



HEALTH SCIENCES

2023/24
UNDERGRADUATE
HEALTH SCIENCES
PROGRAMS

BRIGHTER WORLD



Discover Health Sciences at McMaster

When you join Health Sciences at McMaster, you benefit from our world-renowned education advances and research excellence, consistently placing us among the top universities in the world for health and medicine.

McMaster's Health Sciences is known globally for our innovative method of small group, problem-based education, our focus on self-directed, life-long learning and our interdisciplinary research. Here, we look to translate what we learn in our laboratories into health care thought and practice.

The programs featured here are highly sought after and regarded, and we invite you to explore them and consider joining our culture of innovation, exploration and collaboration, where we lead by learning what was, challenging what is and optimistically embracing what could be.

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Dr. Paul O'ByrneDean and Vice-President,
Faculty of Health Sciences

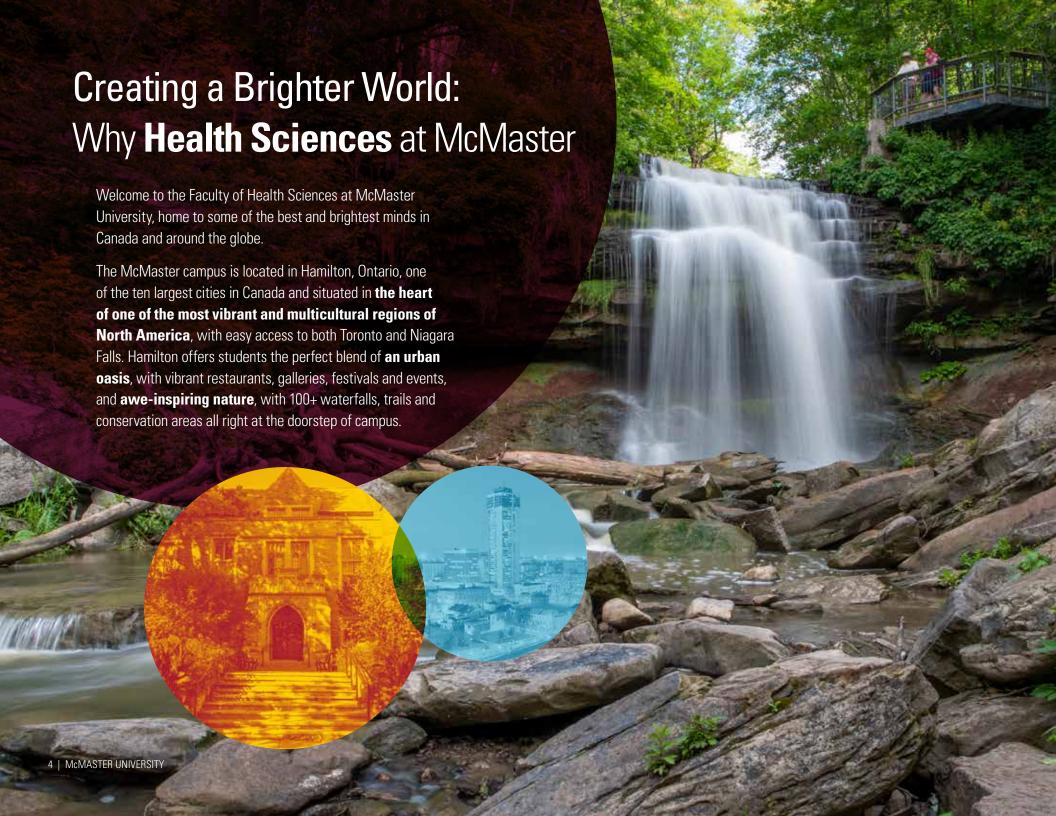
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Dr. Rob WhyteVice-Dean, Education,
Faculty of Health Sciences



in the world for Clinical and Health

2023 Times Higher Education World University Rankings





Health Program Pathways

No matter where you are in your undergraduate academic journey, the Faculty of Health Sciences at McMaster University offers you a pathway to a diverse range of careers in health. With specialized programs offering entry at Level I, II and III stages, learners can find a program that meets their needs. Explore some of our world-renowned undergraduate programs:



Canada's premier program in the interdisciplinary study of health.

