Biomedical Physics combines fundamental courses in physics, mathematics, chemistry, and biology together with specialized courses in biological physics. This new program has been introduced in response to the growing demand for specialists with physics background in the areas of biology and medicine. Are you interested in understanding how the building blocks of biology, such as proteins, DNA and RNA, fit together and interact to form the living world around us? Maybe you would like to build an instrument that can rapidly identify blood-borne infections or diagnose and track the progression of Alzheimer’s disease. Perhaps you’re interested in programming a computer to figure out the ideal way for a drug to target and attack a cancer cell. These are some of the challenges that Biomedical physicists tackle every day.

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 ERSPE1944 Biomedical Physics Specialist (Science)
- Major Program ERMAJ1944 Physics (Science)
- Minor Program ERMIN1944 Physics (Science)

Check out...
Get a physicist’s perspective on the building blocks of the living world in PHY332H5. You’ll learn about a wide range of biophysical techniques commonly used in life science.

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: Medical physicist; Ultrasound technician; Radiation therapist; Photodynamic therapist; Nuclear medicine technologist; Biological technician; Pharmacologist; Informationist; Community health worker; Doctor

Workplaces: Government; Research Laboratories; Manufacturing; Research centres; Hospitals and medical centres; Pharmaceuticals; Biotechnology; Academic medical centres/laboratories.
### 1st YEAR

- **Enroll in courses** (PHY146H5 and PHY147H5) or (PHY136H5 and PHY137H5), BIOC13H5, CHM110H5, CHM120H5, (MAT135H5 or MAT134H5) or (MAT137Y5 or MAT137Y5), ISP100H5.  
- Choose a program of study (Subject POS) 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 an utmONE course. Build community and gain academic support through LAUNCH. Join a RAGASC Peer Facilitated Study Group.  
- Use the Co-Curricular Record (CCR). Search for opportunities beyond the classroom and keep track of your accomplishments.  
- Attend the Get Experience Fair through the Career Centre (CC) to learn about on- and off-campus work and volunteer opportunities.  

### 2nd YEAR

- **Enroll in courses** PHY241H5, PHY245H5, PHY255H5, JOP265H5, JCP221H5, MAT233H5, 212H5/244H5/STA265H5.  
- Consider applying for Research Opportunity Program (ROP) courses PHY299Y and PHY399Y and work in a research lab. Visit the EEU website for ROP Course Prerequisites.  
- Attend the RGASC’s P.A.R.T. to enhance your research skills.  
- Use the Career Learning Network (CLN) 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 CLN.  

### 3rd YEAR

- **Enroll in courses** PHY324H5, PHY325H5, PHY332H5, PHY333H5, PHY347H5, JCP321H5, JCP322H5.  
- Throughout your undergraduate degree:  
  - use the Degree Explorer to ensure you complete your degree and program requirements  
  - use the Office of the Registrar and the CPS Academic Counsellor  
- Apply to TRIUMF - Canada’s national laboratory for particle and nuclear physics - that accepts 70 undergraduate students from across the country and abroad every year as part of its Undergraduate Student Program.  
- Apply for NSERC Undergraduate Program awards such as USRA to work in a lab in the summer.  
- Networking simply means talking to people and developing relationships with them. Start by joining the UTM Physics Club. Go to the Enidate Chemical & Physical Sciences Society’s Meet the Profs Night.  
- Visit the UTM Library Reference Desk.  
- Do you have a professor you really like or connect with? Ask them question during office hours. Discuss an assignment. Go over lecture material. Don’t be shy! Learn Tips On How to Approach a Professor available through the Experiential Education Unit (EEDU).  
- Engage in programs like the Global and Intercultural Fluency Training Series (GIFTS) or learn about and prepare for a future UTM Abroad Experience through the IEC to strengthen and enhance your intercultural skill set, and learn about other cultures while sharing your own.  

