These regulations apply to students who have joined the MACS program before Sept. 2018.

Master of Applied Computer Science

MACS

Faculty of Computer Science

Site Menu

Paid internship opportunities

Why choose Master of Applied Computer Science at Dal?

1. **Fast track your way to industry:** In a hurry, all program streams can be completed in as little as 16 months. Alternatively, take a deeper dive with a program lasting 24 months which may include an 8-month internship, entrepreneurial work term, or research project.

2. **Experiential based learning:** Complete one of three streams:
   1. **Internship:** Build on your classroom knowledge and gain industry work experience for your resume during a 4 or even 8 month paid internship. Internships in Canada and abroad allow you to gain valuable on-the-job technical experience and provide networking opportunities with IT professionals and potential employers.
   2. **Entrepreneurship:** Take courses in the technical and entrepreneurial skills it takes to get create your own software-based business. Develop your ideas in ShiftKey labs, our start-up incubation space, that offers a broad mix of technical resources, workshops, and entrepreneurial mentoring. Meet potential co-founders, gain practical experience, be inspired, and ultimately, explore what is involved in creating a software start-up in a casual, risk-free environment.
   3. **Project:** Complete a research project under the direction of a faculty supervisor. Gain technical experience in the context of an established research group by completing an in-depth research project.

3. **Technical strength:** Get a head start for a career in the information technology industry. The Master of Applied Computer Science program is designed give you the technical skills needed for rapid advancement in the software industry.

4. **In-demand coursework:** Our required courses are in high demand by industry and include mobile computing, data management, warehousing and analytics, and communications.

5. **Learn in person:** Share ideas and insights among experienced faculty members and classmates with range a of diverse backgrounds and professional experiences.

6. **Wide range of backgrounds:** Whether you are an IT professional working in Canada, a student coming direct from a bachelor degree, or a foreign-trained professional, this degree is right for you.

7. **A growing network:** Because computer science permeates nearly all human endeavors from business and science to entertainment and medicine, our grads have found work across all industry sectors.

View program details

---

World-class faculty

Active research groups
You will benefit from working closely with our internationally recognized faculty. They provide the expertise you need to succeed in the growing field of information and communication technologies.

Learn about our faculty

Focus areas in Big Data Analytics, Systems and Networking, and Human-Computer Interaction allow you to find your research interest and work closely with active research groups.

Learn about the project stream

Industry internships

Paid internships give you the opportunity to network with IT professionals and potential employers, and present the opportunity of being hired by the organization you work with upon graduation.

Learn about the internship stream

A start-up network

Be a part of a vibrant network of students, alumni, and local companies engaged in the world of entrepreneurship, and passionate about helping you succeed in starting your own venture in Nova Scotia.

Learn about the entrepreneurship stream
The Master of Applied Computer Science is a 16-month graduate degree that prepares students for dynamic careers in the software industry. Student develop their technical skills through core courses in systems, communications, and data management. They then apply what they have learnt in a paid industry internship, entrepreneurship workterm, or research project. The program is also open to students with a STEM undergraduate degree outside of computer science and engineering who complete a two term preparatory program in software development.

Choose between four streams to create the program that is right for you.

**Internship**: Obtain technical experience in the context of an industrial work placement.

**Entrepreneurship**: Learn the technical and business knowledge needed to create your own business.

**Project**: Gain technical experience as you complete a research project within an established research program.

Students from a non-Computer Science background: Complete our Master of Applied Computer Science program in 24 months.

Example course schedule*

*The following is an example of courses for fall students. Please check the academic calendar for available courses for this academic year, or speak to an advisor.

