STEM COLLEGIATE EDMONTON
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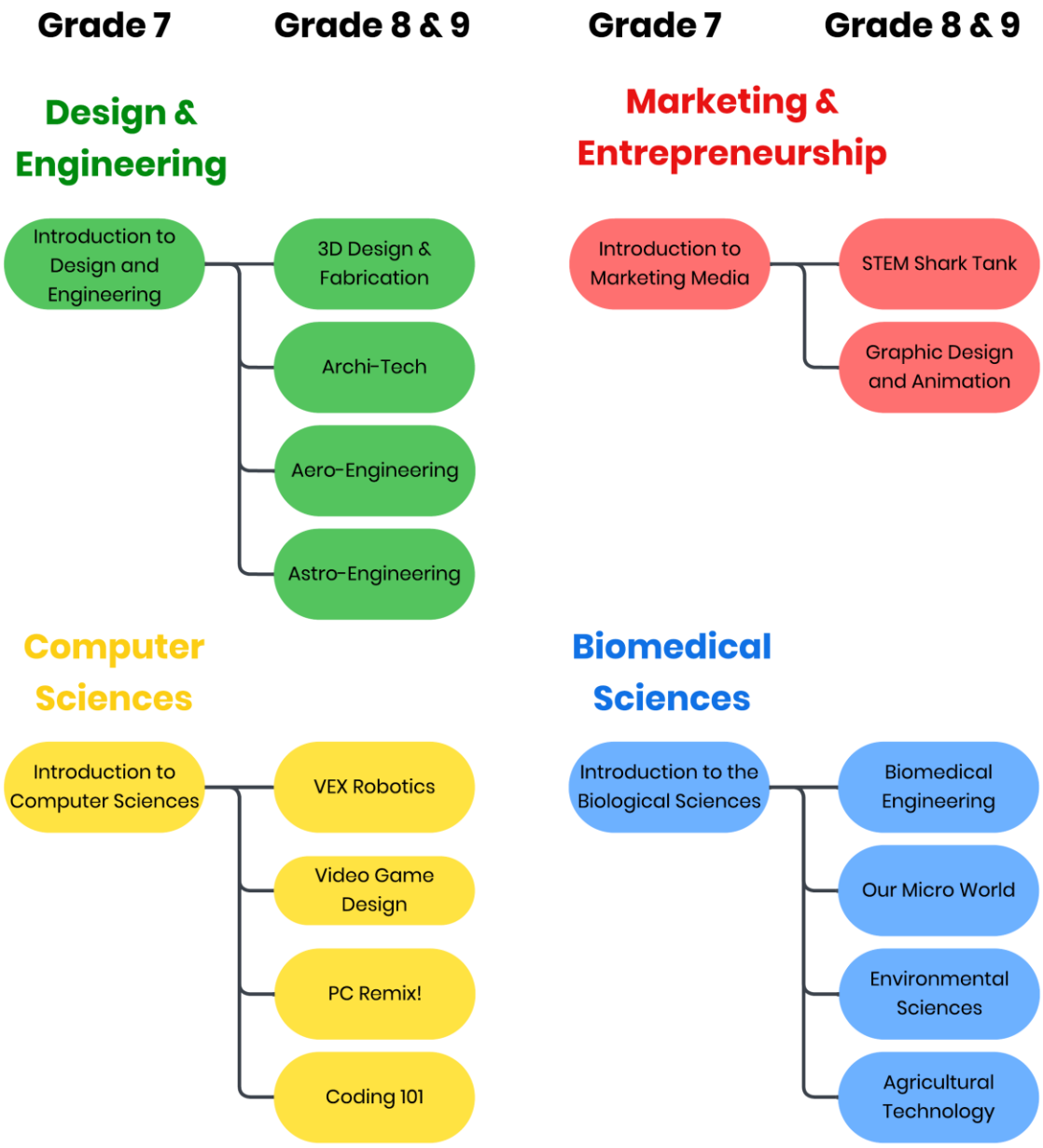
Junior High Options and Descriptions

Course descriptions serve as a guide to help students understand the content of the course. Due to the nature of technological innovations and each teacher's individual skillsets, there may be slight deviations in each course as the term progresses.



Not all courses will be offered each term/year! Course offerings will depend on teacher availability, student enrollment, and the results of student interest surveys.

