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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 with parents to “raise up generations of students who embrace Biblical truth, strive for academic excellence, demonstrate discipline, and exhibit leadership and influence in their homes, churches, and communities.” 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 graduates eager to bring a Biblical worldview to the field.

Applications are now being accepted for the **STEM Diploma Track**. Enrollment is open 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 six pathways or begin a core program of study.

* Engineering Sciences Pathway
* Mathematical Sciences Pathway
* Digital Sciences Pathway
* Life Sciences Pathway
* Physical Sciences Pathway
* Architecture/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.

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 extra-curricular 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!**

 

**Which Pathway is right for me?**

The STEM Track at Fellowship Christian School offers six 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, and AP courses. Students are always encouraged to take the highest level course available. The mathematical requirements for each Pathway differs 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 in their junior year.

**Engineering Sciences 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. All engineers need math skills, so students in this Pathway typically love math. They are mechanically inclined and can visualize basic mechanical processes.

**Mathematical Sciences Pathway** – Because mathematics is the building block for so many interesting career paths, those who master mathematics have significant advantages in the workplace. Mathematics is used extensively in physics, actuarial science, statistics, engineering, operations research, computer science, business and industrial management, economics, finance, chemistry, geology, life sciences, behavioral sciences, and many other fields. By developing a mastery of mathematical tools and reasoning, students can pursue careers over a wide range of fields. Students in this pathway obviously like math. They typically have taken high school level math courses in middle school or seek to take the highest level math courses available. Students will complete seven units of math, three of which will be AP courses.

**Digital Sciences Pathway** – Employment of computer and information technology occupations is projected to grow 12 percent from 2014 to 2024, 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 from 2014 to 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 a viruses. They may be interested in pursuing Computer Science, Information Technology, Software Engineering, or a programming field. Students in this Pathway will be required to earn at least two CompTIA certifications.

**Physical Sciences Pathway –** Physical Science is the study of non-living systems, as opposed to a study of biological sciences or living systems. It consists of physics, chemistry, astronomy and earth science. It also includes the scientific method and experimentation. Students in this pathway like to know why, and may have been very inquisitive at an early age. They are interested in knowing fundamental principles and laws and are drawn to courses in chemistry, physics, earth or environmental science. Additionally, the 21st century is seeing a synthesis between the life and physical sciences. New fields of study in bio-chemistry and bio-physics are being offered at many universities. Many students who pursue a physical science degree in college will continue in graduate school and may enter one of these new and exciting career fields. Students in this pathway are typically preparing themselves for careers as a research scientist, applied engineer, new product developer, or teacher.

**Life Sciences Pathway** – The life sciences comprise the fields of science that involve the scientific study of living organisms – such as microorganisms, plants, animals, and human beings – as well as oceanography and ecology. The life sciences explore the structure, function and evolution of diverse living systems. They addresses some of the most important issues of our time—genetic engineering, stem cell research, obesity, cancer and effects of global warming. Students in this Pathway typically like biology. They may be interested in human or animal health, healthcare, ecology, botany, or genetics. They may have a passion to bring a Biblical world view to the conversation. Additionally, the 21st century is seeing a synthesis between the life and physical sciences. New fields of study in bio-chemistry and bio-physics are being offered at many universities. Many students who pursue a life science degree in college will continue in graduate school and may enter one of these new and exciting career fields. Students in this pathway are typically preparing themselves for careers as a research scientist, applied engineer, new product developer, or teacher.

**Architecture/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, mathematic, 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 Legos, 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 user certifications in Computer Aided Design tools. They will also be encouraged to intern as stage and prop designers within our drama program.