<table>
<thead>
<tr>
<th>Project Stream</th>
<th>Internship Stream</th>
<th>Entrepreneurship Stream</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Year 1 (Term 1)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Required Courses</strong></td>
<td>CSCI 5708.03: Mobile Computing</td>
<td>CSCI 5708.03: Mobile Computing</td>
</tr>
<tr>
<td><strong>Other Requirements</strong></td>
<td>2 courses, total 6 credit hours</td>
<td>2 courses, total 6 credit hours</td>
</tr>
<tr>
<td><strong>Year 1 (Term 2)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Required Courses</strong></td>
<td>CSCI 5408.03: Data management, Warehousing and Analytics</td>
<td>CSCI 5408.03: Data management, Warehousing and Analytics</td>
</tr>
<tr>
<td><strong>Other Requirements</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Year 1 (Term 3)
<table>
<thead>
<tr>
<th>Required Courses</th>
<th>Other Requirements</th>
<th>Required Courses</th>
<th>Other Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSCI 5100.03: Written and Oral Communication Skills</td>
<td>Start 6 credit hour project; 1 course, 3 credit hours</td>
<td>CSCI 5100.03: Written and Oral Communication Skills</td>
<td>Entrepreneurship work term, Business plan development and presentation - total 3 credit hours</td>
</tr>
<tr>
<td>2 courses, total 6 credit hours</td>
<td>2 courses, total 6 credit hours</td>
<td>1 course, 3 credit hours</td>
<td>2 courses, total 6 credit hours</td>
</tr>
</tbody>
</table>

### Year 2 (Term 1)
<table>
<thead>
<tr>
<th>Required Courses</th>
<th>Other Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>N/A</td>
<td>Continue Project - Report and Presentation</td>
</tr>
<tr>
<td>N/A</td>
<td>Internship, Internship report and presentation - total 3 credit hours</td>
</tr>
<tr>
<td>N/A</td>
<td>Entrepreneurship work term, Business plan development and presentation - total 3 credit hours</td>
</tr>
</tbody>
</table>

### Advising and resources for MACS students

Get the full details on resources and support that exists for you.
Master of Applied Computer Science
MACS
Faculty of Computer Science

Overview

WHY DAL’S MACS IS RIGHT FOR YOU

Learn more about

- Advising & resources
- Funding and support
- MACS grad life

Apply now

Open new doors

Dalhousie’s Master of Applied Computer Science program will help you become a better designer and builder of software technologies. Our Faculty of Computer Science has strong ties with industry through our research collaborations and various co-op and internship programs. We collaborate closely with our Industry Advisory Board to ensure that our program is applied and focused to meet the needs within industry.

Whether you are an IT professional in Canada, a student coming direct from a bachelor degree, or a foreign-trained IT professional, this program will open doors for you that wouldn’t otherwise be open.

IT professionals working in Canada

Dalhousie’s Master of Applied Computer Science program is perfect for those individuals who already have a couple of years experience in software development. It will open up new opportunities for you within the Canadian IT industry - among others. Because computer science permeates nearly all human endeavors from business and science to entertainment and medicine, our MACS graduates are valued and find work across all industry sectors.

Students coming direct from a bachelor degree

The Master of Applied Computer Science program is well-suited for students coming direct from a bachelor degree in disciplines related to technology - with no on-the-job experience necessary.

Read about Nilofer Mehta’s experience as an MACS student coming direct from a bachelor degree.

Foreign-trained IT professionals

Use your technical experience and knowledge to develop a successful career in Canada. With Dalhousie’s Master of Applied Computer Science, you have the opportunity to work successfully in a field that is in high demand. This program will get you where you want to be - whether you decide to complete a research project with one of our profs, complete a 4 or 8 month internship, or jumpstart your own business venture. With an 8-month internship, your 2-year program may make you eligible to apply for a 3-year work visa.

Read more about how Nova Scotia is supporting international entrepreneurs.

Apply now

See our admission requirements.
Master of Applied Computer Science

Faculty of Computer Science

CAREER OPPORTUNITIES

Our growing network
Because computer science permeates nearly all human endeavors from business and science to entertainment and medicine, our grads have found work across all industry sectors. Learn more.

Expanding your career options
A Master of Applied Computer Science degree adds value to your career and will open up new opportunities for you within the IT industry and beyond. You will have the ability to connect with and contribute to the ongoing information technology advancements across all industries.

Computer Science has its own vertical within the IT industry, but also cuts horizontally across all other sectors of our economy. Studies have shown that 50% of all the IT jobs in Canada are not actually in the IT sector, but are spread across the rest of our economy. The IT industry’s unemployment rate continues to remain low as our graduates remain in high demand.

