

Saint Francis University
STEAM Day 2023 Presentations

Tuesday, November 21, 2023

Sessions begin at 9:30 am, 10:30 am, 11:30 am, and 12:30pm

STEAM Day Keynote Presentations – JFK Auditorium			
9:30	10:30	11:30	12:30
KEYNOTE #1 Wow, this is Neat! AI, Big Data, and Great Career Paths	KEYNOTE #2 Industrial Science: Paint and Coatings, Advancing Digitization, and Career Opportunities	KEYNOTE #3 Day in the Life: STEAM Student Panel	KEYNOTE #4 Experience A World of Arts at SFU
<i>Mr. John Skarupa, IT Manager at UPMC, Pittsburgh, PA; Saint Francis University alumnus 2012</i>	<i>Dr. Heather Eckenrode- Stiffler, Global Technical Leader - Dow Chemical Company</i>	<i>Moderator Mr. Isaac Johnsen, Biology & Political Science Major (Class of 2024); Panelists: Ms. Adrianna Boldizar, History & Secondary Education Major (2025); Mr. Stephen McGinnis, General Engineering (2026); Ms. Abrielle Brown, Biology/Premedicine (2027)</i>	<i>Ms. Jessica Campbell, Mr. Jim Donovan, Dr. Lance Mekeel, and Mr. Jonathan Neff; Center for Fine Arts, Saint Francis University</i>
By now we have all heard about the power and misuses of Chat GPT and similar conversational artificial intelligence applications. Hear about the current usage of these tools, and problems that can result. Also hear about the career pathways with companies using information safely, securely, and ethically to improve their operations and service.	Watching paint dry...is that really something industrial scientists do? It is! And it is way more exciting than it sounds. From a local high school to a Fortune 100 company, hear about the career path of a leader in the materials science industry who studies the durability of coatings such as paint using automation and digital tools. Changing trends in skills needed for career opportunities in industry in STEM fields will also be discussed.	What is it like to be a college student in a STEAM major? What are classes like, the workload, the schedule, the challenges? What clubs and activities are available? How do I prepare for a job, med school, or graduate school? What do you do for fun? Hear answers to these questions and more from current STEAM students and ask your own questions.	Hope to keep your passion for the arts alive in college? Whether you choose to study business, health, humanities, or STEM, Saint Francis is committed to providing you with enlivening opportunities in the Arts. In fact, soon to open is the state-of-the-art \$7M Connors Family Fine Arts Center featuring the “Resinski Black Box Theater.” Participating in the arts helps you by developing confidence in public settings, providing stress relief, allowing balance during your academic pursuits, increasing self-esteem, and just having fun.