**STEM Core
Course Plan**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **9th** | **10th** | **11th** | **12th** |
| **Science\*** | **Biology**  | **Chemistry** | **Pathway Dependent** |
| **Technology** | **S1** | **Digital Designand Drawing** |  |
| **S2** | **CAD IRapid Prototyping** | **MechanicalSystems** |
| **Engineering** | **S1** |  | **Introduction toMechanical Engineering** |
| **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** |
| **Language** |  | **Introduction to Computational Solutions** | **AP Computer Science or Programming Elective** |  |
| **PE / Heath** | **PE and Health** |  |  |  |
| **TOTAL PERIODS** | **7** | **7** | **7** | **6** |

\* Honors level required

**Engineering Sciences Pathway
Course Plan**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **9th** | **10th** | **11th** | **12th** |
| **Science\*** | **Biology**  | **Chemistry** | **AP Environmental** | **AP Physics C** |
| **Technology** | **S1** | **Digital Designand Drawing** |  |  | **Pathway CapstoneDesignProject** | **Pathway Internship** |
| **S2** | **CAD IRapid Prototyping** | **MechanicalSystems** | **Electrical / Digital Systems** |
| **Engineering** | **S1** |  | **Introduction toMechanical Engineering** | **Introduction toElectrical Engineering** |
| **S2** |  |  |  |
| **Math 1** | **Honors Geometry** | **HonorsPre-calculus** | **AP Calculus AB** | **AP Statistics /****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** |
| **Language** |  | **Introduction to Computational Solutions** | **AP Computer Science or Programming Elective** |  |
| **PE / Heath** | **PE and Health** |  |  |  |
| **TOTAL PERIODS** | **7** | **7** | **7** | **6** |

\* Honors level preferred but not required

**Mathematical Sciences Pathway
Course Plan**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **9th** | **10th** | **11th** | **12th** |
| **Science** | **Biology\*\*** | **Chemistry\*\*** | **Honors Physics** | **AP Physics C** |
| **Technology** | **S1** | **Digital Designand Drawing** |  |  | **Pathway CapstoneDesign Project** | **Pathway Internship** |
| **S2** | **CAD IRapid Prototyping** |  |  |
| **Math 1\*** | **Geometry** | **Pre-calculus** | **AP Calculus AB** | **AP Calculus BC** |
| **Math 2\*** | **Algebra II** |  | **AP Statistics** |  |
| **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** |  | **Introduction to Computational Solutions** | **AP Computer Science or Programming Elective** |  |
| **PE / Heath** | **PE and Health** |  |  |  |
| **TOTAL PERIODS** | **7** | **6** | **7** | **6** |

\* Honors level required
\*\* Honors level preferred but not required

**Digital Sciences Pathway
Course Plan**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **9th** | **10th** | **11th** | **12th** |
| **Science\*** | **Biology** | **Chemistry** | **Conceptual Physics orHonors Physics** | **Computer Science Elective** |
| **Technology** | **S1** | **Digital Designand Drawing** | **CompTIA Certification I** | **CompTIACertification II** | **Pathway CapstoneDesignProject** | **Pathway Internship** |
| **S2** | **CAD IRapid Prototyping** | **Mechanical Systems** | **Electrical / Digital Systems** |
| **Math\*** | **Algebra 1 or Geometry** | **Geometry or Algebra 2** | **Algebra 2 orPre-Calculus** | **Pre-Calculus orMath 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** |  | **Introduction to Computational Solutions** | **AP Computer Science**  |  |
| **PE / Heath** | **PE and Health** |  |  |  |
| **TOTAL PERIODS** | **6** | **7** | **7** | **6** |

\* Honors level preferred but not required

**Life Sciences Pathway
Course Plan**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **9th** | **10th** | **11th** | **12th** |
| **Science 1\*** | **Biology** | **Chemistry** | **Conceptual Physics orHonors Physics** | **AP Biology or AP Chemistry** |
| **Science 2** |  | **Human Anatomy** | **AP Biology or AP Chemistry** | **Pathway CapstoneDesignProject** | **Pathway Internship** |
| **Technology** | **S1** | **Digital Designand Drawing** |  |  |
| **S2** | **CAD IRapid Prototyping** |  |  |
| **Math\*\*** | **Algebra 1 or Geometry** | **Geometry or Algebra 2** | **Algebra 2 orPre-Calculus** | **Pre-Calculus orMath 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** |  | **Introduction to Computational Solutions** | **AP Computer Science or Programming Elective** |  |
| **PE / Heath** | **PE and Health** |  |  |  |
| **TOTAL PERIODS** | **6** | **7** | **7** | **6** |