Integrated Biomedical Engineering & Health Sciences see page 10 Learn to bring health solutions to market in the program where health sciences, engineering and entrepreneurship meet.

Honours Biochemistry see page 12

Study the chemical and molecular basis of life.

Integrated Rehabilitation & Humanities see page 14

Canada's only program where you study at the intersection of rehabilitation sciences and humanities.

Honours Biology & Pharmacology Co-op see page 16

Gain an interdisciplinary knowledge of biology and pharmacology and real-world experience.

Biomedical Discovery & Commercialization see page 18

Become a leader in biomedical sciences with an emphasis on drug discovery and business.

Levels of Entry

Programs that offer learners a direct entry pathway from secondary school.

Programs that require learners to have a minimum of one year of university study and meet the specified prerequisites.

Programs that require learners to have a minimum of two years of university study and meet the specified prerequisites.



Program		Level I	Level II	Level III	Level IV	Level V
Bachelor of Health Sciences (Honours)	Secondary School*					
Integrated Biomedical Engineering & Health Sciences						
Integrated Rehabilitation & Humanities	Any Level I program*					
Honours Biochemistry	Any Level I science or health science program*					
				co-op	stream	
Honours Biology & Pharmacology Co-op	Any Level II science or health science program*				co-op stream	
Biomedical Discovery & Commercialization	Al	ny Level II science or nealth s	science program.			Master internship



bhsc.mcmaster.ca

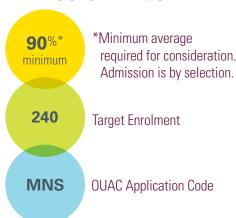
Bachelor of Health Sciences (Honours)

Level I Entry*

Degree: Bachelor of Health Sciences (Honours)

The Bachelor of Health Sciences (Honours) or BHSc (Hons) program is one of the top programs of its kind in the world, offering a unique interdisciplinary approach to the study of health, wellness and illness from biological, social, policy and population-based perspectives. Our curriculum aims to build the capacities that students need to become transformative leaders in health, from research to health care to health policy and beyond.

ADMISSION REQUIREMENTS



Requirements for Admission (Ontario)

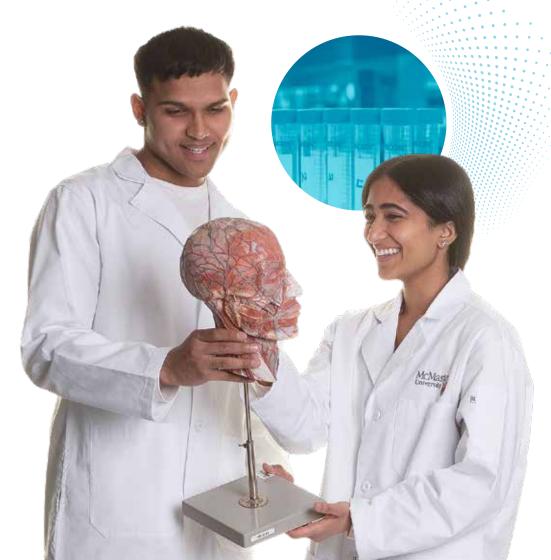
- English
- Biology
- Chemistry
- One of Advanced Functions Calculus & Vectors or Data Management
- One non-math/non-science/ non-technology 4U or 4M credit
- One additional Grade 12 U/M course

Supplementary Application

Supplementary application is a required component when applying to BHSc (Hons). It provides you the opportunity to showcase your critical thinking skills, problem-solving, and self-reflection. Both the supplementary application score and the grade point average factor into our admissions decision.

BHSc (Hons) supplementary application questions are posted on the program website in mid-September. Applicants will receive an email in late January with detailed instructions for logging in and submitting your supplementary applications. Admissions decisions for the BHSc (Hons) Program are made in early May.

*There are also a limited number of seats for Level II transfer students: see our website for details





"The smaller class sizes of BHSc is something that really helped me get closer to the professors and my classmates."

Vittoria, BHSc Student

FOCUS OF STUDY

The Bachelor of Health Sciences (Honours) program offers a ground-breaking approach to the interdisciplinary study of health. Drawing on a full range of departments within the Faculty of Health Sciences, and with access to McMaster's teaching hospital and state-of-the-art labs, students can build their knowledge across a range of health-related disciplines while simultaneously building crucial skills in problem-solving, collaboration, communication and critical thinking.