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1. A Hands-on Primer in Therapeutic Gardening	Hoophouse	9:30a & 12:30p
<i>Dr. Tim Bintrim, Professor of English, and Coordinator of Sustainability Minor; Students, SFU</i>		
Research shows that when the elderly have access to gardens, biophilia elevates their mood, reduces the need for medication, and encourages wellness, flexibility, and fine motor skills. For the past three years, students at SFU have been using our high-hoop greenhouse to stock a therapeutic garden at Maple Heights, a skilled nursing facility closeby that is our community partner. This session, held in the SFU Hoophouse near Torvian Dining Hall, will offer a hands-on introduction to sensory plants, vertical gardening, and propagation techniques that we use to make the wheelchair accessible garden bloom. Participants will propagate ice plant and tradescantia, taste edible flowers, and learn how therapeutic gardening intersects with careers in occupational or physical therapy, gerontology, psychology, nursing and physician assistant science, as well as botany, ecology, and teaching.		
2. Army ROTC Opportunities: Leadership, Service, and Scholarships	Scotus 210	9:30a & 10:30a
<i>Mr. Chris Chavira, Recruiting Operations Officer, U.S. Army ROTC</i>		
Consider the Reserve Officers' Training Corps (ROTC) as you are looking for options in your college career. Full scholarships are possible for you to lead and serve your country, all without sacrificing your college experience in almost any major. And a career is waiting for you when you graduate. Attend this session to learn more about the opportunities and how to apply.		
3. Brain Illusions	Scotus 102	9:30a & 10:30a
<i>Dr. Shlomit Flaisher-Grinberg, Associate Professor of Psychology, SFU</i>		
In this fun and interactive session, participants will explore the different ways our nervous system plays tricks on us, focusing on the ways that we see, hear, taste, smell, and feel the world that we live in.		
4. Careers focused on protecting and restoring water resources	Science Center 015	9:30a, 10:30a & 12:30p
<i>Dr. Travis Tasker, Assistant Professor of Environmental Engineering, SFU</i>		
Water is life. Without it, life on earth would not exist as we know it. According to the 2022 United Nations Sustainable Development Goals report, the world's water related ecosystems are being degraded at an alarming rate. By 2030, over 1.6 billion people in the world will lack access to clean drinking water and over 2.8 billion people will not have access to facilities that safely handle their wastewater. This is such a big problem that the National Academy of Engineering has also identified access to clean drinking water as one of their 14 game changing goals for improving life on earth in the 21st century. In this session students will learn how environmental scientists and engineers can use math, science, and technology to protect and restore water resources.		
5. Cryptography: Making and Breaking Secret Codes	Science Center 028	9:30a, 10:30a & 11:30a
<i>Dr. Kevin Slonka, Assistant Professor of Computer Science/Cyber Security, SFU</i>		
What if you could send a message that everybody could see but only a few could read? Find out how to encrypt and decrypt basic messages in this session. Coded messages are used by spies, diplomats, and the intelligence community, but also used on almost all Internet transactions. Make and break some simple codes in this session and learn some of the theory behind codes.		
6. CSI Loretto: Help Forensic Chemists Solve a Crime	Science Center 225	9:30a, 10:30a & 11:30a
<i>Dr. Ashley Smith-Diemler, Assistant Professor of Chemistry, and student, Sarah Evans, SFU</i>		
Work together with the CSI Loretto team to solve a crime. You will review the evidence collected from the crime scene to identify the suspect who committed the crime. This analysis will require creativity, attention to detail, and collaboration with your peers and the CSI team. Bring your curiosity to compare fiber, hair, and blood (simulated) evidence to help us catch the perpetrator!		
7. Disastrous Floods and the Demise of Steel in Johnstown	Schwab 313	9:30a & 10:30a
<i>Dr. Patrick Farabaugh, Professor of Communications, SFU</i>		
Learn more about the history of the steel and coal industry in the Johnstown region, as well as the causes and the science behind the three major floods that have hit this city. In this session, author Pat Farabaugh will talk about his latest book - "Disastrous Floods and the Demise of Steel in Johnstown" - and the process of writing and publishing a book.		

8. Engineering the Perfect Wave	Science Center 019	9:30a & 12:30p
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Dr. Joel Bandstra, Professor of Environmental Engineering, SFU

The very existence of civilization depends on our ability to engineer flowing water. Being able to deliver water to people when they need it and protect people from excessive water during disasters are twin cornerstones of our quality of life. In this hands-on lesson, you will build a wave-shaping device and see how it works in SFU's own hydraulic flume. You will see how engineers manipulate flowing water, waves, and hydraulic jumps to protect infrastructure, help migrating fish, and restore riverine ecosystems. This session will help you determine if engineering is a possible career for you.

9. Exploring Animal Ecology	Science Center 133	11:30a
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Dr. Lane Loya, Professor of Biology; Biology 203 Students, SFU

Join Dr. Loya and students from his Ecology course for a hands-on, interactive session about the field of animal ecology.

10. Extraterrestrial Intelligent Life: Is Their Existence Consistent with Religious Beliefs?	DiSepio 211	11:30a & 12:30p
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Dr. Tyler McNabb, Associate Professor of Philosophy, SFU

Would the existence of extraterrestrial intelligent life (ETI) conflict in any way with religious belief? With respect to particularly Christian belief, we identify various areas of potential conflict. If there be no conflict in any of these areas—and we argue ultimately there is not—we are confident in declaring that there is no conflict, period.

11. Fireworks, Change, and Explosions. Better Living through Chemistry	Science Center 230	9:30a & 10:30a
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Dr. Pedro Muñio, Professor of Chemistry and Master of Explosions, SFU

See that chemistry is behind most technologies we currently use, from our space program to our kitchens and from construction to demolition. We will show you that a good chemist never misses an opportunity to set something on fire or to make it explode (safely, of course).

12. I Like Cybersecurity, but What Can I Do in the Field?	Science Center 024	11:30a & 12:30p
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Mr. Michael Zambotti, Assistant Professor of Computer Science/Cyber Security, SFU

"Cybersecurity" is a very broad field. Do you like solving problems? Might you have the mindset and curiosity to solve cybercrimes? You will develop analytical skills to solve these crimes and use tools like Advanced Google Searches, Social Media Investigation, the Dark Web, and image searches to search for criminals. Attend this session to hear about specific career paths based on your interests and passions.

