th	11th	12th
Computer Science	**Design and Modeling CAD and Prototyping**	**Python**	**AP Computer Science**	**Computer Technology and/or Capstone**
Architecture / Industrial Design	**Design and Modeling CAD and Prototyping**	**Architecture and Industrial Design**	**Engineering Principles**	**Capstone**
Engineering	**Design and Modeling CAD and Prototyping**	**Engineering Principles**	**Engineering Applications**	**Capstone**
Additional Semester Courses		**IT Internship Advanced Arch/ID Aerospace Game Dev.**		

STEM Technologist (Undecided)
Course Plan

		9th	10th	11th	12th
Science		Biology*	Chemistry*	Pathway Dependent	
Technology	S1	Design and Modeling	Python Programming OR Engineering Principles		
	S2	CAD and Prototyping			
Engineering	S1				
	S2				
Math 1*		Geometry	Pre-calculus		
Math 2*		Algebra II			
Bible		9th Grade Bible	10th Grade Bible	11th Grade Bible	12th Grade Bible
English		Introduction to Literature	World Literature	American Literature	British Literature / AP English
Social Studies			World History / AP World History	U.S. History / AP U.S. History	Government and Economics / AP US Government
Foreign Language		Spanish 1	Spanish 2		
Other		PE and Health**			
TOTAL PERIODS		8	7	7	6

* Honors level or above preferred

** Must be taken in summer

Engineering Pathway
Course Plan

		9th		10th	11th	12th
Science		**Biology***		**Chemistry***	**Conceptual OR Honors OR AP* Physics C**	**AP Computer Science A**
Engineering /Technology	**S1**	**Design and Modeling**		**Engineering Principles 1**	**Engineering Applications**	**STEM Capstone:** • Capstone - Independent Design Project OR o Pathway related AP Course o Computer Applications o STEM Lab Assistant o Middle School Robotics Instructor o Pathway related Internship
	S2	**CAD and Prototyping**		**Engineering Principles 2**		
Math 1		**Algebra I OR Geometry OR Algebra II***	**Honors Geometry***	**Pre-calculus**	**AP Calculus AB**	**AP Statistics or AP Calculus BC**
Math 2			**Honors Algebra II***			
Bible		**9th Grade Bible**		**10th Grade Bible**	**11th Grade Bible**	**12th Grade Bible**
English		**Introduction to Literature**		**World Literature**	**American Literature**	**British Literature / AP English**
Social Studies				**World History / AP World History**	**U.S. History / AP U.S. History**	**Government and Economics / AP US Government**
Foreign Language		**Spanish 1**		**Spanish 2**		
Other		**PE and Health*** **			**Python Programming****	
TOTAL PERIODS		**6-7***		**7**	**7**	**6**

* For certain selective schools (e.g GT), completing Algebra II Freshman year is advantageous. In addition, math and science must be Honors and Precalculus completed in order to take AP Physics.

** Python not required for Engineering pathway completion but highly recommended.

*** Must be taken in summer

Computer Science Pathway
Course Plan

		9th	10th	11th	12th
Science*		**Biology**	**Chemistry**	**Conceptual or DE Physics**	**Computer Technology**
Technology	**S1**	**Design and Modeling**	**Python Programming**	**AP Computer Science A**	**STEM Capstone:** ● Capstone - Independent Design Project OR o STEM Lab Assistant o Middle School Robotics Instructor o Pathway related Internship
	S2	**CAD and Prototyping**			
Math*		**Algebra 1 or Geometry**	**Geometry or Algebra 2**	**Algebra 2 or Pre-Calculus**	**Pre-Calculus or Math Elective**
Bible		**9th Grade Bible**	**10th Grade Bible**	**11th Grade Bible**	**12th Grade Bible**
English		**Introduction to Literature**	**World Literature**	**American Literature**	**British Literature / AP English**
Social Studies			**World History / AP World History**	**U.S. History / AP U.S. History**	**Government and Economics / AP US Government**
Language		**Spanish 1**	**Spanish 2**		
Other		**PE and Health**			
TOTAL PERIODS		**7**	**7**	**6**	**6**