First-Year at a Glance

Total: **30 units**Required: **21 units**Electives: **9 units**

First-year required courses:

HTHSCI 1106 - Cellular and Molecular Biology CHEM 1A03 & CHEM 1AA3 - Introductory

Chemistry I & II

HTHSCI 1E06 - Inquiry I: Introduction

HTHSCI 1G02 - Interdisciplinary Problem Solving

in Health

HTHSCI 1Z01 - Praxis Pathways Curriculum 1 WHMIS 1A00 - Introduction to Health and Safety

Think Differently Through Inquiry

Beyond the rankings and courses, what makes our program so unique is the way you will engage and learn. In addition to the small class sizes, the Bachelor of Health Sciences (Honours) Program will help you to think differently through our inquiry-based learning model. With an emphasis on students as active participants in their learning, our inquiry-based learning emphasizes problem-solving, information literacy, collaboration and communication. How you engage and learn in BHSc (Hons) is as important as what you learn.

FUTURE CAREER

Our graduates are a diverse group, with the skills to find success in a variety of fields:

Dentistry

Medicine

Global Health

Law

Health Policy

- Physiotherapy or
- Health Research

Occupational Therapy

Research Opportunities

From COVID-19 and glycemic control in children living with disabilities to examining the effect of sex hormones on susceptibility to HSV-2, the Bachelor of Health Sciences (Honours) program offers students the chance to be involved in a wide variety of innovative, in-depth research with real-world applications.

Visit the Research section of our website for more examples of the enormous range of research undertaken by BHSc (Hons) students.







Integrated Biomedical Engineering & Health Sciences

Level I Entry

Degree: Honours Bachelor of Health Sciences in Health Engineering Science and Entrepreneurship

The Integrated Biomedical Engineering & Health Sciences (iBioMed) program is a unique interdisciplinary program drawing on the strengths of two world-renowned Faculties at McMaster: Engineering and Health Sciences. The first of its kind in Canada, students enter the program through a common first year where they will establish a strong foundation of skills and knowledge from both faculties before selecting a specialization.

Level II Specialization: Health, Engineering Science and Entrepreneurship (HESE)

Study where health sciences, engineering and entrepreneurship meet. The revolutionary Health, Engineering Science and Entrepreneurship (HESE) specialization gives students the opportunity to put their health sciences and engineering knowledge to work designing, creating and bringing health solutions to market and putting them in the hands of those that need it.

ADMISSION REQUIREMENTS IBIOMED

90%* minimum

*Minimum average required for consideration. Admission is by selection.

155 iBioMed

Target Enrolment HESE target enrollement of 50

MEH or MEI

OUAC Application Code

Requirements for Admission (Ontario)

- English
- Chemistry
- Biology
- Physics
- Calculus

Supplementary Application

The iBioMed program requires students to complete a supplementary application as part of the admissions process. The supplementary application consists of three (3) video response questions and one (1) written response. It takes approximately 30 minutes to complete.



A key focus of the iBioMed program is our project-based approach. Our unique Health Solutions Design courses allow students to solve unmet health care needs in a hands-on environment. In each level of study, students team up to utilize state-of-the-art technology and equipment for design solutions for real clients.

Throughout their studies, iBioMed students work in and have access to the iBioMed Design Studio, the iBioMed Genetic and Tissue Engineering Lab (located in the McMaster University Medical Centre) and the iBioMed Imaging and Instrumentation Lab. Within these spaces, students have access to optical CT scanners, desktop MRIs and ultrasounds, 3D printers and scanners, prototyping stations and more.

iBioMed First-Year at a Glance

Total: **37 units**Required: **34 units**

Electives: **3 units** – approved Complementary Studies

First-year required courses:

IBEHS 1P10 - Health Solutions Design Projects I
CHEM 1E03 - Entrepreneurship in Biomedical
Innovation: from Bench to Market
MATH 1ZA3 - Engineering Mathematics I
MATH 1ZB3 - Engineering Mathematics II-A
MATH 1ZC3 - Engineering Mathematics II-B
PHYSICS 1D03 - Introductory Mechanics
PHYSICS 1E03 - Waves, Electricity and

FUTURE CAREER

Our graduates are a diverse group, with the skills to find success in a variety of fields:

