University at Buffalo

SED Science Exploration Day

MARCH 18, 2026

PROGRAM GUIDE

Welcome

Welcome to Science Exploration Day at the University at Buffalo! Today we celebrate over three decades of curiosity, discovery, and the power of sharing knowledge.

We are grateful to the teachers, presenters, and partners who bring their expertise and enthusiasm to this event. By opening doors to laboratories, new ideas, and real-world experiences, you help students see how science, engineering, medicine, and technology can shape the world—and perhaps their own futures.

We also extend our sincere thanks to the sponsors and organizations whose generous support makes this day possible. Together, we are inspiring the next generation of explorers, innovators, and problem-solvers.
Thank you for being part of Science Exploration Day.

1. Biostatistics: Using Data to Improve Health and Save Lives

Session 1 (Talbert 113)

Shamshad Ali
Associate Director, Biostatistics Center for Collaborative Research & Data Coordination (BCCRD-DC)
University at Buffalo, School of Public Health and Health Professions, Department of Biostatistics

Discover how data and statistics are used to answer important questions in medicine and public health. This session introduces biostatistics, the role of biostatisticians, and how they help improve health outcomes and save lives. Students will also learn about opportunities to study biostatistics at the University at Buffalo and see real-world examples in action.

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2. The Genetics of Bitter Taste: Are You a Supertaster?

Session 2 & 5 (Knox 104)

Lindsey Alico
Clinical Assistant Professor
Jacobs School of Medicine and Biomedical Sciences

Come learn about human genetics with a genetic counselor! Students will experiment with PTC paper to see if they can taste the bitter chemical linked to the PTC gene. They will also interpret celebrity pedigree charts and practice drawing their own.

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3. Innovations in Dentistry: Where STEM Meets Smiles

Session 5 (Capen 240)

Praveen Arany
Associate Professor University at Buffalo Departments of Oral Biology, Biomedical Engineering, and Surgery

Co-presenters: Alyssa Lickfield, Ridham Varsani, Mahmud Amin, Maria Emilia Mota,Galdino Ferreira

This session introduces innovations in dentistry, oral biology, and STEM that are being used in clinical applications. Students will rotate through demonstration stations including: (1) dental hygiene, (2) smart biomaterials, (3) molecular biology and diagnostics, (4) light in medicine and dentistry, and (5) cancer prevention and care.

4. Fuel Your Future: Can You Power a Smoothie With Your Body?

Sessions 1, 2 & 5 (O'Brian 112)

Niki Becklem
Director, Clinical Nutrition (MS), UB ENS

Co-presenter: Martin Kretz

Hop on a pedal-powered blender bike and turn your own energy into a delicious smoothie while exploring how nutrition fuels the human body. This interactive session connects food, metabolism, and movement. Meet UB nutrition students and learn how a career in nutrition science blends knowledge, impact, and fun.

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5. Electronics You Can Print Like a Sticker

Sessions 2 & 5 (TOUR: Sign Color - BLACK)

Eloise Bihar
Assistant Professor, The Research Foundation for SUNY on behalf of the University at Buffalo

What if electronics didn't have to be rigid, hard, or made in a factory? In this session, students will learn how scientists print soft electronics that bend, stretch, and interact with the human body, plants, and the environment. Real-world examples include smart bandages, wearable sensors, and emerging sustainable technologies.

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6. Buffalo Pharmacy Summer Institute

Session 1 (Capen 240)

Tyler Bingham
Assistant Director for Recruitment and Advisement
UB School of Pharmacy and Pharmaceutical Sciences

Co-presenter: Sara Robinson

Learn about summer opportunities with UB Pharmacy. The three-day Pharmacy Summer Institute brings students behind the scenes of pharmacy practice, education, and research.

7. DITL (Day in the Life): The STEM Student Perspective

Session 2 (Talbert 107)

Macey Blum
Biochemistry Undergraduate Student
SUNY at Buffalo, Jacobs School of Medicine and Biomedical Sciences

Co-presenter: Dilasha Thapa

Curious about the daily life of a STEM undergraduate? Hear insights from UB students across various programs and learn what they are engaged in beyond the classroom.

