MONDAY, MARCH 21

10:00 - 11:30 (Auditorium, A 103)
"*Stardust*"
Don Hetherington, Dean of Science and General Studies, Vanier College
Where do the atoms, the stuff of which our bodies are made, come from? Were they forged in the Big Bang at the beginning of time or by some other process? How did they get to be part of the earth and then part of your body? In looking for the answer to these questions, we will travel back and forth in time and enquire into the intimate details of the lives of the stars, not the stars of Hollywood, but the stars in our galaxy. You might be surprised by some of the answers.

11:00 - 14:00 (Student Mall)

McGill WOW Science Labs

Who would have thought you could use Jello-O and music to study Snell's Law? The McGill WOW Lab did! Come and check out their three-dimensional science and math teaching technologies in the Student Mall, including bouncing bubbles, rainbow in a jar and a generator made with marbles. Science can be fun and edible!

14:30 - 16:00 (Math & Science Centre, F 540)
"*CRIME AND DETECTION: *The story of forensic science"
Ariel Fenster, McGill University
Sherlock Holmes solved criminal cases only with the help of his magnifying glass and his sense of observation. Today the police can make use of a vast array of scientific techniques from computer fingerprints analysis to DNA profiling. This lecture presents the history of and the technology behind forensic science. This provides the background for a critical examination of some famous cases ranging from the story of the Poison Umbrella to the Patricia Stallings Affair.

TUESDAY, MARCH 22

10:00 - 11:30 (Auditorium, A 103)
"Biodiversity: Facing Up to the Growing Crisis "
David Fletcher, Green Coalition
This presentation will discuss the extraordinary biological diversity that has arisen within the biosphere, the critical danger it now faces from human activity and what the progression of a major extinction event will mean for the future.
Special attention will be given to the loss of species, the reduction of genetic diversity and the degradation of ecosystems in Canada, in Québec and, particularly, in the Montréal region. The *Sugar Maple Bitternut Hickory Bioclimatic Domain,* an ecologically distinct region of southwestern Québec will be featured; here the province's richest concentration of species but also the greatest population density and pressures for development are centered.
The presentation will conclude with a look at what initiatives are afoot to address the conservation shortfall in the Montreal region and across Canada, as well as the commitment undertaken by United Nations member countries at Aichi-Nagoya, Japan, in October 2010, to protect biodiversity planet-wide.

12:00 - 13:00 (Auditorium, A 103)
"How to Ace a Test Without Even Trying It"
Ivan T. Ivanov, Vanier College
How are counterfactuals defined in the general philosophical literature? Counterfactual reasoning has been used extensively in modern physics and has given rise to a number of linguistic, but not physical, "paradoxes". This lecture will consider the Bomb Detector of Elitzur and Vaidman and more recent experiments based on their idea of interaction free measurement. Such experiments have shown it is possible 1) to image an object without exposing it with light or particles, or 2) to employ a computer to deliver the output of a program even if you don't run the program. The common theme is counterfactuality: the fact that an event might have happened enables one to obtain some information about that event, even though it did not actually take place.

14:30 - 15:30 (Auditorium, A 103)
"Visual Aspects of Symmetry"
David Harpp, McGill University
The concept of symmetry is a fundamental and unifying theme in science, nature and our modern society. The importance of this concept ranges from mathematics to paintings and architecture. This presentation examines a variety of these topics with an emphasis on the visual arts, music and nature. Extensive use of pictures will enhance this visual approach to the subject. A straight-forward section on the use of symmetry in chemistry will be included.

WEDNESDAY, MARCH 23

10:30 - 11:30 (Math & Science Centre, F 540)
Science Pictionary!
Come watch as three teams of students display their fine artistic talents and use their science knowledge to battle it out for the title of Pictionary Champions!

Science Coffeehouse

For this special event, the Math & Science Centre will be transformed into a cozy coffeehouse venue. Science students and faculty will be showcasing their musical and artistic talents and an art and photography exhibit will be displayed around the Centre. Baked goods will be on sale as a fundraising event for the 2012 international Science trip.

16:00 - 17:00 (Math & Science Centre, F 540)
"Robo Sapiens"
Stephen Cohen, Vanier College
Over the past 10 years, the kinds of technological changes that have transformed the world have been both subtle and virtual, like that of the social networking phenomenon. I believe that the next 10 years will bring more dramatic changes, due in large part to the growth of certain engineering fields, particularly those of biomedical and robotics. Most people are unaware of the unbelievable research being conducted in these fields worldwide, and will be quite shocked when they begin to permeate society. This talk will focus on the state of the art of biomedical and robotics engineering, and the intriguing evolutionary repercussions that could result as the two fields grow and begin to mix.

THURSDAY, MARCH 24

10:00 - 11:00 (Auditorium, A 103)
"The Awesome Power of Immunity "
Christine McCusker, McGill University
Most of us are unaware of the number of pathogens around us daily. This is partly because we do not have to think about it. The immune system can be seen as a very adept security company, tirelessly working to keep harmful foreign substances out of the body. Nevertheless, this structured system can be flawed, resulting in serious negative effects. In this seminar we will discuss aspects of what your immune system can do to protect you from harm and talk about what happens when things go wrong.

