ARE YOU SFU?

{ APPLIED SCIENCES }
ARE YOU?

- Problem Solver
- Seeker of the Unknown
- Innovator
- Global Explorer
- Games Master
- Code Cracker
- Design Guru
We invite you to study at one of Canada’s top applied science programs in one of the world’s most beautiful cities. SFU’s Faculty of Applied Sciences is home to three high-tech schools: Computing Science, Engineering Science and Mechatronic Systems Engineering.

Join us and sharpen your problem-solving and core technology skills so you can tackle challenges you are passionate about: improving health, reducing our environmental footprint, or designing the next big video game.

Along the way, meet world-class researchers, join competition teams to test your skills against students from around the world, and discover many ways to build your leadership and professional skills.

Sara Martinez is a Software Systems student with a passion for coding. During her co-op placement, she teamed up with professional programmers to create a remote app that converts Android smartphones or tablets into a universal remote control. In her spare time, Martinez plans activities for the Software Systems Student Society and is an orientation team leader for new SFU students.

ARE YOU LOOKING FOR A WORLD-CLASS UNIVERSITY?

Top 50 under 50
QS World University Rankings of institutions under 50 years old (2014)

Top 100 under 50
Times Higher Education rankings of universities under 50 years old (2014)

Top 50
Academic Ranking of World Universities (2014)

Future software developer

92% of Faculty of Applied Sciences alumni would recommend SFU to others

$64,355 average salary with a bachelor’s degree two years after graduation (2014 survey of 2012 graduates)

95% of alumni were employed two years after graduation (2014 survey of 2012 graduates active in the labour force)
ARE YOU INSPIRED BY TECHNOLOGY?

Interactive TV puts you in the moment

Software Systems faculty member Mohamed Hefeeda (far right) and researcher Ahmed Hamza are making videos more interactive and immersive. They are working on free-viewpoint video (FVV) streaming systems, optimizing the quality of video streams being displayed to users at any given viewpoint. Traditional TV systems today present only a single view of the 3D world. In an FVV system, users can navigate freely to any viewpoint within a certain range to gain different perspectives and feel like they are part of the scene. Hefeeda and Hamza’s computer algorithms decide which video segments to send to users to maximize the quality of synthesized views.

New medical technologies for brain injuries

By developing advanced diagnostic and treatment tools, neuroscientist Ryan D’Arcy is striving to help people affected by brain injury or illness. A professor in computing science and engineering science, D’Arcy is also a driving force behind Innovation Boulevard, a partnership of health institutions, universities and companies based in Surrey, B.C. “By creating innovation in medical research, you can help countless people,” he says, noting that one in three Canadians will be impacted by a brain condition.

Engineering better outcomes for spinal cord injuries

Mechatronic Systems Engineering faculty member Carolyn Sparrey creates new technologies to prevent and treat spinal cord injuries. Using specialized testing equipment to model and simulate the injury process, Sparrey determines how tissues deform under different forces. The results will help clinicians refine diagnostic methods, assess therapies, and provide better treatment and rehabilitation for patients with spinal cord injuries.

A driving force for sustainable transport

Sheldon Manansala put his studies to work in his co-op placement with California-based Tesla Motors, a pioneering manufacturer of high-performance electric vehicles. As a member of the product excellence team, he ensured critical battery components met precise specifications according to computer-generated 3D models. Manansala, a Mechatronic Systems Engineering student, is now working on an eight-month capstone project: a robotic lower-body exoskeleton to allow people paralyzed from the waist down to walk completely unaided.
Bringing big data to life

“I want my students to think outside the box and not be constrained by rules.” Jian Pei, one of the world’s 10 most-cited authors in data mining research (Microsoft Academic Search), hopes to instill in his students the spirit of innovation. He teaches CMPT 456: Information Retrieval and Web Search, a popular undergraduate class exploring hot topics like web analytics, social network search engines and sponsored searches.