*Honors or Dual Enrollment level preferred but not required

** IT Internship might be available for 11th grade depending on schedule and offerings

Architectural/Industrial Design Pathway
Course Plan

		9th	10th	11th	12th
Science*		**Biology**	**Chemistry**	**Physics**	**Python Programming or AP Computer Science**
Technology	**S1**	**Design and Modeling**	**Architectural/Industrial Design**	**Engineering Principles**	**STEM Capstone:** ● Capstone - Independent Design Project OR o STEM Lab Assistant o Middle School Robotics Instructor o Pathway related Internship
	S2	**CAD and Prototyping**	**Advanced CAD for Architecture/Industrial Design**	**Engineering Principles II**	
Math*		**Algebra 1 or Geometry**	**Geometry or Algebra 2**	**Algebra 2 or Pre-Calculus**	**Pre-Calculus or AP Calculus**
Bible		**9th Grade Bible**	**10th Grade Bible**	**11th Grade Bible**	**12th Grade Bible**
English		**Introduction to Literature**	**World Literature**	**American Literature**	**British Literature / AP English**
Social Studies			**World History / AP World History**	**U.S. History / AP U.S. History**	**Government and Economics / AP US Government**
Language		**Spanish 1**	**Spanish 2**		
Other		**PE and Health**			
TOTAL PERIODS		**7**	**7**	**6**	**6**

* Honors or Dual Enrollment level preferred but not required.
** Art elective to help with portfolio.

Frequently Asked Questions

What are the entrance requirements for the STEM diploma track, and how are students selected?

The STEM diploma track is available to rising 9th and 10th grade students enrolled at FCS. Students must complete an online STEM application that will provide us with information about their academic aptitude and overall motivation. The application requires at least two teacher recommendations. A STEM selection committee will then select students based on their potential to complete the program. Conditional acceptance may be granted for those requiring summer work to meet prerequisite requirements.

The high school diploma program does not allow much room for electives. How can my student participate in non-STEM activities or take a study hall?

The STEM diploma track requires 26 - 28 units of instruction depending on Pathway and previous coursework. Students who wish to make room in their schedules for additional courses or study halls may take online or summer classes to satisfy some core requirements. It is expected that courses in math, social studies, computer science, health and PE will be offered during the summer. Summer work will incur an additional cost above the standard tuition.

Is there an additional cost to enroll in the STEM diploma track?

There is no additional tuition cost, however, there is a small annual technology fee of $75. Students may also elect to take summer courses to meet prerequisites and/or soften loads during the regular school year. Registration fees for summer courses are not included in FCS tuition.

What exactly is a STEM pathway?

A STEM pathway is a focused plan of study within a particular STEM field and are designed to support student collegiate goals and interests. FCS offers three pathways:

- Engineering Pathway
- Computer Science Pathway
- Architectural/Industrial Design Pathway

Students may select a particular Pathway upon enrollment or may take a STEM Core program and select a pathway prior to their junior year. Each pathway has a specific course plan for graduation.

What type of facilities are available for STEM?

We are very excited about our STEM facilities at FCS. Our high school building includes several laboratories, including a separate STEM lab and FAB lab. The STEM lab provides students with the space and equipment to pursue hands-on activities in mechanics, electronics, and computer aided design/manufacturing. It also supports various after school activities such as robotics. The FAB lab contains woodworking tools, metalworking tools, and computer controlled rapid prototyping devices. Our students soon learn that if they can dream it, then they can build it.

What are the qualifications of the teachers in STEM?

Our STEM courses are taught by our most experienced math/science teachers and our dedicated STEM staff. All STEM teachers have engineering degrees in their field of study. Our STEM director, Mr. Hal Scripka, has a Master's Degree in Engineering from the University of Texas and an Educational Specialist degree from Liberty University. He has served as an Assistant Professor of Aeronautics at the Air Force Academy and has held positions in IT, school administration, and K-12 education for over 25 years.

How will external internships work?

FCS will partner with local companies to host student interns. Many of these may be with companies of current FCS families. Internships will normally occur in the summer following the junior year or during Winterim of the senior year. Internships are normally unpaid positions in which students gain invaluable work experience. Students will earn 0.5 units of course credit for each 70 clock hours of internship service.

What if my student decides to leave the STEM program after admission?

Students who enter the STEM diploma track may withdraw from the program at any time. It is recognized that some students will decide that STEM may not be for them during the course of the program. There will be no penalty or stigma for withdrawing from the track. These students will likely be ahead in math and science as they rejoin our regular college-prep program.

What STEM programs are available for the elementary and middle school?

In Elementary school, students are exposed to STEM competencies throughout the curriculum. Students in 4th and 5th grade can participate in a Spark and Ignite program which includes an activity based STEM Lab and a school news video production team.

The Middle school offers an Introduction to STEM, and Robotics elective. These electives provide students with hands-on experience in science and engineering. These introductory electives will allow young students to sample various STEM fields while helping them decide if the high school STEM program is right for them. A competitive Vex robotics program is also available for 7th and 8th grade students.

Where can I get more information about STEM at FCS?

Please contact Drew Lawes at drew.lawes@fcspaladins.org for more information. We are excited about our STEM program and if you, or your student, believe that STEM is in your future, please let us know. It's never too early to express your interest in STEM!