ASTRONOMICAL SCIENCES (HBSc)

Department of Chemical & Physical Sciences

Astronomical Sciences studies the vast universe beyond Earth, discovering objects and phenomena that do not exist on Earth or in the solar system, such as planets orbiting other stars, black holes and forms of mass and energy that cannot be seen even though they form 95% of the universe. To study these objects, astronomical sciences integrates the methods and knowledge of all the other sciences. Astronomical Sciences develops skills leading to careers in:

- Research in astronomy and other fields needing similar methods of measurement and analysis, such as medicine and natural resources.
- Education done in classrooms, science centres and in documentaries for film and television.
- Financial analysis using quantitative methods to understand huge, complex systems.

MAKE THE MOST OF YOUR TIME AT UTM!

We want to help you maximize your university experience, so we’ve pulled together information and interesting suggestions to get you started, although there are many more! As you review the chart on the inside pages, note that many of the suggestions need not be restricted to the year they are mentioned. In fact, activities such as joining an academic society, engaging with faculty and seeking opportunities to gain experience should occur in each year of your study at UTM. Read through the chart and create your own plan using My Program Plan found at www.utm.utoronto.ca/program-plans

Programs of Study (POST)

- Specialist Program ERSPE1025 Astronomical Sciences (Science)
- Major Program ERMAJ2204 Astronomy (Science)

Check out...

Get ready to delve into astrophysics! In AST320H5, you’ll learn about the formation, equilibrium and evolution of the universe, as well as about clusters of galaxies, galaxies, clusters of stars, gas clouds and stars. Have a soft spot for quantum mechanics? Check out JCP321H5, an introduction to the concepts of quantum chemistry and physics.

What can I do with my degree?

The career you choose will depend on your experience and interests. Visit the Career Centre to explore your career options.

Careers for Graduates: Spectral software developer; Radar indicator inspector; Science librarian; Planetarium guide; Science educator; Data scientist; Meteorologist; Optical technician; Laboratory technician; Astronomer.

Workplaces: Communications technology; Government; Scientific instrumentation manufacturing companies; Museums; Observatories and planetariums; Research centres; Space industry.
HOW TO USE THIS PROGRAM PLAN
Read through each year. Investigate what appeals to you here and in any other Program Plans that apply to you.
Visit www.utm.utoronto.ca/program-plans to create your own plan using My Program Plan.
Update your plan yearly.

1ST YEAR
Enrol in AST110H5; MAT102H5; (MAT135H5 & MAT136H5) or (MAT137H5 & MAT137H5) or (MAT137H5 & MAT159H5) or (MAT137Y5 or MAT137Y5 or MAT157Y5; MAT222H5 or MAT240H5; (PHY116H5 & PHY117H5) or (PHY146H5 & PHY147H5); ISP100H5.

Choose a program of study (Subject POSO) once you complete 4.0 credits. Use the Degree Explorer and the Academic Calendar to plan your degree.

Develop foundational academic skills and strategies by enrolling in a uBridge course. Build community and gain academic support through LAUNCH. Join a RGASC Peer Facilitated Study Group.

PLAN YOUR ACADEMICS*

BUILD A NETWORK
Networking simply means talking to people and developing relationships with them. Start by joining the Erindale Chemical and Physical Sciences Society (ECtPS). Make sure to go to the ECtPS's Meet the Prof's Night and follow them on IG @ecpsutm for upcoming events.

Visit the UTM Library Reference Desk.

BUILD A GLOBAL MINDSET
Engage with the many programs offered by the International Education Centre (IEC), whether you are an international or domestic student. Consider joining the Canada Eh? day trips or English Language Conversation Circles to deepen your global mindset.

First-year international students can also take advantage of THRiVE-IN, a one-day conference dedicated to helping you start your UTM journey successfully.

Attend the Program Selection & Career Options workshop offered by the Office of the Registrar and the CC.

Check Out Careers by Major at the CC to see potential career options.

BUILD SKILLS
Use the Co-Curricular Record (CCR). Search for opportunities beyond the classroom, and keep track of your accomplishments.

Attend the Get Hired Fair through the Career Centre (CC) to learn about on- and off-campus opportunities.

Attend the Experiential Education Fair.

2ND YEAR
Enrol in courses AST221H5 & AST222H5; MAT233H5 or MAT235H5; MAT236H5 & MAT244H5; PHY241H5 & PHY242H5 or JCP221H5.

Attend the RGASC's PART to enhance your research skills and enrol in the RGASC's PELS program to enhance your English language skills.

Use the Career & Co-Curricular Learning Network (CLNs) to find postings for on- and off-campus work and volunteer opportunities.

Work on campus through the Work-Study program. View position descriptions on the CLNs.

Sign up to become an Experiential Education Unit Student Ambassador and earn a CCR notation.