Magnetic Fields

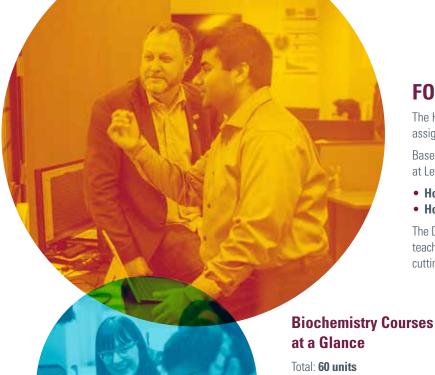
- Biomedical engineering
- Biotechnology
- Health and biomedical science
- Medical start-ups and entrepreneurship in the health sector
- Biomedical engineering and medical innovation organizations
- Professional health science careers or medicine

"I felt that the faculty really cared about my learning and strived to make sure that I gained the most from my undergraduate experience."

Arjun, iBioMed HESE Alumni







The Honours Biochemistry program employs a broad mixture of lecture-based learning, independent assignments, writing assignments, group work, laboratory work and optional hands-on research.

Based on your academic interests, the Honours Biochemistry program provides students with additional program options at Level III:

- **Honours Biochemistry** Biomedical Research Specialization (B.H.Sc.)
- Honours Biochemistry Biomedical Research Specialization Co-op (B.H.Sc.)

The Department of Biochemistry has a strong focus on research excellence, with unique lab opportunities and experience in both teaching and research laboratories. Students of the Honours Biochemistry program may choose to become heavily involved in cutting-edge wet-lab research earning credits towards their degree, as early as Level III.

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Total: **60 units**Required: **39 units**Biochemistry Course List:

21 units

Required courses:

BIOCHEM 2L06 - Inquiry in Biochemical Techniques
BIOCHEM 2B03 - Nucleic Acid Structure and Function
BIOCHEM 2BB3 - Protein Structure and Enzyme Function
BIOCHEM 3D03 - Metabolism and Regulation
BIOLOGY 2C03 - Genetics
BIOMEDDC 3WR3 - Biochemistry and Biomedical
Scientific Writing: Right your Write

CHEM 20A3 - Organic Chemistry I
CHEM 20B3 - Organic Chemistry II
STATS 2B03 - Statistical Methods for Science

Other program requirements apply outside of required courses and are subject to change. Please see the current Academic Calendar for full program requirements.

FUTURE CAREER

Biochemistry and Biomedical Sciences students develop a range of skills that are easily transferred to a wide range of careers. Our graduates have gone on to successful careers in:

- Immunology
- Microbiology
- Public Health and Health Policy
- Bioinformatics
- Stem Cells and Gene Therapy
- Biomedical Engineering
- Pharmacy
- Medicine, Dentistry, Veterinary Medicine
- Cancer Biology

Research Opportunities

With Level III course-based research options as well as senior thesis options, the Honours Biochemistry program offers students a wide array of areas of research to explore:

- Biotechnology and Drug Discovery
- Antimicrobial Resistance
- Host-Pathogen Interactions
- Genetic Engineering
- Infectious Disease
- Protein Structure and Enzyme Mechanics
- Neurodegenerative Disease
- Membrane Structure and Function
- Nutrition and Metabolism
- Bacteriology, Virology, and Mycology
- Nucleic Acid Structure and Function
- Vaccine Development
- Stem Cell and Cancer





The Integrated Rehabilitation and Humanities program is grounded in the problem-based learning and inquiry approaches which are foundational pillars of McMaster's Faculty of Health Sciences. Through cross-faculty experiential learning, coursework and co-curricular activities, students will learn about how restoring, maintaining and improving health through rehabilitation requires an in-depth examination of what it means to be human, as reflected in the creative arts, literature, music, history, peace and cultural studies, linguistics, the classics, communication studies, philosophy, ethics, theatre, film and more.

