



**UNIVERSITY
OF ALBERTA**

SCIENCE

VIEWBOOK 2024 - 2025



WE ARE

making discoveries and pushing boundaries. We are uncovering ways to be more effective in our processes and more efficient in our work models. We know science responds to global and societal changes and is becoming more interdisciplinary in nature — and we are training the next generation of scientists to meet the challenges on the horizon.

Science is not static... and neither are we.

Territorial Acknowledgement

The University of Alberta acknowledges that we are located on Treaty 6 territory, and respects the histories, languages, and cultures of First Nations, Métis, Inuit, and all First Peoples of Canada, whose presence continues to enrich our vibrant community.

12 TEACHING DEPARTMENTS
+ 29 FIELDS OF STUDY

HIGHLY
CUSTOMIZABLE PROGRAMS



3 DEGREE TYPES TO CHOOSE FROM



OPTIONAL MINORS IN SCIENCE, ARTS, NATIVE STUDIES, AGRICULTURE, NUTRITION, HUMAN ECOLOGY AND BUSINESS



\$8.3M+ IN SCHOLARSHIPS AWARDED ANNUALLY

THE FACULTY OF **SCIENCE**

HUNDREDS
OF COURSES TO CHOOSE FROM

20-25 STUDENTS
IN LAB SECTIONS, FACILITATING
OPTIMAL SPECIALIZED TRAINING



#1 IN CANADA
FOR EARTH SCIENCES
*2022 Global Ranking of
Academic Subjects - Shanghai*



INTERNATIONALLY
RECOGNIZED
PROFESSORS



#2 IN CANADA
FOR BIOLOGICAL SCIENCES
*2022 Global Ranking of
Academic Subjects - Shanghai*



46,000+
ALUMNI



#3 GLOBALLY
FOR PALEONTOLOGY
CWUR 2017



7,500+
UNDERGRADUATE STUDENTS IN
ONE OF THE LARGEST FACULTIES
ON CAMPUS



#4 IN CANADA
FOR CHEMISTRY, GEOLOGY
AND GEOPHYSICS
2023 QS World University Rankings.



STUDENT SPOTLIGHT



SCIENCE GETS SOCIAL

To get the most out of your degree, we highly encourage participation in our student groups — there are numerous ways to connect with others through your passion for science!

Feature: Interdepartmental Science Students Society (ISSS)

As an undergraduate student in the Faculty of Science, you're automatically a member of the Interdepartmental Science Students Society — the official voice of students within the faculty. Run entirely by students, ISSS (pronounced "ICE") delivers useful services and fun events to the science community. This includes locker rentals, science-specific orientation and other community-building events.

BRANDON

BSc/BEd STUDENT

Brandon is a second-generation Chilean student completing his fifth year of a Bachelor of Science/ Bachelor of Education combined degree. On campus, he is part of the Open Styles Dance Club and a Week of Welcome volunteer. Off campus, he is a CIC Officer with the Canadian Cadet Program, training incoming cadets.

“

My overall fear coming out of high school and pursuing something science-related was that I knew I wasn't strong at math. After entering this new program I started attending a supplementary calculus class and learned I wasn't actually bad at math, I just didn't understand the way it was taught to me. The teacher in this class was very skilled at adapting to different student's needs. This inspired me to do the same as a teacher — to become someone who can master multiple teaching strategies and reach the needs of all my students.”



SCIENCE

DISCIPLINES

Biological Sciences

The breadth of biological sciences always relates in some way to life sciences. Our programs cover the environment and climate change, and its effects on life and biodiversity – including plants, animals, microorganisms and ecosystems, genetics, health studies, cellular structures, past life forms, and evolution.

Chemistry

Considered the central science, chemistry is connected to all scientific disciplines in one way or another. Our degrees offer specialized training in the theoretical and practical components of chemistry. Take a selection of courses in general, analytical, organic and physical chemistry, as well as mathematics and related courses in environmental studies.

Computing Science

The first of its kind established in Canada, this program has earned us a reputation for being innovative, creative and responsive. You can combine a computing science background with another topic of your choice to create a flexible and applied program. Students build strong theoretical and mathematical foundations, including hardware and software design and processes. You can even train in artificial intelligence, user interface design and telecommunications.