3RD YEAR
Enrol in courses AST320H5; JCP365H5 or CSC100H5 or AST325H1; JCP322H5 & JCP323H5; MAT311H5 and MAT334H5; PHY325H5 & PHY347H5.

Throughout your undergraduate degree:
- use the Degree Explorer to ensure you complete your degree and program requirements.
- see the CPS Academic Counsellor and the Office of the Registrar for assistance.

Enrol in AST399Y5 or AST425Y1; JCP421H5 and PHY451H5; STA220H5 or STA265H5. Senior students complete a research project. Speak to the CPS Academic Counsellor to discover available opportunities.

Log on to ACORN and request graduation.

4TH OR FINAL YEAR
Enrol in courses AST320H5; JCP365H5 or CSC100H5 or AST325H1; JCP322H5 & JCP323H5; MAT311H5 and MAT334H5; PHY325H5 & PHY347H5.

Skills are transferrable to any job regardless of where you develop them. Need to strengthen your presentation skills? Consider taking EDIS325H5 which allows you to earn a course credit in addition to a placement opportunity as a RGASC Facilitated Study Group Leader.

Establish a professional presence on social media (e.g. LinkedIn, Facebook, Twitter or blogs).

Learn about local issues! Consider a CSE Global Leadership Training Series (GIFTS) to become engaged with the local community, involved in social change, community development and contribute to a community-based project.

Expanding your intercultural awareness and developing intercultural skills will help you in your academics, personal growth and are highly sought out by employers.

Check out the Royal Astronomical Society of Canada Mississauga Centre or Earthline, an organization that develops and runs astronomy education and public outreach activities in Mississauga.

Go to a conference such as the Canadian Space Summit.

Engage in programs like ISTEP and THRIVE to support your transition out of the University!

Market your skills to employers. Get your resume critiqued at the CC. Attend the CC workshop Now That I'm Graduating What's Next?

Write a strong application for further education. Attend the CC's Mastering the Personal Statement workshop.

Ready to transition from the classroom to the workplace? Check out the Recent Graduate Opportunities Program (RGOP).

*Consult the Academic Calendar for greater detail on course requirements, program notes and degree requirements.
Skills developed in Astronomical Sciences

To be competitive in the job market, it is essential that you can explain your skills to an employer. Visit the Career Centre to learn how to articulate and market the following skills:

**Problem-solving:** analyze data and interpret observations and see relationships among factors.

**Communication:** explain complex concepts and theories to others and clearly explain scientific research and write reports.

**Research:** define a problem; establish hypotheses; apply and integrate fundamental scientific principles; gather scientific data; and review scientific literature.

**Computational:** measure distances and sizes; perform complex calculations; and interpret images.

Get involved

Check out the 100+ student organizations on campus. Here are a few:

- Erindale Chemical and Physical Sciences Society (ECPS)
- UTM Student Union (UTMSU)
- UTM Athletics Council (UTMAC)

For a listing of clubs on campus visit Student Groups and Societies Directory

Services that support you

- Accessibility Services (AS)
- Career Centre (CC)
- Centre for Student Engagement (CSE)
- Equity, Diversity & Inclusion Office (EDIO)
- Experiential Education Unit (EEU)
- Health & Counselling Centre (HCC)
- Indigenous Centre (IC)
- International Education Centre (IEC)
- Office of the Registrar (OR)
- Recreation, Athletics and Wellness Centre (RAWC)
- Robert Gillespie Academic Skills Centre (RGASC)
- UTM Library, Hazel McCallion Academic Learning Centre (HMALC)

Department of Chemical & Physical Sciences

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905-828-5351; 905-828-3800 cpscounsellor.utm@utoronto.ca www.utm.utoronto.ca/cps

FUTURE STUDENTS

Admission to UTM

All program areas require an Ontario Secondary School Diploma, or equivalent, with six Grade 12 U/M courses, or equivalent, including English. Your admission average is calculated using English plus your next best five courses. The Grade 12 prerequisites for Astronomical Sciences are Advanced Functions and Physics. The approximate average required for admission is mid- to high-70s. More information is available at utm.utoronto.ca/viewbook.

**NOTE:** During the application process, applicants will select the Chemical & Physical Sciences admissions category but will not officially be admitted to a formal program of study (Specialist, Major, and/or Minor) until after first year.

Sneak Peek

Would you like to understand more fully the celestial phenomena visible to the naked eye? AST110H5 gives a quantitative, scientific introduction to observing objects that can be seen with the naked eye or with binoculars. Discover the beauty of proofs in MAT102H5! You will learn to understand, use and develop precise expressions of mathematical ideas, including definitions and theorems.

In CPS, our students have access to new, state-of-the-art teaching laboratories and are involved in cutting-edge research projects in our research labs.

Student Recruitment & Admissions

Innovation Complex, Room 1270 University of Toronto Mississauga 3359 Mississauga Rd Mississauga ON Canada L5L 1C6

905-828-5400 www.utm.utoronto.ca/future-students