13. Insights and Advice from Premedicine Students	DiSepio 213	9:30a & 10:30a
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Dr. Sue Reimer, Premedicine Advisor and Professor of Biology, and Dr. Kate Criswell, Assistant Professor of Biology, SFU

Interested in medicine, optometry, dentistry, veterinary medicine, or pharmacy? Join us as we have a panel discussion featuring Saint Francis University Premedicine students. Learn how they chose a school, what courses they are taking, and how they are planning their path to medical school.

14. Interested in Flying? Study to be a pilot!	Scotus 211	11:30a & 12:30p
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Mr. Will Guzik and Mr. Cade Young, Certified Flight Instructors for Nulton Aviation, Johnstown PA; and SFU alumni

Dive into what a career and outlook as a pilot looks like right now and in the future. A shortage exists for commercial pilots and is expected to only grow in the coming years. With a new aviation program, you gain flight experience and a pilot license as you complete your degree in business, criminal justice, engineering, or other majors. Hear about the many opportunities available to you as a pilot and find a possible career direction.

15. Join the Red Flash Family: An Introduction to SFU Admissions and Financial Aid	DiSepio 214	9:30a
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Dr. Bobby Anderson, Director of Admissions, SFU

Saint Francis University is one of the premier institutions in the Northeast touting 1) nationally recognized academic programs, 2) amazing opportunities in internships, study abroad, research, and more, 3) NCAA Division I athletics, and 4) exceptional outcomes for graduates including very impressive graduate school and career success! Getting into SFU is easier than you think and the financial aid is very generous...let us show you how you can "Become that Someone" you always believed you could be...at Saint Francis University!

16. Luke Trotz Esports Arena Open Play	Luke Trotz Esports Arena (JFK)	10:30a, 11:30a & 12:30p
<i>Mr. Ethan Wingard, Esports Coordinator, SFU</i>		
Students can visit the state-of-the-art Luke Trotz Esports Arena and play a variety of games including Super Smash Bros. Ultimate, Rocket League, Valorant, and more! In addition, staff and students will be present and available to discuss the Collegiate Esports experience (including possible scholarships) and steps to join the team.		
17. Make College Count: Experiences that Set You Apart from the Crowd	DiSepio 214	10:30a
<i>Dr. Bobby Anderson, Director of Admissions, SFU</i>		
All students choose a college major to lead to their first job. What you learn will in part determine which job you get, the impact you make, and how much you can earn. Learning includes both the content in your courses and the portfolio of experiences you acquire during your four years of college. In selecting a college, look for opportunities that transform you from just another graduate to someone that employers and communities are seeking.		
18. Making History: The Breakup Microgame	Scotus 211	9:30a & 10:30a
<i>Dr. Arthur Remillard, Associate Director of the Honors Program; Dr. Denise Damico, Professor of History, SFU</i>		
This game is intended to introduce students to some of the issues involved in the use of primary sources to construct historical narratives. The scenario under consideration centers on two college students who break up. Players will receive a series of sources that will give clues on the cause, and they must develop a story of the breakup based on these sources.		
19. Making Sense of Our Sensory Systems	Library 203, Sensory Room	9:30a & 10:30a
<i>Dr. Julie Nagle and Dr. Erin Long, Assistant Professors of Occupational Therapy, SFU</i>		
This session will include a brief overview of the 8 sensory systems, what happens when our body's sensory needs are not met, and what we can do about it. This session is filled with hands-on learning experiences with several SENSEational take-aways! You might consider a career in occupational therapy after attending.		
20. MC Escher and Tilings of the Hyperbolic Plane	DiSepio 213	11:30a
<i>Dr. Brendon LaBuz, Associate Professor of Mathematics, SFU</i>		
MC Escher is famous for his stunning works like Relativity which shows an impossible staircase and Drawing Hands which shows two hands drawing each other. Later in his career, he used a model of hyperbolic geometry to create his Circle Limit series. We will explore hyperbolic geometry through these four beautiful woodcuts and then create our own tilings of the hyperbolic plane.		
21. Medieval Engineering	Stokes Auxiliary Gym	11:30a & 12:30p
<i>Br. Marius Strom, Engineering Laboratory Instructor; Mr. Jim Eckenrode, Engineering Laboratory Manager, SFU</i>		
Explore the engineering behind trebuchets as we hurl payloads downrange! Join us as we investigate the physical concepts leveraged by this deceptively simple machine dating back to the middle ages. In this hands-on experience, we will see the sophistication of medieval engineers and what we can learn from them in the modern day. Come and set loose your inner engineer as we examine the fundamentals of engineering and physics at work!		
22. NASA Community Anchor: Search for Life in the Universe	Science Center Atrium	9:30a & 10:30a
<i>Dr. Lanika Ruzhitskaya, Assistant Professor of Physics, SFU</i>		
Is there life out there? Is it possible that life is hiding somewhere on distant moons and planets in our Solar System? Or maybe there are alien beings that live in other star systems studying our planet? Are we able to answer these questions? During this planetarium session, we will look at the current events in the night sky and go on a journey through the universe in the search for life. This session takes place in the Palumbo Planetarium, and part of the outreach from the NASA Community Anchor on campus.		
23. Set the Mood with Atmospheres in Acting	JFK Red Conference Room	11:30a
<i>Dr. Lance Mekeel, Assistant Professor of Theater, SFU</i>		
In this session, students will engage in a number of exercises from the Michael Chekhov Technique of acting in developing atmospheres onstage. Students will work with both personal atmospheres and general atmospheres to demonstrate how a single character relates to an environment very differently from any other character, all while sharing the same overall mood. Come ready to play!		