Earth and Atmospheric Sciences

Our programs examine the Earth, its structure and evolution, and the atmosphere above us. Unique in Canada, we offer an interdisciplinary approach to the study of environmental earth science, geology, paleontology, human geography and urban planning, plus our students have access to the most coveted field locations in the world.

Mathematical and Statistical Sciences

Mathematical and statistical sciences form the foundation of our increasingly data-driven society – and address some of today's most pressing issues, like climate change, epidemiology and economic forecasting. Our undergraduate programs help to develop specialized skills in applied mathematics, mathematical economics, math and finance, and statistics.

Physics

As a fundamental science, physics provides a deep understanding of how the world works. Students build a strong background in modern physics, mechanics, thermodynamics, electromagnetism, relativity, quantum mechanics, statistical physics and laboratory work. Topics in the fields of laser spectroscopy, optics, electronics, nuclear physics, particle physics, stellar atmospheres and interiors, field theory, condensed matter and fluid dynamics are introduced in later years of the program.

Psychology

Shared between the Faculty of Science and the Faculty of Arts, our Department of Psychology offers students comprehensive opportunities to study two different aspects of the field. A science degree in psychology focuses on how the brain functions as well as how we perceive, learn and forget things. Students study perception and motivation, behaviour, and cognitive development with emphasis on the physical, biological, and mathematical sciences.

Medical and Health Sciences

In collaboration with the Faculty of Medicine & Dentistry, we offer a number of outstanding undergraduate programs in health. Programs include Biochemistry, Cell Biology, Immunology and Infection, Neuroscience, Pharmacology, and Physiology.

View department brochures at uab.ca/scibrochure

BSc (MAJOR)

DEGREES

Our undergraduate Science degrees are extraordinarily customizable programs – encompassing a breadth of topics spanning 12 teaching departments and 29 fields of study.

Students can choose from three degree types: a Bachelor of Science (Major), a Bachelor of Science Honors, or a Bachelor of Science/Bachelor of Education (BSc/BEd) combined. Each allows students to dive into a field of study and emerge with a degree that provides a holistic understanding of their chosen field, and can be applied to numerous industries.

Solving today's issues requires collaboration and a depth of knowledge that allows the solver to think differently – an open mind and seeing the problem from multiple angles is crucial. Regardless of the chosen degree, we work to ensure students excel in their field and enter the workforce confident in their abilities.

BSc (MAJOR)

- Major, double major or major/minor for most subject areas
- Part-time study permitted
- Internship available

BSc (HONORS)

- Honors or Honors/minor for most subject areas
- Double major not permitted
- Includes a mandatory capstone or research experience
- Higher level of academic performance is expected
- More specialized courses required
- Part-time study permitted
- Internship available

BSc/BEd

- 5 year program
- 7 major/minor combinations
- Dual degree (BEd Secondary and BSc Specialization)
- Highly structured
- Internship available

Students pursuing the BSc Major will follow a program designed to provide a common level of expertise in their chosen field(s) of study. The curriculum offers a blend of structure and versatility, building a strong knowledge foundation for students and the opportunity to design their degree their way.

We have structured the degree so students can either deepen their knowledge in that area or diversify with another field of study through a minor or a double major. This flexibility means students can tailor their degree to reflect their interests and passions.

DEGREE FEATURES

- 4 year Bachelor of Science degree
- 29 areas of study
- Part-time study allowed (extends the degree)
- Students gain skills to work in unique and variable industries
- 4, 8, 12 or 16-month internship opportunities

AVAILABLE MAJORS

- [APPLIED MATHEMATICS](#)
- [ASTROPHYSICS](#)
- [BIOCHEMISTRY](#)
- [BIOLOGICAL SCIENCES](#)
- [CELL BIOLOGY](#)
- [CHEMISTRY](#)
- [COMPUTING SCIENCE](#)
- [COMPUTING SCIENCE - ARTIFICIAL INTELLIGENCE OPTION](#)
- [COMPUTING SCIENCE - SOFTWARE PRACTICE OPTION](#)
- [EARTH SCIENCES](#)
- [ECOLOGY, EVOLUTION AND ENVIRONMENTAL BIOLOGY](#)
- [ENVIRONMENTAL EARTH SCIENCE](#)
- [GEOLOGY](#)
- [GEOPHYSICS](#)
- [IMMUNOLOGY & INFECTION](#)
- [INTEGRATIVE PHYSIOLOGY](#)
- [MATHEMATICS](#)
- [MATHEMATICS AND ECONOMICS](#)
- [MATHEMATICS AND FINANCE](#)
- [MATHEMATICAL PHYSICS](#)
- [MOLECULAR, CELLULAR AND DEVELOPMENTAL BIOLOGY](#)
- [NEUROSCIENCE](#)
- [PALEONTOLOGY](#)
- [PHARMACOLOGY](#)
- [PHYSICS](#)
- [PHYSIOLOGY](#)
- [PLANNING](#)
- [PSYCHOLOGY](#)
- [STATISTICS](#)