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8. It's in the Mud: Glacier and Sea Level Change on Greenland

Session 2 (TOUR: Sign Color - BLUE)

Jason Briner
Professor, Department of Earth Sciences

Co-presenter: Karlee Prince

Students will have a hands-on opportunity to examine core samples collected from Greenland. Using geological clues, participants will investigate past glacier size and historical sea level change.

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9. Sim-to-Real Journey for Autonomous Robots

Sessions 1 & 2 (TOUR: Sign Color - ORANGE)

Souma Chowdhury
Mechanical and Aerospace Engineering

Co-presenter: Aditya Bhatt

Robots and drones are transforming logistics, disaster response, and search-and-rescue operations. This interactive presentation explores the challenge of moving from computer simulations to real-world deployment, highlighting opportunities for future engineers to innovate smoother sim-to-real pathways.

10. A Day in the Life of a Home Care Nurse

Sessions 1, 2 & 5 (Norton 213)

Kelley Clem
VP, Clinical Education and Patient Advocacy, Hospice and Palliative Care Buffalo

Nursing extends far beyond hospitals and clinics. This session explores the world of home care nursing and what it means to support patients and families in their homes. Learn how nurses play a vital role in helping patients receive care where they feel most comfortable.

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11. Informal Science Careers: Too Cool to Handle

Session 5: (Location: Please inquire day of event)

Holly Cohen
Facilitator of Learning and Astronomy Coordinator, Buffalo Museum of Science

Co-presenter: Holly Scheiber

An actor, teacher, and geologist walk into a museum… spoiler alert: it is all the same person! Learn about sharing your passion for science with audiences of all ages while exploring science that is truly too cool for school.

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12. Tour a Synthesis and Spectroscopy Chemistry Research Lab

Sessions: 2 & 5 (NSC 858)

Timothy Cook
Professor, Department of Chemistry

Co-presenters: Rachel Snider, John Pinti

Tour a chemistry laboratory conducting research in molecular self-assembly, energy storage, catalysis, and more. Learn about the instruments and techniques that enable cutting-edge experiments in synthesis and spectroscopy. Interact with students and faculty to explore undergraduate and graduate research opportunities.

13. Who's Most at Risk? Be a Climate Health Detective

Session 1 (Capen 215)

Kristen Cowan
Assistant Professor, UB Department of Epidemiology and Environmental Health,Center for Climate Change and Health Equity

Co-presenters: Shelby Yamamoto, Ellie Madson

Ever wonder why some communities are hit harder by climate disasters than others? In this hands-on investigation, become a disease detective and explore how climate change impacts health differently across neighborhoods. Learn how epidemiologists use maps, data, and critical thinking to protect vulnerable communities.

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14. Space Debris: It's Just Floating Space Junk, So Why Do We Care?

Sessions 5 (Talbert 107)

John Crassidis
UB School of Engineering, Department of Mechanical & Aerospace Engineering

This presentation explores why space debris must be studied and taken seriously. Learn about real-world incidents such as the collision between Russia's Cosmos 2251 satellite and the U.S. Iridium 33 satellite. The session concludes with current strategies to mitigate the growing risks of space debris.

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15. The Eye as a Window into Brain and Heart Health

Session 5 (Talbert 106)

Margaret DeAngelis
Endowed Chair and Professor, Jacobs School of Medicine

Co-presenter: Jesse Slon

The eye, brain, and circulatory system share similar cell types. Eye exams and non-invasive imaging can sometimes detect diseases such as Alzheimer's and hypertension before diagnosis. Advances in genomic technologies reveal connections between eye conditions and systemic diseases, opening new avenues for treatment.

16. What Do Industrial Engineers Do?

Session 2 (Talbert 106)

Robert Dell
Professor and Chair, UB Industrial and Systems Engineering

Co-presenter: Chase Murray

Discover why Industrial Engineering is one of the fastest-growing engineering fields. Through student-created videos, attendees will explore how industrial engineers improve systems and processes in areas such as drone delivery, product design, human-robot interaction, and sports analytics.