Grade 7

Grade 7 options are predetermined for all students. The rationale for this is to expose students to each of the key disciplines in their first year at STEM Collegiate. Trying each option strand in their first year allows students to find new passions and better allows them to follow their interests when they select options in Grade 8 and 9.

Introduction to Design and Engineering

"Intro to Design and Engineering" propels students into the heart of the engineering world, blending foundational design principles with hands-on creation. Guided by STEM Design thinking, students will tackle real-world challenges with creativity. Armed with tools from "Makerspace" traditional tools to 3D printers and laser cutters, learners will design, assemble, and refine their visions into tangible creations. The adventure culminates in a CO_2 dragster challenge, where students design and race their own dragsters, showcasing their ingenuity and mastery. Ready, set, engineer!

Introduction to Computer Sciences

"Introduction to Computer Sciences" invites students to the forefront of computer science with an engaging blend of block-based and introductory coding activities, alongside interactive physical computing. Unraveling core programming concepts through intuitive block-based languages, students master sequencing, loops, and conditional logic while tackling fun challenges and building games. Beyond the screen, they dive into physical computing, using sensors and motors to craft interactive devices, animate bots, and engineer contraptions that merge code with the physical world. Join us where code meets creation, and students become architects of their own inventions.

Introduction to Marketing Media

In "Introduction to Marketing Media", students will explore the basics of design while gaining hands on experience with industry relevant programs. Students will learn to craft eye-catching visuals and simple animations that capture the attention of their viewers and communicate their messages effectively. Whether designing logos or experimenting with marketing techniques, this course sets the stage for future success in graphic design and marketing. Unleash your creativity and discover how design shapes the world around us!

Introduction to the Biological Sciences

"Introduction to the Biological Sciences" takes students on an exciting journey through the diverse world of living organisms. Delving into the intricate evolutionary "Tree of Life" through interactive activities and experiments, learners gain a deeper understanding of the natural world, from the tiny world of cells under microscopes to body systems and interactions. Students will not only cultivate an appreciation for the complexity of life but will also be armed with the essential toolkit to make advances in the exciting realm of medical sciences!

Grade 8 & 9

Grade 8s and 9s can select their top choices for options. While they can choose, it is important to note that students will only be able to take each option once during the two years. Students should choose a couple of favourites each year but also try something new!

Design and Engineering Strand

3D Design and Fabrication

Step into the future with 3D Design and Fabrication! Students will dive deeper into the world of Design and 3D creation, starting with real-world sculpting and advancing to digital masterpieces using cutting-edge CAD software and 3D Scanning techniques. They'll transform their complex ideas into reality by designing, crafting, and testing a variety of 3D objects to tackle complex challenges. Turn your imagination into reality with this hands-on course!

Archi-Tech

Transform ideas into architectural marvels with Archi-Tech! Students will dive into building design, from initial visionary sketches to polished final models. They'll unleash their inner architects using CAD tools, 3D printing, and materials like cardboard and foam to bring digital blueprints to life. Archi-Tech is where creativity meets structure, and big dreams become designs. Ready, set, build!

Aero-Engineering

Take to the skies with Aero-Engineering! Explore the fundamentals of flight, from the Wright brothers' first gliders to the sleek jets of today. Through hands-on building and prototyping activities, students will uncover the principles of lift, propulsion, and aerodynamics. With each challenge, they'll sharpen their problem-solving skills and design their own revolutionary flying machines. Get ready to soar into the world of aviation innovation!

Astro-Engineering

Blast off into the final frontier with Astro-Engineering! This course explores the technologies that make space exploration possible, from rockets to space habitats. Students will tackle engineering challenges like designing life-support systems and habitats for survival in extreme environments. Through hands-on projects, they'll imagine and create solutions that could one day help humanity thrive among the stars. Get ready to embark on a journey through the cosmos!

Computer Sciences Strand

VEX robotics:
Continue your robotic adventure with VEX Robotics, where creativity and teamwork powers innovation! In this course, students will extend their robotics skills, collaborate to tackle exciting challenges by designing and coding their own VEX robots. This hands-on class blends logic, programming, and engineering, enabling students to bring mechanical marvels to life and navigate thrilling tasks. Gear up for an immersive journey into the heart of technology!