BSc (HONORS)

BSc / BEd COMBINED

AVAILABLE HONORS PROGRAMS

- [APPLIED MATHEMATICS](#)
- [ASTROPHYSICS](#)
- [BIOCHEMISTRY](#)
- [BIOLOGICAL SCIENCES](#)
- [CELL BIOLOGY](#)
- [CHEMISTRY](#)
- [COMPUTING SCIENCE](#)
- [COMPUTING SCIENCE - ARTIFICIAL INTELLIGENCE OPTION](#)
- [COMPUTING SCIENCE - SOFTWARE PRACTICE OPTION](#)
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- [NEUROSCIENCE](#)
- [PALEONTOLOGY](#)
- [PLANNING](#)
- [PHARMACOLOGY](#)
- [PHYSICS](#)
- [PHYSIOLOGY](#)
- [PSYCHOLOGY](#)
- [STATISTICS](#)



The BSc Honors degree is designed for students to reach an advanced level of expertise in their chosen subject area. Students must maintain a higher GPA and complete a capstone or research experience in the final years of their program.

Similar to the major, students in the Honors program will have the opportunity to complete more courses in their field of study or diversify their studies by adding a minor. Note: a double major is not available in the Honors program.

DEGREE FEATURES

- 4 year Bachelor of Science degree
- 29 areas of study
- Part-time study allowed (extends the degree)
- Provides in-depth and advanced expertise
- Students are expected to maintain a higher standard of academic performance compared to other science programs
- Strongly recommended for students who wish to pursue a graduate degree
- 4, 8, 12, 16-month internship opportunities available
- Includes a capstone or research experience:
 - Learn to pose your own research question, then collect, interpret, analyze and present the data
 - Develop independent critical thinking and the confidence to reach your own conclusions
 - Fully understand the scientific process and methodology
 - Hone your communication and writing skills

Would you like to teach science at the secondary education level? The BSc/BEd combined degree is a dual program offered jointly with the Faculty of Education. Students spend the first two years studying in the Faculty of Science and the remaining three in the Faculty of Education. At graduation, they receive both a science specialization degree and a secondary education degree.

DEGREE FEATURES

- 2 degrees in 5 years
- Secondary education only
- Structured course curriculum (requirements for both degrees and teacher certification must be completed within 5 years)
- The major and minor combinations accommodate the variety of subject studies needed in secondary school teaching

MAJOR AND MINOR COMBINATIONS

- [BIOLOGICAL SCIENCES MAJOR/ MATHEMATICAL SCIENCES MINOR](#)
- [BIOLOGICAL SCIENCES MAJOR/ PHYSICAL SCIENCES MINOR](#)
- [MATHEMATICAL SCIENCES MAJOR/ BIOLOGICAL SCIENCES MINOR](#)
- [MATHEMATICAL SCIENCES MAJOR/ PHYSICAL SCIENCES MINOR](#)
- [PHYSICAL SCIENCES MAJOR/ BIOLOGICAL SCIENCES MINOR, CHEMISTRY CONCENTRATION](#)
- [PHYSICAL SCIENCES MAJOR/ BIOLOGICAL SCIENCES MINOR, PHYSICS CONCENTRATION](#)
- [PHYSICAL SCIENCES MAJOR/ MATHEMATICAL SCIENCES MINOR](#)

LEARNING SPACES AND SUPPORT

LIFE IN

SCIENCE

OUR PROFESSORS

Teaching here is celebrated – it's at the core of what we do! In the Faculty of Science, we are committed to providing education that is both current, dynamic and delivered in a combination of formats. We employ both discovery-based and active learning methods, training students to construct their own knowledge, work collaboratively and gain confidence in their decisions.