24. Science Fiction Becomes Reality in the Experiential Learning Commons	Learning Commons G31 A & B	9:30a, 10:30a, 11:30a, 12:30p
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Ms. Brenda Guzik, Director of Experiential Learning Commons; Dr. Jessica Gregg, Assistant Professor, Nursing Department; Mr. David Wolfe, Simulation Operation Specialist, SFU

Visit our Virtual Reality Anatomy Lab for hands-on experience with our virtual dissection/science Anatomage Tables and our mixed reality HoloAnatomy Lenses. In the virtual reality lab, you can swipe your finger to soar through the inside of the ear or view a beating heart. You will see life-size images of human bodies that can be turned or even flipped to get clear images of the body as well as internal organs and bone structure. You can see cadaver images of dogs, cats, small rodents, birds, reptiles, and farm and aquatic animals with regular or diseased anatomy such as a two-headed calf. You can conduct virtual biology, physics and chemistry experiments. You will have a 3D perspective of every part of the body. The mixed sensory experiences enables users to study human anatomy with a high level of detail and interactivity that is revolutionary in the field of medical education.

25. Should the United States Ban TikTok?	Pauda 110	9:30a
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Dr. Mark Gentry, Associate Professor of Political Science, SFU

Because of the increase in international tensions between the United States and China, several American lawmakers and presidential candidates have called for severing or severely limiting economic ties with China. As an example, many have called for a ban on the TikTok app, popular with young people, in the United States because of ties to a Chinese firm. The session identifies and critically examines the arguments for and against banning TikTok in the United States. Students will be provided a 1-page summary of opposing arguments, view a short news video on the issue, and then be divided into discussion groups to critically examine the opposing arguments.

26. Shut Up and Drive!	Raymond 215	11:30a & 12:30p
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Dr. Amy Hudkins, Clinical Assistant Professor of Occupational Therapy, SFU

Check out the occupational therapy department's high fidelity driving simulator. Driving is a complex occupation. When a person wants or needs to return to driving after sustaining a medical condition, such as a stroke, occupational therapists can help assess if the person has the skills necessary to drive. Participants will have a chance to experience the driving simulator with a variety of conditions. Caution, this can cause motion sickness.

27. STEAM Careers and You!	Schwab 302, Vista Room	9:30a & 10:30a
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Ms. Beth McGregor, Director of Career Services; Ms. Becky Cacciotti, Assistant Director of Career Services; Mr. Andrew Stopko, Assistant Director of Employer Relations/Internships, SFU

Today's STEAM professionals create virtual worlds, design amazing machines, invent new materials, construct earth-friendly buildings, and engineer cutting-edge air vehicles. Over the next 20 years, the science, technology, engineering, arts, and math (STEAM) field is projected to grow significantly. You have the chance to be the innovators, educators, and researchers who will change the world. In this session we'll explore careers and majors in the STEAM field and how your personality, interests, skills, and values might fit in a STEAM career. Get started on exploring and preparing for a STEAM career of the future!

28. Taste, Aroma, Flavor, and Cheese	Scotus 119	9:30a & 12:30p
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Dr. Benjamin Smith, Assistant Professor of Chemistry, SFU

Chemistry is intimately connected to the world around us through the products we use, the medicines we take, and most importantly in the food we eat. During this session, you will explore the chemistry behind the 5 basic tastes and a few aroma/flavor molecules before applying that information to the tasting of different cheeses.

29. The Benefits of Combining Art and Science	Raymond 125	11:30a
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Dr. Brennan Thomas, Professor of English, Dr. Larissa Clachar, Associate Professor of Spanish, SFU

Some of the most highly successful people, from world leaders and entrepreneurs such as Justin Trudeau (Prime Minister of Canada) and Larry Page (Google co-founder) to celebrities like Mayim Bialik, studied both humanities and scientific disciplines. Find out how these individuals' diverse educational backgrounds in the arts and sciences propelled them to new career heights--and ultimately changed the way they think and view the world.