### 4th OR FINAL YEAR

- Enroll in courses PHY426H5, PHY451H5, PHY433H5, JCP463H5, PHY473H5/CP5489Y5, CP5400Y5, JCP421H5.  
- Senior students complete a research project. Speak to the CPS Academic Counsellor to discover available opportunities such as Independent Study Courses PHY473H5 and CP5489Y5.  
- Consider taking ED325H5 which allows you to earn a course credit in addition to a placement opportunity as a RAGASC Facilitated Study Group Leader.  
- Skills are transferrable to any job regardless of where you develop them. Need to strengthen your presentation skills? Consider taking ED325H5 which allows you to earn a course credit in addition to a placement opportunity as a RAGASC Facilitated Study Group Leader.  
- What is Experiential Education? It means learn by doing! Consider applying for the CPS400Y5 internship course. Speak to the CPS Academic Counsellor for more details.  
- Log on to ACORN and request graduation.  
- What is Experiential Education? It means learn by doing! Consider applying for the CPS400Y5 internship course. Speak to the CPS Academic Counsellor for more details.  
- Learn about working abroad. Read up on worldwide employment trends and industry outlooks through GoinGlobal. Attend the Go Global Expo. See if you are eligible for International Experience Canada.  
- Visit the UTM Physics Club. Go to the Enidate Chemical & Physical Sciences Society’s Meet the Profs Night.  
- Visit the UTM Library Reference Desk.  
- Go to the Experiential Education Unit (EEDU).  
- Establish a professional presence on social media (e.g., LinkedIn).  
- Learn about local issues! Consider a CSE Alternative Reading Week (ARW) to become engaged with the local community, involved in social change, community development and contribute to a community-based project.  
- Earn credits overseas! Apply to study for a summer, term or year at one of 140+ universities. The CPS department has identified partnerships which are most relevant to our students. Speak to the IEC for details about Course Based Exchange, funding and travel safety.  
- Learn about working abroad. Read up on worldwide employment trends and industry outlooks through GoinGlobal. Attend the Go Global Expo. See if you are eligible for International Experience Canada.  
- Join a professional association. Check out the Canadian Association of Physicians, the Canadian Organization of Medical Physicists or the American Physical Society.  
- Go to the Canadian Undergraduate Physics Conference or the Women in Physics Canada Conference.  

### 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](http://www.utm.utoronto.ca/program-plans) to create your own plan using My Program Plan.  

Update your plan yearly.  

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*How To Use This Program Plan*  

Revised on: 7/7/2021  

Visit [www.utm.utoronto.ca/program-plans](http://www.utm.utoronto.ca/program-plans) for the online version and links.
BIOMEDICAL PHYSICS

Skills developed in Biomedical Physics

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:

**Technical**: strong emphasis on lab work using state-of-the-art technology and advanced instrumentation.

**Communication**: ability to explain complex concepts and theories to others; 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.

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

Get involved

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

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

For a listing of clubs on campus visit [www.utm.utoronto.ca/clubs](http://www.utm.utoronto.ca/clubs).

Services that support you

- Accessibility Services (AS)
- Career Centre (CC)
- Centre for Student Engagement (CSE)
- 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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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 Biomedical Physics are Advanced Functions, Physics and Chemistry. The approximate average required for admission is mid- to high 70s. More information is available at [utm.utoronto.ca/viewbook](http://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

How are physics and the elasticity of muscles connected? Find out in PHY255H5, a course that applies Physics to biomedical phenomena. Medical techniques such as ultrasound imaging, magnetic resonance imaging, and laser surgery will be discussed.

Our students have access to new, state-of-the-art teaching laboratories and are involved in cutting-edge research projects in our research labs. Our physics equipment ranges from basic mechanic setups all the way to an atomic force microscope (AFM) that can achieve single atom resolution. We have an active undergraduate student club – the UTM Physics Club –to provide students with an opportunity for fun physics-based activities. To date, the main task has been building a Tesla coil that will play music.

Student Recruitment & Admissions

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