BRINGING COURSE MATERIAL TO LIFE

Learning from instructors and professors involved in research means you'll gain the most up-to-date knowledge. These individuals are passionate about their discipline and are at the top of their field. Through work-integrated learning opportunities, our students are able to participate in research labs or special projects – an invaluable opportunity to immerse themselves in the scientific process, sharpen their skills, and be part of something new.

THE CLASSROOM

We continually develop and re-design our curriculum using innovative educational models. By offering both traditional and blended learning formats, we can deliver varying levels of student engagement within our classrooms. Our traditional classes appeal to students wanting a high level of instructor engagement and in-depth subject material during class, while our blended learning classes provide a healthy combination of online and face-to-face elements for the student who prefers collaborative learning.

SPECIAL SPACES FOR UNDERGRADUATES

We have a multitude of lab spaces and special facilities to support learning. Hands-on experiences are important, and we have unique facilities to provide practical training in a safe environment. uab.ca/scitours

- **The Science Hardware Makerspace, AKA the Shack**, is a student hackerspace equipped with 3D printers, CNC milling machines, computers and electronics.
- **The Department of Physics Astronomical Observatory** houses three telescopes for solar observing on the roof of the Centennial Centre for Interdisciplinary Sciences.
- **The Petrology Undergraduate Laboratory** helps students refine their petrographic skills in igneous, metamorphic and sedimentary petrology using one of 20 polarizing microscopes.
- **The Planning Studio and Teaching Space** houses state-of-the-art equipment for teaching and ongoing studio projects in the Urban Planning program.
- **The Virtual Environments and Spatial Cognition Lab** is where we investigate human spatial cognition using behavioral and neuroimaging methods, including augmented reality (virtual reality), eye tracking, fMRI and ERP.
- **The Biotron** consists of an aquatic facility, greenhouse complex and large controlled environment facility. Tightly controlled environmental conditions are for the study of animal and plant life.

STUDENT SUPPORTS

- Students can access a dedicated team of advisors and academic support services, including:
 - Science Student Services Office
 - Decima Robinson Support Centre
 - Chemistry Tutorial Centre
 - Physics Tutorial Centre
- All incoming Science students have the opportunity to be paired with a mentor! The Science Mentor Program connects new students to a senior student for one-on-one, non-academic support during the first fall semester. uab.ca/sciencementor

DECIMA ROBINSON SUPPORT CENTRE

Drop-in help. Weekly review seminars. Exam study sessions. What more could students taking introductory mathematics and statistics courses want? This centre also offers mathematics primer courses to help high school students make the transition to university.

DID YOU KNOW?

Decima Eveline Robinson was the very first Bachelor of Science in Mathematics graduate at the University of Alberta in 1911!

INTERNSHIP AND INNOVATION



Science Internship Program

Explore career options with our Science Internship Program (SIP) and gain real-world work experience before you graduate. Students in all science degrees are eligible to participate in 4, 8, 12 or 16-month paid work terms. SIP placements allow you to:

- Apply classroom knowledge to hands-on, real life situations
- Graduate with a resume packed with relevant work experience
- Boost your chances of landing a great job after graduation
- Build your strengths, and clarify your interests and goals
- Begin growing a professional network

uab.ca/scienceinternship

NOTEWORTHY

340+ employers have actively recruited SIP students

Student Innovation Centre

The world isn't divided into creative and non-creative people. Creativity can be learned. Innovation can be harnessed! Your passion is what you build, and we can help you build it.

The Student Innovation Centre is a collaborative workspace in the Faculty of Science for you to take your ideas beyond the classroom – creating real-world impact. Our playful, creative and welcoming community motivates students from all programs to connect to technology and expertise in dynamic, exciting areas, including:

- Artificial Intelligence
- Synthetic Biology
- Space Science
- Media (visual and audio) Design and Production
- Virtual Reality
- Game Development

Science Career Centre

A Science degree opens the doors for a variety of careers, our in-house science career centre hosts events and provides career resources and services to current students. See all the possibilities based on your area of study at

uab.ca/sciencecareers

This cutting-edge project space boasts:

- Drop-in space for planning and building your next prototype
- Breakout rooms for collaborations
- Ongoing workshops, events and seminars to boost creativity and ideation
- Access to technology including high-performance computing stations, sound mixers for podcast production, Microsoft HoloLens and more
- Resources for groups transitioning to entrepreneurship

Find out how you can bring your ideas to life: uab.ca/innov8

RESEARCH, CERTIFICATES AND ONLINE LEARNING

At the University of Alberta, research isn't limited to graduate students and faculty. We encourage our undergraduate students to ask their own questions and get involved with research early in their careers. Our training services, courses and certifications will teach you about scientific inquiry, data collection, analysis and reporting.