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17. Trapping Trash: Using Technology to Keep Plastic Pollution Out of the Great Lakes

Session 5 (Capen 258)

Nate Drag
Great Lakes Literacy Specialist, New York Sea Grant

Trash and microplastic pollution often begin on land and enter waterways through storm sewers. This session introduces two types of trash-capture technology designed to remove pollution before it reaches lakes and rivers.

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18. Exploring Chemical Engineering with Tea

Sessions 1 & 2 (TOUR: Sign Color - GOLD)

Jeff Errington
Professor and Chair, UB Chemical and Biological Engineering

Co-presenter: Maura Sepesy

In this hands-on session inspired by the chemistry of tea, students will explore chemical engineering principles using everyday materials. Observe color changes from acid-base reactions and learn how molecules like anthocyanins act as natural pH indicators. Discover how chemistry is at work in a simple cup of tea.

19. Demonstration of Analysis Techniques for Molecular Research

Session 5 (NSC 328)

Valerie Frerichs
Director, Chemistry Instrument Center, Department of Chemistry

Co-presenters: Matthew Crawley, Raul Santiago Diaz, Brynn Nelson, Tristan Vick

Tour the UB Chemistry Instrument Center and see the technology supporting research in materials, medicine, and environmental science. Learn about real-world research projects and the advanced tools used by over 40 research groups at UB.

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20. REALLY GROSS ANATOMY – Not for the Faint of Heart!

Sessions 1 & 2 (Knox 109)

Donald Gill Jr.
Professor, SUNY–Erie, South Campus

Explore preserved animal specimens from a unique perspective. This session includes specimen dissections accompanied by a PowerPoint presentation.

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21. Explore the Potential of 3D Printing (2 parts)

Session 5 (TOUR: Sign Color - PURPLE)

Donald Goralski
Director, Shared Instrumentation Laboratories, School of Engineering and Applied Sciences,
Digital Manufacturing Laboratory / DREAM Lab Makerspace

Co-presenter: Dylan Zelko

PART 1: Lasers at Work: Bringing Ideas to Life

Sujal Santosh Dharne (presenter)

This session introduces subtractive manufacturing using a laser cutter. Students will see how a flat digital design becomes laser-cut parts assembled into a simple 3D object. Real-world engineering and design applications will be highlighted.

PART 2: Digital Manufacturing Laboratory: Advanced 3D Printing Methods

Dylan Zelko (presenter)

Join a guided tour of the Digital Manufacturing Laboratory to explore advanced 3D printing processes. Participants will see printers in action, learn how they work, and view finished printed objects.

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22. Public Health: More Than You Think

Session 5 (Norton 218)

Adam Graczyk
Undergraduate Public Health Program (SPHHP)

Public health includes everything from clean drinking water to measles vaccines. It promotes social justice and ensures that every voice is heard. Public health saves lives every single day.

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23. Why Drugs Help, Hurt, or Do Nothing: An Introduction to Pharmacology

Session1 & 2 (Talbert 115)

Julie Harris
Lecturer, Department of Pharmacology & Toxicology

Co-presenter: Roh-Yu Shen

Pharmacology explores how drugs and chemicals affect the body and why the same substance can help, harm, or have no effect at all. In this interactive session, students will work through real-world scenarios to understand how dose, biology, and context shape drug effects.

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24. Tour of the Materials Characterization Laboratory (MCL)

Sessions 1 & 2 (TOUR: Sign Color - GOLD)

Yulong Huang
Research Assistant Professor / Laboratory Manager, Shared Instrumentation Laboratories, School of Engineering and Applied Sciences, University at Buffalo

Visit the Materials Characterization Laboratory in Furnas Hall to learn about nanotechnology tools including atomic force microscopy and low-temperature technologies using liquid nitrogen and liquid helium. Explore the many analytical instruments used across physics, chemistry, biology, and engineering research.