\* Honors level required
\*\* Honors level preferred but not required

**Physical Sciences Pathway
Course Plan**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | 9th | 10th | 11th | 12th |
| Science 1 | **Biology\*\*** | **Honors Chemistry** | **Honors Physics** | **AP Physics or AP Chemistry** |
| Science 2 | **S1** |  | **Environmental Science** | **Oceanography** |  |
| **S2** |  |  |  |  |
| Technology | **S1** | **Digital Designand Drawing** |  |  | **Pathway CapstoneDesignProject** | **Pathway Internship** |
| **S2** | **CAD IRapid Prototyping** | **MechanicalSystems** | **Electrical / Digital Systems** |
| Math\* | **Geometry** | **Algebra 2**  | **Pre-Calculus** | **AP Calculus AB** |
| 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 |  | **Introduction to Computational Solutions** | **AP Computer Science**  |  |
| PE / Heath | **PE and Health** |  |  |  |
| TOTAL PERIODS | **6** | **7** | **7** | **6** |

\* Honors level required
\*\* Honors level preferred but not required

**Architecture/Industrial Design Pathway
Course Plan**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | 9th | 10th | 11th | 12th |
| Science | **Biology**  | **Chemistry** | **Conceptual Physics or Honors Physics** | **AP Environmental** |
| Fine Arts | **S1** | **Digital Designand Drawing** | **Drawing I** | **AP 2-D or AP3-D** | **Pathway CapstoneDesignProject** | **Pathway Internship** |
| Technology | **S2** | **CAD IRapid Prototyping** | **CAD II** **Architecture** | **CAD III****Product Design** |
| Math\* | **Algebra 1 or Geometry** | **Geometry or Algebra 2** | **Algebra 2 orPre-Calculus** | **Pre-Calculus orAP 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 |  | **Introduction to Computational Solutions** | **AP Computer Science or Programming Elective** |  |
| PE / Heath | **PE and Health** |  |  |  |
| TOTAL PERIODS | **6** | **7** | **7** | **6** |

\* Honors level preferred but not required

**Frequently Asked Questions**

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

The STEM diploma track will be available to rising 9th and 10th grade students enrolled in FCS. Students will complete an online STEM application that will provide us with information about their academic aptitude and overall motivation. The application will include teacher references. 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?**

Depending on the Pathway, the STEM diploma track requires 26 - 27 units of instruction, nearly 7 classes per year. Students who wish to make room in their schedules for additional courses or study halls may take summer classes to satisfy some core requirements. It is expected that online courses in math, 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, STEM students will be required to own a laptop computer. 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 six pathways:

* Engineering Sciences Pathway
* Mathematical Sciences Pathway
* Digital Sciences Pathway
* Life Sciences Pathway
* Physical Sciences Pathway
* Architecture/Industrial Design Pathway

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

**What type of facilities will be available for STEM?**

We are very excited about the new building for FCS. Current plans include several laboratories, including a separate STEM lab and FAB lab. The STEM lab will provide students with the space and equipment to pursue hands-on activities in mechanics, electronics, and computer aided design/manufacturing. It will also support various after school activities such as robotics, rocketry, and a Maker’s club. The FAB lab will contain woodworking tools, metalworking tools, and computer controlled rapid prototyping devices. If you can dream it, then you can build it in this lab.

**What will be the qualifications of the teachers in STEM?**

STEM teachers will consist of our current science/math faculty and dedicated new hires. All STEM teachers will be followers of Jesus Christ, degreed in their field, and certified through our accrediting agencies. Preference will be given to those with industry experience. It is our intent to attract and acquire men and women who love the Lord, love their field, love learning, and love teaching.

**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 the 1st or 2nd semester 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 75 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 prior to the start of any school year. 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 join another track.

**Will STEM programs be available for the elementary and middle school?**

We believe that there are some core STEM competencies that any educated person should achieve. As such, the elementary and middle school will begin to provide STEM related activities and/or electives that will expose students to STEM disciplines throughout their academic experience at FCS. Beginning in August, the middle school will offer STEM electives that will 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. Elementary school students will be exposed to STEM speakers, demonstrations, and hands-on activities to expose them to its different fields of study. The goal will be to create an enthusiasm and approachability to STEM while reinforcing core competencies.

**Where can I get more information about STEM at FCS?**

Please contact Hal Scripka at hal.scripka@fcspaladins.org for more information. We are excited about our new STEM initiative and more details will follow as our planning progresses. 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!