Video Game Design:
Unlock the secrets of game creation with Foundations of Video Game Design! Using the powerful Unity engine and C# programming, students will turn their gaming dreams into digital realities. They'll design intricate levels, animate unique characters, and craft complex stories, mastering game mechanics and coding along the way. It's more than play—it's where students become architects of their own virtual worlds!

PC remix:
Are you ready to become a computer wizard with PC Remix? This course is your ticket to mastering computer hardware, where you will dive into the heart of technology as you troubleshoot and solve real-world computer issues, from planning and repairing to upgrading and rebuilding. For the grand finale, you'll put your soldering and customization skills to the test by building a personalized mechanical keyboard of your very own! Remix the way you think about computers and create something extraordinary!

Coding 101:
Unlock the world of coding with Coding 101! This beginner-friendly course introduces students to the fundamentals of programming languages, from block coding to more advanced coding languages such as C++ and Python. Through hands-on projects, they'll program animations and interactive projects, building essential problem-solving skills along the way. Designed to set a solid foundation, this course provides a head start for success in high school programming and beyond. Dive into coding and let your creativity take control!

Marketing and Media Strand

STEM Shark Tank™

Step into the world of business with STEM Shark Tank! This course introduces students to the fundamentals of business management and marketing, blending creativity with real-world problem-solving. Students will design, market, and pitch their own small business ideas, learning to think like entrepreneurs. From crafting sales pitches to growing their “business” into a booming success, this course inspires ingenuity and innovation every step of the way. Get ready to turn big ideas into reality!

Graphic Design and Animation:

Continue your digital discovery with Digital Design and Animation! From concept to final frame, students will master digital design techniques and animate their visions using professional 2D and 3D software. They’ll craft everything from sleek illustrations to immersive VR worlds, ready to impress in the creative industries. It's where art meets technology, and students become the creators of tomorrow's visual wonders, further developing the valuable skills that are highly sought after in today's job market.

Biomedical Sciences Strand

Biomedical Engineering:
Dive into the cutting-edge world of Biomedical Engineering! This immersive course takes students on a deep dive into biomedical design, exploring common diseases and their modern cures. They'll step into the shoes of a biomedical engineer, unraveling the complexity of disease and disability, and tackling them head on with the creation of life-changing prosthetic limbs with creativity, CAD modeling and 3D printing. It's an in-depth exploration of innovation and empathy, where students can make a real and meaningful impact on their healthcare community.

Our Micro world:
Get ready to explore the hidden universe of tiny creatures in Our Micro World! Armed with microscopes, students will dive into the microverse, investigating the habitats that allow isopods, springtails, and other fascinating organisms to thrive. Use your skills to uncover and identify as many microorganisms as possible. Maybe you will even find the elusive Tardigrade, the ultimate micro-world legend! Students will also be exposed to the advanced techniques required to culture, grow and examine micro-organisms, using aseptic techniques, incubators and microscopes like a real microbiologist! This course combines science, exploration, and discovery as you learn to "catch them all" in the amazing world of the tiny and unseen. Are you ready to become a microverse master?

Environmental Sciences:
Environmental Sciences invites you to explore how innovation, sustainability, and Alberta's resource-driven economy can move forward together. Through hands-on investigations and design challenges, you will explore renewable energy systems, biodegradable materials, carbon management strategies, and sustainable technologies that work alongside existing industries to reduce environmental impact without turning away from economic realities.
You will learn how small, meaningful changes at home and in your community can collectively make a measurable difference, while also examining how innovation of existing products can improve efficiency and environmental performance. By combining scientific literacy, critical thinking, and creative problem-solving, Environmental Sciences empowers you to become a thoughtful steward of both our environment and our economy, helping shape a future that is responsible, realistic, and future ready.

Agricultural Technology:
Cultivate innovation in Agricultural Technology! In this hands-on course, students will explore the fascinating journey of plants, from seeds to harvest. Learn the basics of plant care, experiment with hydroponic and aeroponic growing systems, and master the art of at home cultivation. Design the perfect growing conditions, tend to your crops, and reap the rewards of your efforts. To top it off, students will consider business models that allow home growers to bring their sustainably harvested produce to a wider market and may start a side hustle of their own. Discover how technology and agriculture can grow a lucrative and sustainable future, one plant at a time!