25. Exploring the Sub-Atomic World at the Large Hadron Collider

Sessions 1 & 2 (Talbert 103)

Ia Iashvili
Professor, SUNY at Buffalo, Department of Physics

The world's largest particle accelerator, the Large Hadron Collider, collides high-energy protons to probe the sub-atomic world. Researchers study these collisions to answer fundamental questions about what the universe is made of and how its smallest components interact.

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26. Water, Water Everywhere: How to Make Water Clean Enough to Drink

Session 2 (TOUR: Sign Color - YELLOW)

James Jensen
Professor, Civil, Structural and Environmental Engineering

Explore the chemistry and physics behind water purification. Learn how engineers and scientists make water safe to drink and discover the challenges facing the next generation of environmental professionals.

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27. Wild Weather of Western New York

Sessions 1 & 2 (Capen 112)

Elizabeth Jurkowski
Meteorologist, National Weather Service

Western New York experiences dramatic weather ranging from lake-effect snow to summer thunderstorms. This session explores the science behind these phenomena and how meteorologists forecast them to keep communities safe.

28. Viruses!

Sessions 1, 2 & 5 (Capen 257)

Kathryn Kauffman
School of Dental Medicine, Department of Oral Biology

Did you know you are full of viruses—even when you're completely healthy? Learn how viruses infect every living organism on Earth and how some can even be beneficial. Explore the fascinating world of viruses in this engaging session.

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29. 2D Materials: The Magic of Flatland for Future Nanoelectronics

Session 2 (Norton 214)

Huamin Li
Associate Professor, Electrical Engineering

Come learn how a common pencil contains the secret to a Nobel Prize–winning discovery that is transforming the way we build technology. Using the "Scotch tape method," students will isolate 2D layers and explore how materials like MoS_2 act as powerful on-off switches for nanoelectronics. Discover how "Flatland" materials can be stacked and twisted to create entirely new forms of matter with remarkable properties.

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30. Physical Therapy: Explore the World of Rehab

Sessions 1 & 2 (Capen 260)

Jill Mayer
UB Department of Rehabilitation Science (SPHHP)

Explore the field of Physical Therapy and discover how PTs work in nearly every healthcare setting with a wide range of patients. Learn about and try out some of the treatment interventions commonly used in practice to help people regain strength, mobility, and independence.

31. It’s All a Network!

Session 2 (Capen 240)

Sarah Muldoon
Associate Professor, AI and Society Department

What do social networks and brain networks have in common? Are two of your friends also friends with each other? Explore how viewing the world through the lens of networks helps us better understand complex systems.

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32. Careers of Tomorrow: Navigating a Career in Robotics & Automation

Sessions 1 & 2 (Talbert 112)

Duncan Mullins
Buffalo Manufacturing Works – EWI

Co-presenter: Dillon Sayers

Automation and robotics are transforming U.S. manufacturing, improving efficiency and flexibility. As adoption grows, skilled professionals are needed to operate and innovate within these systems. Discover how robotics and automation offer exciting and sustainable career pathways.

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33. You’re Already Doing Chemistry, So Why Not Study It?

Session 5 (Knox 109)

Andrew Musacchio
Adjunct Professor, UB Chemistry

Chemistry affects our daily lives more than most people realize. From cooking to cleaning to technology, chemical principles are constantly at work. Explore how chemistry shapes everyday experiences and the diverse career paths available with a chemistry background.

34. Supercomputing for AI and Research

Session 2 (Talbert 113)

Anton Nekhai
Research Computing & Data Science Facilitator, Center for Computational Research

Co-presenter: Adrian Levesque

Supercomputing powers innovation in artificial intelligence and scientific research. This session provides an overview of these powerful systems and explores what students can learn to take advantage of cutting-edge computing technologies.

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35. Setting Yourself Up for Success in STEM Learning and a STEM Career

Session 2 (Norton 218)

Jon Nickerson
Industrial Account Manager, National Grid

Success in STEM involves more than strong academics. Discover how early exploration, extracurricular opportunities, and strategic experiences outside the classroom can help build a strong foundation for a future STEM career.

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36. What Makes Buildings and Bridges Safe and Long Lasting?