30. The Science of Exercise and Human Movement	DiSepio 119, Human Performance Lab	9:30a, 10:30, & 11:30a
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Dr. Kristofer S. Wisniewski, Associate Professor; Dr. Michelle Stehman, Assistant Professor; Mr. Tyke Steiner, Instructor, Exercise Physiology; and Dr. Mark Boland, Clinical Associate Professor of Physical Therapy, SFU

During exercise, the heart beats to move blood and oxygen so muscles can move. Blood pressure and breathing rates rise. Muscles produce acid and carbon dioxide. What does all this mean? What does it look like? How do you do it correctly to avoid

injury or increase your performance? See all of this live in the Human Performance Laboratory, and know how your body is able to move. Let us show you the science of exercise and movement!

31. The Science of Music and Mindfulness: Self-Care Strategies	JFK Lounge	9:30a & 10:30a
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Mr. James Donovan, Assistant Professor of Fine Arts, SFU; TEDx Speaker, Multi-Platinum Recording Artist

The active use of music-based self-care is scientifically proven to improve your mood, relieve stress, increase mental focus and to build social connections. Musical experience is not required. Beginners are warmly welcomed, and rhythm tubes are provided for all to use during the program. During the session participants will experience how to use music making to energize your body, clear your mind and become deeply relaxed; practice techniques to use rhythm to slow your brainwaves and enter a meditative mind; use rhythm and movement to raise your energy and lift your mood; and connect with each other through musical social games.

32. Tour of the Saint Francis University Campus	Admissions Welcome Center	9:30a, 10:30a, 11:30a & 12:30p
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Ms. Victoria Ivock, Associate Director of Admissions, and Bell Tower Student Ambassadors, SFU

SFU students will lead a walking tour of the Saint Francis University Campus including classrooms, Library and Learning Commons, DiSepio Institute for Rural Health and Wellness, Science Center, residence hall, and other key locations on campus. During the tour, they will talk about college experience and life on campus.

33. We will R.O.C.K. You! Explore the Lighter Side of Chemistry	Science Center 219	9:30a, 10:30a & 12:30p
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Dr. Edward Zovinka, Professor of Chemistry, Dr. Rose Clark, Professor of Chemistry, and Students: Alexandra Ochs, Joanna Woods, and Taylor Rabatin, SFU

Have fun while learning chemistry! Explore interactive chemistry with the SFU Chemistry Outreach program using glowsticks, liquid nitrogen, diapers, or ??? It is always something different with the ROCK program. And teachers can learn how we can work together too!

34. What You See Isn't What You Get: Sensory Tricks in Human Vision	Science Center 101	11:30a & 12:30p
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Dr. Justin Merry, Professor of Biology, SFU

We rely on our eyes to perceive the world around us, but are they really to be trusted? Our eyes have sensory limits, and our nervous system does a lot of work in the background that usually helps us extract useful information from our environment. Sometimes, however, those sensory tricks result in illusions, where we perceive things that aren't real! In this lab, we'll measure the limits of our visual system, and reveal what is happening when our eyes give us misleading information!

35. Who Splashed Coffee on the Wall? A Surface Science Investigation	Pauda 112	12:30p
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Dr. Heather Eckenrode-Stiffler, Global Technical Leader, Dow Chemical Company

All of the objects around us have surfaces. Scientists are continuously working on new inventions to improve the appearance and durability of the coatings that protect those surfaces. In this session, participants will learn about surface coatings and the test methods used to evaluate their performance including one that focuses on investigating the resistance of common household stains such as coffee and lipstick.

36. "Why not add a language to that?"	Raymond 125	10:30a
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Dr. Larissa Clachar, Associate Professor of Spanish, SFU

Consider the benefits of pairing Spanish with other areas of interest like teaching, law enforcement, social work, business, or healthcare. Over 40 million people in the United States speak Spanish, making it the most spoken foreign language in our society. Imagine the doors learning Spanish could open! Learn about opportunities for service and employment and the benefits of bilingualism for our brains and longevity.

37. Zentangle	JFK Red Conference Room	9:30a
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Ms. Jessica Campbell, Assistant Professor of Visual Arts, SFU

Zentangle drawing is a way to practice focused art meditation through drawing by using repetitive lines, marks, circles, and shapes. Advocates note that it has multiple benefits including calming an anxious mind, increasing self-confidence, and cultivating moment-to-moment awareness in a similar way as mindfulness meditation.