Certificates

Certificates allow for further study in a special area of interest that is not easily identifiable on a student's transcript. Our certificates are embedded – meaning they are taken alongside regular courses and completed over the course of your degree. By obtaining a certificate, you will enhance your degree and receive official recognition for the high level of skills you have developed.

We offer the following embedded certificates:

- Research Certificate in Biological Sciences
- Research Certificate in Psychology
- Certificate in Computer Game Development (jointly with the Faculty of Arts)
- Certificate in Applied Data Science

Science students can also earn a certificate offered through other faculties. Examples include:

- Certificate in Biomedical Research (offered by the Faculty of Medicine & Dentistry)
- Certificate in Sustainability
- Certificate in Peace and Post-Conflict Studies
- Certificate in Translation Studies

Online Learning

The Faculty of Science is a leader in online learning, collaborating with multiple faculties and developing digital courses ranging from paleobiology and software product management to the environment. Learn from the experts through interactive, self-paced, online modules, and even get credit for some courses.

Popular courses include:

- Dinosaur Paleobiology
- Understanding Video Games
- Introduction to the Arctic: Climate
- Mountains 101
- Paleontology: Ancient Marine Reptiles, Early Vertebrate Evolution, Therapod Dinosaurs and The Origin of Birds
- Problem Solving, Programming and Video Games
- Astro 101: Black Holes
- Bugs 101: Insect-Human Interactions

Check out the growing list of courses and sign up at

uab.ca/mooc

Undergraduate Research

Resources available to science students include:

- Special topic and research courses that start in year 1
- Two research certificates
- Embedded research opportunities in the BSc Honors program
- The Undergraduate Research Initiative (URI)
- Working or volunteering in a departmental research lab (spring/summer)

 **\$80M**
IN RESEARCH
FUNDING THIS YEAR



THE WORLD IS YOUR CLASSROOM

A global education is not just about visiting another country; it's about understanding other cultures and seeing your field of study through another lens. Sharing your ideas with colleagues around the world and learning from them is one of the most enriching experiences you can find. Expand your knowledge, grow on a personal level and develop your cultural sensitivity.

If you are a first or second year science student, explore the exciting opportunities offered through Education Abroad and plan your degree with an academic advisor. Attain a global education by taking opportunities to study, volunteer or work abroad.

uab.ca/abroad

BAMFIELD MARINE SCIENCES CENTRE

Your oceanside campus.

Attend Canada's premier coastal research and training facility – located on the exposed west coast of Vancouver Island. Earn U of A credit while taking unique undergraduate field courses during the summer and fall semesters in coastal marine sciences. Live on-site and learn in a first-class, experiential environment with state-of-the-art research facilities. U of A students get exclusive access to courses and facilities!



READY, SET, APPLY!

HELP US SHAPE THE WORLD

Successful scientists are knowledgeable but also adaptable. They are responsive to global and societal changes and appreciate the power of collaboration.

Join us in the Faculty of Science, and let us teach you, train you and help you develop the specific skills needed to excel in your discipline. Study abroad, become an intern, engage in scientific discovery — we're here to guide you in becoming innovative and bold with your ideas.

Whether you are applying directly after high school, took some time off and are now ready to start, changing careers or transferring from another post-secondary institution, we encourage you to visit our admission pages to see our requirements and application process.

JOIN US

Admission to the Faculty of Science is competitive, and our program requirements vary.