Session 1 (TOUR: Sign Color - PURPLE)

Pinar Okumus
Associate Professor, SEAS, CSEE

Co-presenters: Mohamed Hassan Lasheen, Pranay Singh, Yu Hsin Cheng

Why do some structures stand for centuries while others deteriorate quickly? Learn how structural engineers use technologies such as advanced materials, 3D printing, and artificial intelligence to build safer, longer-lasting infrastructure and protect it from environmental damage.

37. Think Like an Engineer Challenge

Sessions 1, 2 & 5 (Norton 216)

Steven Pilat
Outreach Coordinator, School of Engineering and Applied Sciences

Co-presenter: Christina Escobar

Working in pairs, students will tackle an engineering challenge guided by current UB engineering students. Put your problem-solving and critical-thinking skills to the test and earn a reward.

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38. Tech Problem-Solving Challenge

Sessions 2 & 5 (Norton 209)

Breonna Rankin
Tech Community Engagement Specialist, M&T Bank, Tech Academy

Co-presenter: Nicholas Macrae

In this fast-paced, team-based experience, students rotate through multiple stations solving computer science challenges. Correct answers unlock clues leading to a final riddle. The first team to solve it wins a prize.

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39. The Wild Side of Western New York

Session 5 (Talbert 112)

Kristen Rosenburg
Program Coordinator, New York State Department of Environmental Conservation, Reinstein Woods Environmental Education Center

Learn about the wildlife of Western New York in this hands-on, inquiry-based session. Explore fascinating local species and discover the ecosystems that support them.

40. Earthquakes in the Central United States: What Makes These Events So Strange?

Session 5 (Talbert 103)

Eric Sandvol
Professor, Department of Earth Sciences

Explore the science of earthquakes and how those occurring in the Central and Eastern United States differ from earthquakes in other parts of the world. Learn how seismic energy builds over hundreds or thousands of years and is released in seconds — and how scientists work to better understand and forecast these unusual events.

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41. From Wetlands to Waterways: Exploring the Iroquois Refuge, Fisheries, and Great Lakes Careers

Session 2 (Knox 110)

Logan Sauer
Park Ranger, U.S. Fish and Wildlife Service

Co-presenter: Denise Clay

Join staff from the Lower Great Lakes Fish and Wildlife Conservation Office and the Iroquois National Wildlife Refuge to learn about their mission and work in the Great Lakes Basin. Discover the fascinating fish, migratory birds, and wildlife conservation efforts happening in your region.

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42. Plants Are Cool! Explore Through Flower Dissections!

Session 2 (TOUR: Sign Color - GREEN)

Nitasha Sehgal
Department of Biological Sciences, UB

This hands-on activity explores the evolution of flowering plants through guided flower dissections. All materials will be provided. This popular introductory biology lab offers a close look at plant structure and development.

43. MindHack Lab: Break the Brain Code

Sessions 1, 2 & 5 (Norton 210)

Sourav Sengupta
Jacobs School of Medicine & Biomedical Sciences, Department of Psychiatry

Co-presenters: Elizabeth Sengupta, Peter Martin

Step inside a fast-paced escape room experience where you will solve brain-based puzzles and challenge your stress responses. Through interactive problem-solving, explore how your mind works — no lectures, just action.

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44. Tour and Demos at IAD and the NSF AI Institute for Exceptional Education

Session 2 (TOUR: Sign Color - PURPLE)

Virginia Stever
Administrative Director, Institute for Artificial Intelligence and Data Science (IAD)

Co-presenters: Ranga Setlur, Chengzhe Sun, Shivansh Shalabh

Learn how UB is advancing research and education in artificial intelligence and data science. Tour two major institutes, participate in an interactive robotics activity, and meet Spark, IAD's robotic dog.

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45. The Standard Model of Cosmology

Sessions 5 (Norton 214)

Dejan Stojkovic
Professor, SUNY at Buffalo, Department of Physics

Explore the origin, evolution, and future of the universe. Learn about the Hot Big Bang Theory and the major puzzles raised by modern observations, including dark matter and dark energy.