Integrated Rehabilitation and Humanities Courses at a Glance

Total: 30 units Required: 30 units

Level II Required courses:

18 units - Rehabilitation Sciences

HTHSCI 2F03 & 2FF3 - Human Anatomy and Physiology I & II HTHSCI 2RS3 - Exploring Foundations of Rehab. Sciences CLA 2MT3 - Ancient Roots of Medical Terminology

PHII 2D03 - Bioethics

3 units - Humanities courses

(HISTORY 1003: ENG 2NH3, 2S03, 2Z03: LING 2S03: PEACEST 2B03: PHIL 2F03: GENDRST 2AA3 OR ARTHIST 2AA3: MUSIC 2MT3. 2MU3: CLA 3MT3)

9 units - Electives

SRS 2R13 - RS Inquiry I

SRS 2FR3 - Evidence-based Rehabilitation

SRS 2MF3 - Measurement Fundamentals in Rehabilitation Science

FUTURE CAREER

Students of the Integrated Rehabilitation and Humanities program will develop a range of skills that are easily transferred to a wide range of careers.

Our graduates go on to careers in:

- Post-graduate health-care professional training such as Physiotherapist, Occupational Therapist, Medicine, Massage Therapists, Chiropractor, Audiologists and Speech Language Pathology, other allied health practitioners and careers that involve clinical assessment and intervention
- Health services support and development*, such as health policy analyst and researchers, consultants, program development, health and human resources

*Some careers may require further training and certification

Research Opportunities

Integrated Rehabilitation and Humanities students will have the opportunity to engage in new and ongoing research project and other health-related projects, where the focus is on data collection. analysis and/or conducting scoping and/or systematic reviews of evidence.

DISCOVER Integrated Rehabilitation and Humanities







Honours Biology and Pharmacology Co-op Program

Level III Entry

Degree: Honours Bachelor of Health Sciences in Biology and Pharmacology

Gain a comprehensive interdisciplinary knowledge of Biology and Pharmacology and real-world experience through three paid placements in the Honours Biology and Pharmacology Co-op (BioPharm) program, McMaster's longest-running undergraduate co-op program. Using the problem-based learning approach, Honours Biology and Pharmacology students are active learners in their education. Taking a self-directed approach to research and learning the many aspects of pharmacology and human physiology.

COMMON PROGRAM PATHWAYS

As a Level III entry program, students enter the Honours Biology and Pharmacology program after completing two years of study. Most commonly in a Science or Health Sciences program.

ADMISSION REQUIREMENTS



Course Requirements for Admission

Level I & II of an undergraduate program such as Chemical Biology, Biochemistry, Life Sciences or Health Sciences

BIOLOGY 2A03 or HTH SCI 2F03 and 2FF3

Supplementary Application

BioPharm applicants are required to submit additional documentation including a statement of interest and resume. Successful applicants will be contacted for an interview.



The Biology and Pharmacology program prides itself on the small-group, problem-based learning model that engages students as active learners in their education. This approach is a foundation of the Faculty of Health Sciences, where students identify issues and then seek, synthesize and integrate information during discussions with their peers. WHAT you learn is as important as HOW you learn it.

Co-Operative Education

Translate your skills and knowledge into real-world experience with the BioPharm co-operative education opportunities. Students of the program will complete up to 12 months of paid work placement during their time in the program, usually in academia, government and pharmaceutical industries.

BioPharm Courses at a Glance

BIOCHEM BIOCHEM 3G03 - Proteins and Nucleic Acids

BIOLOGY 3P03 - Cell Physiology

BIOLOGY 3U03 - Animal Physiology - Homeostasis

PHARMAC 3A06 - Introduction to Pharmacology (full year)

PHARMAC 3B06 - Methods in Pharmacology (full-year lab course)

PHARMAC 4C03 - Toxicology

PHARMAC 4AA3 - Advanced Pharmacology topics, including

how to start a company

PHARMAC 4D03 - Drug design

PHARMAC 4E03 - Social Pharmacology

of pre-accepted courses



FUTURE CAREER

Biology and Pharmacology graduates are having an impact on the world through a variety of successful careers:

- Physician
- Industry Scientist
- Pharmacist
- Professor
- Leading a start-up company

- Medical Communications
- Pharmaceutical Marketing
- Health Fconomist
- Epidemiologist
- · Health Policy in Government

Research Opportunities

BioPharm students will take a 4-month thesis project working in a laboratory with a clinician or scientist. A written thesis will be produced as well as an oral defence, as training for graduate school and research communication.