- View programs and admission requirements at uab.ca/programs
- View specific program prerequisites at uab.ca/sciprereq
- For historical admission averages by Faculty visit uab.ca/averages
- For application deadlines and to apply, visit uab.ca/apply
- Visit our campus by booking a tour at uab.ca/tours



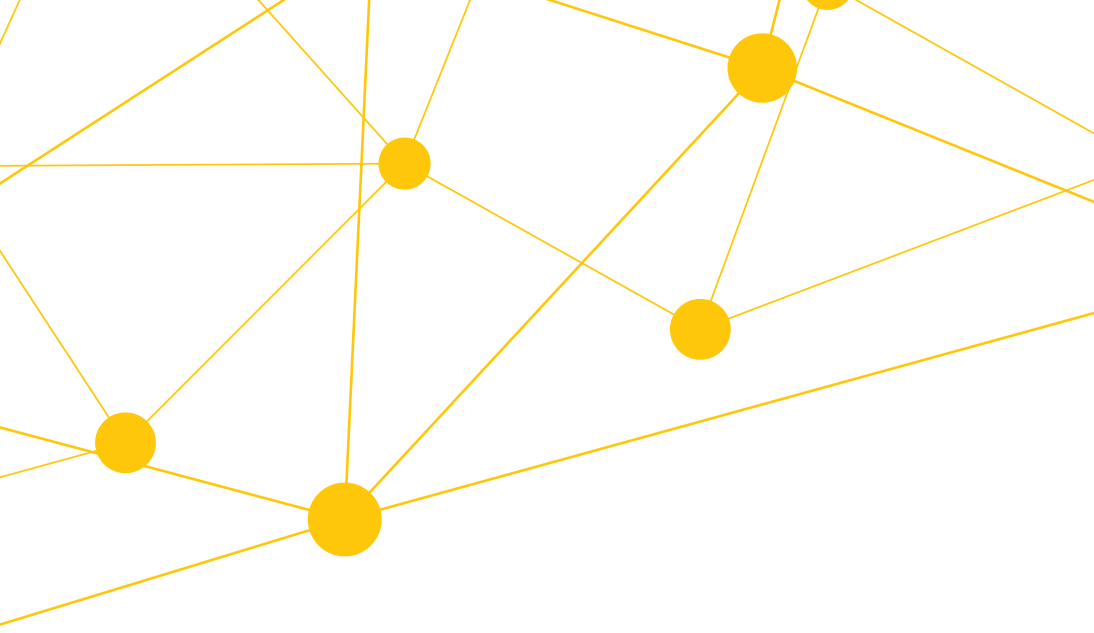
JENNIFER

MATHEMATICAL PHYSICS STUDENT

Jennifer is a first-year Mathematical Physics student from Ho Chi Minh City, Vietnam. She is the recipient of the Schulich Leader Scholarship and the Faculty of Science Gold Standard Scholarship. Working alongside a local non-profit, the Somali Canadian Cultural Society of Edmonton, Jennifer sought to uplift newcomers in the community and encourage STEM learning amongst immigrant youth by programming an interactive computer game called "Ready, Set, Math!"



The inclination for physics came to me in high school, when I was inspired by some incredible conversations about forces and relativity with my physics teacher. I fell in love with the theory, the idea that there would always be new questions to answer in physics, and most importantly, its applications and the potential for it to contribute to the world's future. After my degree, I hope to pursue a Master's and PhD in Applied Mathematics and Theoretical Physics with a particular interest in quantum computing and accelerator technology."



KEEYA

3RD YEAR HONORS GEOPHYSICS

Keeya is a third-year Honours Geophysics student from Entwistle, AB. She is an Art and Design committee member for UA-WISE, a member of the mission design team for AlbertaSAT, and a mentor with WISEST where she advises on physics/earth science-related activities. On top of all that, she is a competitive powerlifter and a third-degree black belt in taekwondo.

“

As one of the only undergraduate students pursuing a major in Geophysics, I am the physics department's hidden secret, but I have made it my mission to highlight this amazing program and how fascinating geophysics truly is. When I tell people my major, I hear "Do you study how fast rocks can be thrown?" or "What even is geophysics?" Firstly, geophysics is the exploration of the processes that drive the Earth's intricate planetary system. For me, geophysics is a way to understand the interconnected

relationships between life, culture, and nature. My program has even prepared me for an opportunity to spend two months off the grid, traversing the Juneau Icefield to study components of the glacial environment. This has inspired me to become a successful Indigenous woman leading my own geophysical expeditions to beautiful regions of the world. I hope this showcases the incredible field of geophysics and inspires prospective students to consider environmental studies!"

WE

CAN'T WAIT
TO MEET YOU!




FIND YOUR **PURPOSE**

uab.ca/science

ASK US

You've got questions,
and we've got advisors.
science.recruiting@ualberta.ca
uab.ca/advising

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