11:00 - 14:00 (Student Mall)

Technology Exhibit

>"Walking machine"
École de Technologie Supérieure (ETS)
The Walking Machine club is a scientific organization composed of undergraduate and master's students from several disciplines: electrical engineering, mechanical engineering, software engineering and automated production. Since 2009, our club has been participating in the Eurobot robotics cup: the competition last year brought together over 150 teams from around the world.
To participate, teams must make an autonomous robot that will perform a task, based on a new theme announced each year. Each year, our robot faces challenges that are totally different: playing golf, building temples or gathering food are examples.

>"SAE Baja vehicle"
École Polytechnique
SAE Mini-Baja is a prototype of a single-seated all terrain vehicle capable of surviving the worst possible driving conditions. This vehicle is entirely designed and built by engineering students at École Polytechnique de Montréal. The team, composed of roughly twenty students, has the mission to design, build, assemble and test the prototype to ultimately participate in the competitions organised by SAE, the *Society of Automotive Engineers.* The vehicle must respect all the rules and regulations imposed by SAE and must absolutely be propelled by a Briggs&Stratton engine of 10 HP.

>"SAE Racing Team"
McGill University
The McGill Racing Team is a group of students from various faculties who every year design and build a new prototype race car to participle in the Formula SAE competition in Michigan. Our latest prototype, the MRT-12, is powered by a gasoline engine that produces 50 hp thanks to a completely reprogrammed engine control unit giving the car both a wide power band and remarkable fuel efficiency. With a total weight of only 180 kg, this car is truly exceptional in terms of handling and power to weight ratio.

>"Steel Bridge"
École Polytechnique
The École Polytechnique de Montréal Steel Bridge team is a technical society formed by students who compete every year in the United-States at the Student Steel Bridge Competition organized by the American Institute of Steel Construction (AISC) and by the American Society of Civil Engineers (ASCE). The challenge is to build and to assemble a steel bridge which meets criteria and requirements that are different every year. Last year's bridge is a twenty-foot deck bridge. The bridge weighs about 650 pounds and can support more than 2500 pounds.

>"Robotics Team"
Vanier College
The Vanier Robotics team consists of dedicated students who aim to excel at the CRC Robotics Competition. This is a 4-part, multifaceted competition, which includes the building of a robot, kiosk, the creation of a video and a website. It is a great opportunity for students to learn about web design, video production and construction. Every year, the team competes with about 20 high schools and CEGEPs in Montreal. Teams are judged based on their performance at the competition, their creativity and sportsmanship.

12:.00 - 13:00 (Auditorium, A 103)
"How to Stop a Killer Asteroid!"
Santiago Paiva and Timothy Polyzos, Vanier Students
On Friday, April 13, 2036, mankind will face its greatest challenge up until now: an asteroid impact. The big dilemma on humanity's shoulders is how to stop such an object from colliding with the Earth. Santiago Paiva and Timothy Polyzos, Vanier Science students, will propose possible solutions to our uncertain future. The end of our world as we know it may be coming sooner than you believe.

14:30 - 15:30 (Auditorium, A 103)
"SHARED REALITY: Towards perceptually convincing computer-mediated environments "
Jeremy Cooperstock, McGill University
Telepresence is concerned with providing users the sensory experience of being in another location. However, most so-called "telepresence" systems offer little more than high-resolution displays. Despite the hype, such systems generally fail to deliver a convincing level of co-presence between users and come nowhere close to providing the sensory fidelity or supporting the expressive cues and manipulation capabilities we take for granted with objects in the physical world. Shared Reality was coined as a metaphor for the ideal, in which distributed users could experience the sensations of a remote environment, and also collaborate with each other as if physically sharing the same space. This talk describes several applications of our research in acquisition, signal processing, data transmission, and display technologies including support of extremely large display environments, remote medical training, multimodal synthesis of ground surfaces, and Ultra-Videoconferencing.

FRIDAY, MARCH 25

11:45 - 12:45 (A407, A476, A516)
Science Laboratory Launch!
The Science Department is pleased to invite you to the official launching of the newly renovated Biology, Chemistry and Physics Laboratories. Visit the individual labs and speak to teachers and lab technicians over coffee and snacks about the improvements made.

14:00 - 17:00 (Student Mall)
Science, on tourne! Engineering Competition in the Student Mall
This year's challenge is to build a vehicle that will independently make the most round trips in 10 minutes with the fewest human interventions. Come and see the variety of engineering designs and cheer on the competitors as we put their devices to the test!

Science Week DISPLAYS

- ◊ MSC (F540) - "Quantum Theory: Expressed in Art"
- ◊ MSC(F540) - "Photography & Art Exhibit"
- ◊ F Carrefour - "Everyday Science"
- ◊ Library Display Case - "Vanier Math and Science Teachers"