Intern at
Harvard Stem Cell Institute

Jasleen Grewal landed a dream internship at the Harvard Stem Cell Institute in Cambridge, Massachusetts. One of only 35 students accepted into this paid internship program, she studied the genetic data of zebrafish – research that could potentially lead to new treatments for blood disorders. Grewal, who’s fascinated by the molecular world, is in SFU’s joint program in Computing Science and Molecular Biology and Biochemistry. She is preparing for a career in bioinformatics – a field that uses computational tools to process and analyze biological and genetic data. A promising up-and-coming researcher, Grewal won an SFU Vice-President of Research Undergraduate Student Research Award.
Tackling overseas health issues
Ash Parameswaran (left) and student Shruti Menon developed a plastic microfluidic device that would cost less than $1 to make and yield results in two hours. This device enables speedy point-of-care antibiotic susceptibility tests on pathogens that can cause life-threatening diseases. While many antibiotics exist – and are distributed for free by the World Health Organization – the challenge is to quickly determine the correct antibiotic to administer.

Study in China
“I wanted to experience something wildly different from the world I knew, mostly to satisfy my own curiosity, but also to help me stand out in the world.” Andrew Paugh went to Zhejiang University in Hangzhou, China, to study and learn Mandarin with SFU’s Dual Degree Program (DDP) in Computing Science. Students in the program can earn two degrees – one from each university – while gaining life-enriching experience by living abroad for two years.

ARE YOU READY TO CHANGE THE WORLD?

Building greenhouses for the future
Fifteen sensors and 17,000 lines of code power Plantosphere – a high-tech greenhouse developed by a team of six SFU engineering science students. Created for a fourth-year capstone project, Plantosphere automates temperature, humidity, and light level to create the perfect environment for plant growth, without human input. Beyond use by would-be gardeners, the greenhouse could also benefit people living in climates too hostile for plants to grow, such as drought-affected regions.
WHAT WILL YOU STUDY?

COMPUTING PROGRAMS

All programs in the School of Computing Science provide a strong foundation in software development and emphasize quantitative reasoning skills to prepare students for a career in their field or for graduate school. In the first two years of study, students develop a wide range of foundational skills in math and computing. In the final two years, students deepen those skills through their course selection. We strongly encourage students to participate in co-op to apply their new skills in the workplace, sharpen their career focus and develop industry contacts.

COMPUTING SCIENCE | BURNABY CAMPUS

The Computing Science major gives you the tools to apply sophisticated strategies and logic to solve a variety of technological problems. Explore the many applications of computer science, with an emphasis on the field’s theoretical aspects.

Computing Science areas of concentration

- Artificial Intelligence: Design new ways to help computers to think and learn.
- Computer Graphics: Solve complex challenges related to how software can recreate visual worlds for gamers, doctors, and scientists.
- Computing Systems: Understand the foundation of every computing environment, from operating systems, to how data is communicated across complex networks.
- Information Systems: Build large data systems that drive how businesses and governments serve their clients and make decisions.
- Programming Languages and Software: Create new software programs and understand how to develop new and better programming languages.
- Theoretical Computing Science: Explore complex mathematical and computational theories that drive the evolution of the computing field.

Honours, joint majors and interdisciplinary programs

Looking for a greater challenge or interested in combining your computer skills with another area, such as biology, geography, math or business? Computing Science offers several flexible honours, joint majors and interdisciplinary programs.

Learn more: sfu.ca/computing

Career options

All Programs: Software engineer | Software developer | Interactive media developer | Web designer and developer | Game developer | Senior quality assurance (QA) analyst | IT project manager | Technology entrepreneur
Computing Science: Cyber security analyst | Geographic information systems developer | Big data scientist | Bioinformatician
Software Systems: Senior quality assurance (QA) analyst | IT project manager | Systems architect | Process control programmer

SOFTWARE SYSTEMS | SURREY CAMPUS

The Software Systems major equips you with expertise to develop high-quality software found in almost every imaginable area of our high-tech world. From cell phone and game console technologies to large-scale software that powers financial analysis systems and search engines, this program focuses on giving you a solid understanding of software development. Smaller class sizes allow for class projects and team assignments that simulate industry approaches to software projects.

Software Systems curriculum

- Software Engineering: Develop advanced skills in software architecture and project management, as well as version control and coding. Learn to program efficiently and effectively as part of a group under time and resource constraints.
- Systems: Study computer systems and how they are organized, including software protocols. Understanding the capabilities and restrictions of computer systems is essential for designing good software.
- Fundamentals: The study of mathematics, writing, and theoretical computing. These are the foundations for any field of technical studies.