46. Exploring the Biomedical Sciences Through Hands-On Activities

Sessions 1, 2 & 5 (Norton 190)

Jennifer Surtees
Chair, Department of Biochemistry, Jacobs School of Medicine and Biomedical Sciences

Engage with students, faculty, and staff from the Jacobs School of Medicine to explore biomedical sciences. This interactive session provides a hands-on introduction to research and learning in the field.

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47. Chemistry in Action! (Demonstrations)

Sessions 2 & 5 (NSC 240)

Rachel Ventura
Director of General Chemistry Laboratories, College of Arts & Sciences – Department of Chemistry

Enjoy engaging chemistry demonstrations while learning about careers in chemistry. This interactive session highlights the excitement and real-world applications of chemical science.

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48. What Can Artificial Neural Networks and Biological Neural Networks Learn from Each Other?

Session 2 (O'Brian 102)

David Wack
Associate Professor, Department of Radiology

Inspired by the human brain, artificial neural networks have transformed technology. In this session, explore how artificial and biological systems inform one another — and how this dialogue may bring us closer to understanding consciousness itself.

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49. The Wildlife of Your Face

Session 1 (TOUR: Sign Color - BLUE)

Heather Williams
Teaching Assistant Professor, Biological Sciences

Did you know microscopic arachnids live on your face? In this lab session, students will sample and observe facial mites using microscopy and learn about the tiny organisms that share our skin.

50. Complex Brain Disorders and the Genetics You Don’t See

Sessions 2 & 5 (Capen 110)

Jamal Williams
Assistant Professor, SUNY Buffalo

Co-presenter: Rajvi Patel

Examine complex brain disorders such as ADHD and Autism Spectrum Disorder. Learn how complex genetics differs from single-gene conditions and how interdisciplinary research contributes to understanding these hidden influences.

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51. Engineered Nanomedicine: A Hands-On Adventure

Sessions 1 & 2 (TOUR: Sign Color - RED)

Yun Wu
Professor, Department of Biomedical Engineering

In this interactive lab session, explore how nanoparticles are engineered to deliver life-saving drugs. Through guided activities, discover how nanotechnology is transforming modern healthcare.

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52. Fluorescent Minerals of New York

Session 1 (Knox 104)

