UNIVERSITY OF ALBERTA

Canada-Wide Science Fair 2023

TIMESLOT 1: Please select 3 choices.

ID	TIMESLOT	TITLE	DESCRIPTION
1A	1	Clinical Nutritional Assessment	Participate in a case study on a patient and learn how Registered Dietitians assess energy metabolism, body composition and dietary intake in client care. During the session you will see a variety of unique assessments at the Human Nutrition Research Unit (HNRU).
1B	1	Genomics for Food Security	Curious about genomics? Join us in the lab to learn about RT-PCR, a technique which was (and is still) being used to navigate the pandemic. Discover how this technique is utilized in our research to tackle crop diseases that have devastating impacts on global food security.
1C	1	Nursing Simulation	Visit our Nursing Simulation Centre and get a look at what it's like to be a nursing student at the University of Alberta. See how different levels of simulation are used to practice various nursing skills.
1D	1	Muscles, Nerves and Brains	Visit the Human Neurophysiology Laboratory and be introduced to the tools used to study how the nervous system controls movement and helps people with paralysis move again.
1E	1	Tinker in the Elko Engineering Garage	Visit our Elko Engineering Garage - a hands-on makerspace for community collaboration and physical prototyping. Discover how to use a CO2 laser cutter, learn about tensegrity and the forces applied and assemble your own scale tensegrity table!
1F	1	Water and Civil Engineering	Discover how river engineering works, why we build bridges at certain points and how construction can affect the surrounding environment. Learn how "the Accidental Beach" came to be in Edmonton.
1G	1	Ice Core Science	Join us at the Canadian Ice Core Lab (CICL) to learn how we collect ice cores in the Canadian Arctic. Tour our ice core archive storage space, as well as our cold lab used for processing ice cores. We'll discuss what ice cores can tell us about past climates, as well as the effects Earth processes and human activity have on our planet.

1H	1	Rowan Zoology Lab	Visit the Rowan Lab for Vertebrate Zoology - home to a wide diversity of vertebrate specimens, such as articulated skeletons, study skins, taxidermied mounts and fluid-preserved specimens. This tour will provide an overview of some of the more interesting specimens in our collection, both exotic and familiar, and will include time for questions.
1I	1	Chemistry of Macromolecules	Interested in polymers and learning about green chemistry? Join us in one of our chemistry labs to explore the application of green polymers in the treatment of water and participate in an ice cream decorating challenge using… a polymer, of course! You will use your creativity to show off your MasterChem skills.
1J	1	Strickland Entomological Museum	Visit the Strickland Entomological Museum where you can see an amazing diversity of arthropods, including some live specimens. Learn how the museum acts as an archive of biodiversity, and see how we facilitate research and education!
1K	1	How Well Does Your Sunscreen Work?	In small groups, you will work with a current graduate student to set-up an experiment of your own design that demonstrates the protective effects of sunscreens. Hands-on activities include: micropipetting, handling liquid cultures of Baker's yeast, spreading yeast onto Petri dishes and UV treating yeast cells.
1L	1	Now in 3D! Motion Analysis and Photogrammetry in Human Movement Sciences	How do we move? How are we built? Visit one of our Neuromusculoskeletal Mechanics Research labs and investigate just that! Participants will use 3D photogrammetry to image, reconstruct and manipulate anatomical structures; and 3D motion analysis to record and evaluate sport, exercise or other skills.
1M	1	Sustainable Technology and Critical Minerals	In this guided tour you will learn about and touch rocks and minerals used in sustainable tech, such as electric vehicles and solar panels. We will also visit an undergraduate teaching lab to look at specimens through specialized microscopes that geoscientists use to examine and analyze rocks and minerals.
1N	1	Solar Observation	A guided tour of the University of Alberta Observatory. Students will learn about astrophysics research, see a small collection of meteorites, and enjoy different views of the Sun with the telescopes found at the observatory.
1O	1	Rehab Robotics Lab - Virtual Reality, Virtual Care, and Accessibility!	The Rehab Robotics Lab uses technology like motion capture, virtual reality, robots, and wheelchair wearables to make healthcare accessible and fun! Learn how to train your brain after a stroke, drive a wheelchair, make measurements of body movements, and more!