> **FIND YOUR PLACE** in Honours BioPharm





bdcprogram.healthsci.mcmaster.ca/

Biomedical Discovery and Commercialization



Level III Entry

Degree: Honours Bachelor of Health Sciences in Biomedical Discovery and Commercialization

The Biomedical Discovery and Commercialization (BDC) program provides students with advanced training in the biomedical sciences complemented by fundamental business training. Our students gain the skills required to be leaders in biomedical research and industries, with a particular emphasis on drug discovery and development. Our graduates are equipped not only with the skills to lead in the rapidly growing field of scientific discovery, but to help bring cutting-edge research from lab to market. This limited enrollment program draws on the strengths of the Department of Biochemistry and Biomedical Sciences with key contributions from the DeGroote School of Business

COMMON PROGRAM PATHWAYS

BDC is a Level III entry program with students who meet the admissions criteria commonly coming from Biochemistry, Sciences or Health Sciences programs after completing Level II study.

ADMISSION REQUIREMENTS

Typical cutoff **Minimum** 5.0 (C) is 8.0

58

Target Enrolment

Course Requirements for Admission

- One full year of Level I Biology
- One full year of Level I Chemistry
- A total of 60 units completed prior to September entry
- Requirements typically achieved through Level I & II of a Biochemistry, Science or Health Sciences Program

Supplementary Application

Applicants to the Biomedical Discovery and Commercialization program are required to complete the BDC Applicant Questionnaire as a supplementary application to the program.

The BDC program embraces innovative educational methods using experiential learning, inquiry and team-based approaches. Our curriculum focuses on an approach where students are active learners, engaging in real-world challenges. By combining first-rate biomedical training with exposure to business curriculum, BDC creates a training paradigm which provides tangible exposure to pharmaceutical, biotechnology and related industries. Graduates are eligible to apply for the 1-year Master of Biomedical Discovery and Commercialization program, which includes a 4-8-month paid industrial internships.

BDC Courses at a Glance Total: 30 units
Required: 21-27 units
Flectives: 3-9 units

Required Level III & Level IV courses:

BIOMEDDC 3A03 - Ideas to Innovation in Biomedical Sciences

BIOMEDDC 3B06 - Drug Discovery and Development

BIOMEDDC 3C06 - Research Skills Laboratory and Inquiry BIOMEDDC 4B03 - Road to Biomedical Commercialization

BIOMEDDC 4A15 - Senior Research Thesis

COMMERCE 1BA3 - Organizational Behaviour

COMMERCE 4AK3 - Accounting Information for Decision Making

COMMERCE 3MD3 - Introduction of Contemporary Applied Marketing

COMMERCE 4FW3 - Finance for Entrepreneurs BIOCHEM 3G03 - Proteins and Nucleic Acids

CHEM 20A3 - Organic Chemistry I CHEM 20B3 - Organic Chemistry II

Research Opportunities

BDC students have the opportunity to engage in research through Level III & IV courses

BIOMEDDC 3C06 Research Skills Lab and Inquiry

• BIOMEDDC 4A15 A/B - Senior Research Thesis

quiry

EXPLORE
Biomedical
Discovery and
Commercialization



FUTURE CAREER

The Biomedical Discovery and Commercialization program prepares graduates for careers in:

- Biomedical Industry
- Pharmaceutical Industry
- Consulting
- Biotechnology
- Medicine, Dentistry, Veterinary Medicine
- Law

"I chose the BDC program because it allowed me to blend my business and science interests."

Taneya, BDC and MBDC Alumni, 2021







HEALTH SCIENCES

Have questions?

Connect with your program of interest for more information.

Bachelor of Health Sciences (Honours)

bhsc.mcmaster.ca

Integrated Biomedical Engineering and Health Sciences

ibiomed.mcmaster.ca

Honours Biochemistry

healthsci.mcmaster.ca/biochem

Integrated Rehabilitation and Humanities

srs.healthsci.mcmaster.ca/irh

Biology and Pharmacology

biopharm.healthsci.mcmaster.ca

Biomedical Discovery and Commercialization

bdcprogram.healthsci.mcmaster.ca/

McMaster University is committed to supporting the needs of all students and ensuring they reach their full potential. Students Accessibility Services (SAS) provides compassionate, individualized services for students with disabilities with an integrated support structure, including facilitation of academic accommodations, programming and support services. Visit sas.mcmaster.ca for more information.

BRIGHTER WORLD