Learn more: sfu.ca/softwareSystems

DUAL DEGREE PROGRAM | BURNABY & HANGZHOU, CHINA

Join a close-knit cohort of peers to take computing science courses and learn Chinese in a small-group environment. Build your language skills, study at China’s “Cambridge of the East” (Zhejiang University), and expand your professional network while working towards two bachelor’s degrees. No previous Chinese language skills required.

Learn more: sfu.ca/ddp
ENGINEERING PROGRAMS

At the core of all SFU engineering programs is a focus on engineering for high technology – electronics, systems design, robotics, medical devices, intelligent mechanical systems, computer engineering and green technologies. All programs are fully accredited by the Canadian Engineering Accreditation Board and provide the necessary academic requirements for licensure as a professional engineer (P.Eng.). Co-op is mandatory for all SFU engineering programs and enables you to gain workplace skills while building a network of contacts.

ENGINEERING SCIENCE | BURNABY CAMPUS

The School of Engineering Science provides a strong focus on advanced technologies. More than half the courses are common to all options, and provide a strong grounding in computer engineering and electronics design coupled with skills in communications and scientific inquiry. Following your first co-op, you will choose an option that best suits your interests, strengths and professional pursuits.

Engineering Science options

• Biomedical Engineering (honours only): Develop new instruments and solutions used in rehabilitation, medical treatment and surgeries; advance research in neuroanatomy, biomechanics and neurophysiology. A joint program with SFU’s School of Biomedical Physiology and Kinesiology.

• Computer Engineering: Learn to design systems with software and/or hardware elements. Become a technology expert and create efficient hardware and/or software solutions for diverse areas such as robotics, imaging, automotive and financial services.

• Electronics Engineering: Design and use electronic components and microprocessors to develop applications in communications, control and computing.

• Engineering Physics (honours only): Develop skills in electronics engineering and physics to prepare for a career in either field, whether in academia or industry. Combine creative engineering design and application with a strong background in physics theory. Offered in cooperation with SFU’s Department of Physics.

• Systems Engineering: Acquire a multi-disciplinary background in electronics, mechanical analysis, computer-aided design, programming and software design. Become a versatile engineer who can integrate knowledge to develop a finished product or complete a complex engineering project.

Learn more: sfu.ca/engineering

MECHATRONIC SYSTEMS ENGINEERING | SURREY CAMPUS

The School of Mechatronic Systems Engineering (MSE) integrates three areas of engineering – mechanical, electrical and computer engineering – to address the growing demand for efficiency in the high-tech world. You will learn to create innovative and intelligent products.

Course overview

Start by learning the fundamentals of engineering devices: circuits, transistors, diodes, gears and motors. Develop an understanding of common principles and instruments used in mechanical, electrical and computer engineering. These include oscilloscopes, power supplies, strain gauges, microprocessors and controllers.

Mechatronics program options

• Double degree program: Offered with SFU’s Beedie School of Business, this program provides the foundation for mechatronics engineers to become effective engineering managers.

• Technology entrepreneurship@SFU: This program requires students to build their skills as a team to execute a common goal: deliver a successful, market-driven product or venture upon graduation.

Learn more: sfu.ca/mechatronics

Career options

All Programs: Electrical engineer | Production engineer | Systems engineer | Biomedical engineer | Automotive engineer | Aerospace engineer | Computer engineer | Electronics engineer | Software engineer | Computer and information systems manager | Robotics specialist

Mechatronics: Mechatronics engineer | Mechanical engineer | Process control and automation specialist

Engineering Science: Software engineer | Communications systems engineer | Satellite data analyst | Information scientist | Engineering physicist

APPLIED SCIENCES CO-OP

Work locally, nationally or internationally while finding your true career passion! The co-op program integrates your academic studies with relevant, paid work experience. You will gain industry experience, discover what kind of work you like (and don’t like) and apply the skills you learn in class to solve industry problems.

We encourage all students in the Faculty of Applied Sciences to participate in co-op. For SFU Engineering Science and Mechatronic Systems Engineering students, it is a requirement for graduation. Co-op placements can be four, eight or 12 months long.

ADMISSION & APPLICATION INFO

areyou@sfu.ca

VISIT US

Take a one-hour tour of our Burnaby or Surrey campus. Explore the computing science, engineering and mechatronics research labs and classrooms. Tours are open to prospective students, parents and teachers.

sfu.ca/fas/tours

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