1P	1	BLINC Lab – Bionic Limbs Showcase	See state-of-the-art robotic artificial arms and hands, including new research prostheses that involve artificial intelligence methods. Discover how gaze and movement analysis, and virtual reality, contribute to building the artificial limbs of the future and making them suitable for use by people with amputations.
1Q	1	Rehabilitation Innovations Lab – Electricity and Exoskeletons	Learn about the various uses of electricity to energize the nervous system and improve function after neural energy or disease. Experience what electrical stimulation feels like, and how it works. Play games using an upper limb exoskeleton, and walk while wearing an exoskeleton for the legs!
1R	1	*Physics/Geophysics*	*Waiting on details*
1S	1	Coffee and (Chemical) Engineering	Chemical engineering is at the forefront of the transition to the sustainable energy systems of the future, and plays important roles in renewable energy production, energy storage, negative emissions technologies and environmental management. Chemical engineering may seem complex, but almost everything can be understood through the process of making coffee, because the elements of roasting and brewing are small scale versions of chemical process systems. Demystify chemical engineering through the example of coffee and make a case for the importance of chemical engineering in a sustainable future!
1T	1	Drug Development and Innovation Centre (DDIC)	In this session you will be exposed to drug dosage forms (e.g., capsule preparation) and research in drug delivery, commercialization, testing and production of clinical trial materials.
1U	1	3D Modelling for Space Scientists and Engineers	Create a model rocket design using the TinkerCAD program in one of our computer labs, and see AlbertaSat's satellites up close!
1V	1	Heart of the Matter	Get a unique look 'under the hood' at how our lungs, heart, blood vessels and muscles work together to meet the body's oxygen demands during exercise and how these pathways are affected by exercise training, spaceflight, ageing and diseases such as heart failure or cancer therapy.
1W	1	The Tower of Hanoi and Variations	The Tower of Hanoi is a well know math puzzle and is often used to introduce the topic of recurrence relations and iteration. In this session we will play the puzzle, work out the solution, and explore some interesting variations

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TIMESLOT 2: Please select 3 choices.

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2F	2:30 PM	Water and Civil Engineering	Discover how river engineering works, why we build bridges at certain points and how construction can affect the surrounding environment. Learn how "the Accidental Beach" came to be in Edmonton.
2G	2	Ice Core Science	Join us at the Canadian Ice Core Lab (CICL) to learn how we collect ice cores in the Canadian Arctic. Tour our ice core archive storage space, as well as our cold lab used for processing ice cores. We'll discuss what ice cores can tell us about past climates, as well as the effects Earth processes and human activity have on our planet.

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2T	2	Satellites, Power & Electronic Circuits	Explore solar energy by using a breadboard to create several solar circuits with increasing complexity, and see AlbertaSat's satellites up close!
2U	2	Robotics Inspection Lab	Discover a dedicated laboratory space with 3m ceilings and high floor loading capability as a work and testing area for machinery diagnostics projects, embedded systems development and robotics and UAV projects for remote asset monitoring and industrial environmental monitoring.
2V	2	Hands On with Machine Learning	Learn the basics of sentiment analysis (a subset of natural language processing) via Naive Bayes Classification and Python code. This session is based on a topic covered in Computing Science 274, Tangible Computing.

2W	2	I-STEAM Pathways	The I-STEAM Pathways Environmental Education Program for Indigenous Students at the University of Alberta is an experiential learning program providing opportunities for Indigenous undergraduate students to participate in post-secondary environmental research in a variety of fields including science, environmental engineering and environmental law and policy. In this session you will chat with current interns about the program, the connections created and what life is like as a First Nations, Métis and Inuit student on campus.
2X	2	Engineering in Dentistry	Explore one of the many amazing areas in Biomedical Engineering. Visit the lab for an orthodontic simulator and dental appliance mechanics demonstration. Discover a new realm of how physics is applied in the real world!