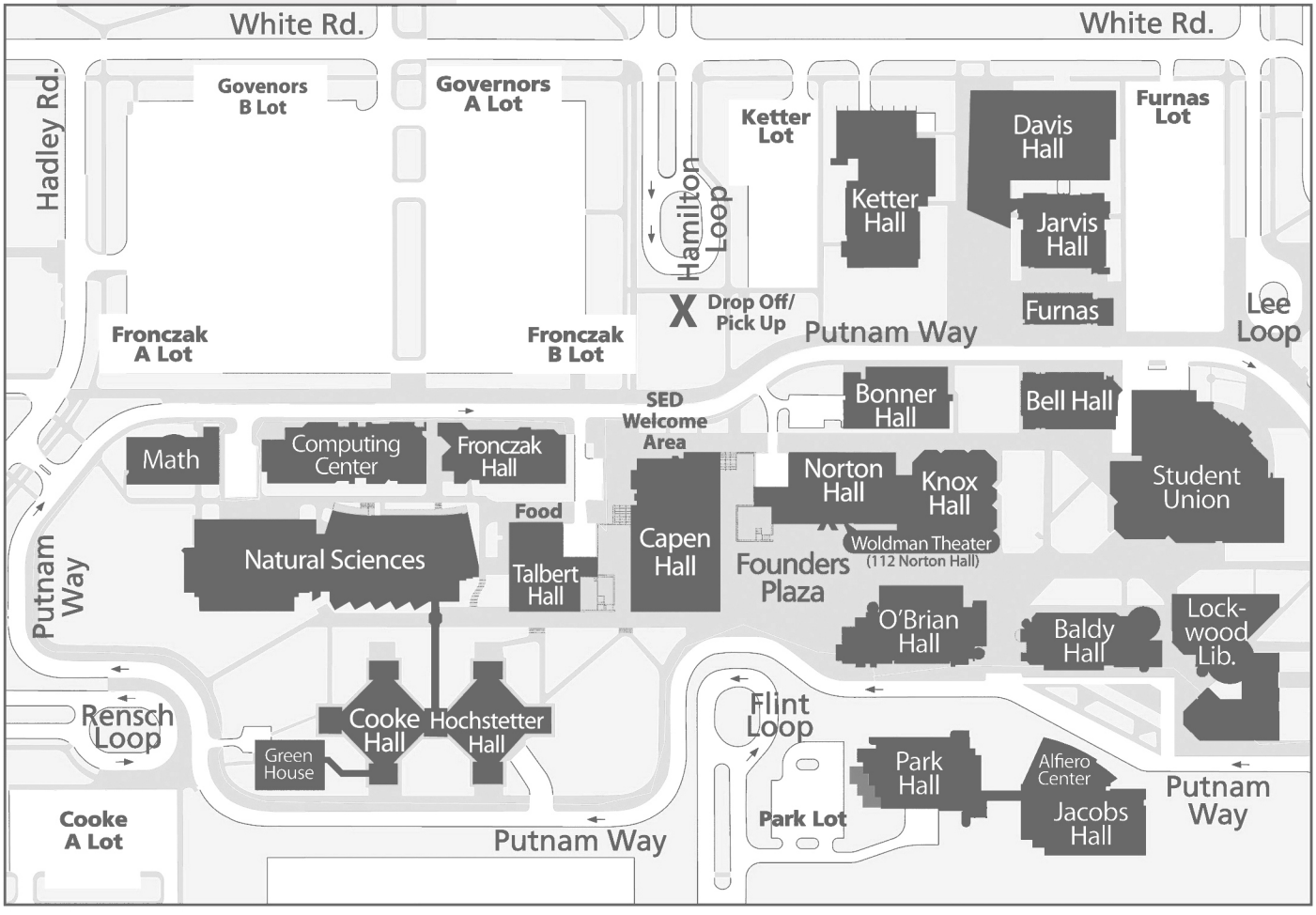
Dino Zack, CPG, PG, STS
Senior Geologist / Senior Project Manager, AECOM Technical Services, Inc.

Discover the fascinating world of fluorescent minerals. Learn about luminescence, ultraviolet light safety, and the many types of mineral fluorescence. Specimens from Northern New York and other renowned locations will be on display to demonstrate fluorescence, phosphorescence, and more.

Schedule

REGISTRATION AND TABLES	**8:15 - 9:20 AM**
SESSION 1	**9:25 - 10:00 AM**
SESSION 2	**10:10 - 10:45 AM**
SESSION 3 (KEYNOTE OR LUNCH)	**10:55 - 11:30 AM**
SESSION 4 (KEYNOTE OR LUNCH)	**11:40 AM - 12:15 PM**
SESSION 5	**12:25 - 1:00 PM**

Campus Map



Management Committee

The following individuals have generously volunteered their time and efforts to make SED a reality:

COORINATOR

Dr. Sandra Small
Senior Manager of Science Education and Workforce Development,
UB's Business and Entrepreneur Partnerships

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Dr. Jeff Arnold
Director, Daemen College (Retired)

John Arnold
Artist/Educator

Macey Blum
Undergraduate Teaching Assistant,
Department of Biological Sciences, Biochemistry Student

Nate Drag
Great Lakes Literacy Specialist, New York Sea Grant

Dr. Joe Engemann
Adjunct Professor, University at Buffalo's Graduate School of Education

Finn Goehrig
Adjunct Instructor, Gifted Math Program, Curriculum, Instruction, & the Science of Learning

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MPH, Assistant Director For Diversity, Inclusion, and Community Engagement;
UB School of Public Health and Health Professions

Stacey Johnson
Director of Workforce Development, UB's Business and Entrepreneur Partnerships

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Business Administration – Operations & Supply Chain Management Student

Dr. Noemi Waight
Associate Professor of Science Education, University at Buffalo

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Melissa Wood
Senior Assistant Director of Community Relations,
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