Former graduates of the program have found work as:
- Software Engineers
- Solutions Architects
- Software Developers
- Chief Technology Officers
- Technical Consultants
- Analysts
- QA Experts
- Senior Mobile Developers
- Data Warehouse Architects
- Senior Technical Leads

Alumni stories
Where are they now?
Our graduates are going places. Find out where they are and what they’re up to.

Learn about our core courses
There are three core courses in the MACS program.

**CSCI 5100 - Written and Oral Communication Skills**

This course will focus on learning to communicate effectively and efficiently in a variety of different written and oral contexts. Emphasis will be on learning proper document structure, reducing/removing noise (anything that distracts from the message), and creating the appropriate document or presentation in a variety of situations.

**CSCI 5408 - Data Management, Warehousing and Analytics**

This course will focus on three pillars for managing and analyzing data in distributed and cloud environments: Management of data in distributed systems, Data Warehousing, and Data Analytics. The course aims to provide appropriate background in areas in high demand in industry.

**CSCI 5708 - Mobile Computing**

This course covers the principles of mobile computing and the concepts and techniques underlying the design and development of mobile computing applications. Mobile computing is discussed from technological, application, and user perspectives. Topics include mobile and wireless communication technologies, development environments, application design for resource limited and failure-prone environments, user interface issues in the mobile computing setting, and the future of mobile computing.

[Learn about CS elective course options.](#)
Master of Applied Computer Science
MACS
Faculty of Computer Science

ADVISING & RESOURCES

Learn more about
- Funding and support
- MACS grad life
- Apply now

Equipped to succeed

While doing your Master of Applied Computer Science, you’ll have easy access to the resources you need to succeed:

- research-active supervisors to guide you
- pertinent research topics
- library for the latest research publications in journals, conferences and books
- software
- data standards and coding tools
- IT professionals
- scholarships offered by various government agencies
- research assistantships (subject to availability)

Solving real-world problems

Your supervisor has knowledge and access to real-world computer science projects. As a student, you will be exposed to these projects as you work towards solving a real-world problem. Not only will your work be hands-on and practical, it will also be gratifying to know that your research will make a real difference in IT.

View graduate links to resources
CONTACT

Learn more about
- Advising & resources
- Funding and support
- MACS grad life
- Apply now

Whether you have a question, comment or suggestion, we want to hear from you.

Admissions Questions
Phone: 902-494-6438
Email: cs.admissions@dal.ca

Address
Master of Applied Computer Science Graduate Coordinator
Faculty of Computer Science, Dalhousie University
6050 University Avenue
PO Box 15000
Halifax, NS, Canada
B3H 4R2

Interested in learning more?
- Request more info
- Attend an info session
Master of Applied Computer Science
MACS
Faculty of Computer Science

Home  Overview

GRADUATE HANDBOOK

Learn more about
- Our research
- Funding and support
- Graduate life
- Apply now

Understanding important requirements, resources, and opportunities
The Graduate Handbook provides an overview of the rules, regulations and procedures for graduate students in the Faculty of Computer Science.

- Graduate Forms
- Academic Integrity
  - Academic Dismissal
- Appeals Process
- Coursework Issues
- Readmission to the program
- Teaching Assistants
- Thesis and Project
  - Thesis Moderator Guidelines
- Resources
- Frequently Asked Questions

Next: Graduate forms
Master of Applied Computer Science
MACS
Faculty of Computer Science

MACS FOR STUDENTS FROM A NON–COMPUTER SCIENCE BACKGROUND

We are glad to accept applications to the Master of Applied Computer Science program from students with bachelor degrees in fields other than Computer Science. A Master of Applied Computer Science degree will allow you to enter the booming tech industry, where there is significant demand for those with transferable skills and experience.

If you come from a non-Computer Science background, you will have the opportunity to complete our Master of Applied Computer Science program in 24 months. This includes a four-month paid internship or entrepreneurial project where you will have the opportunity to apply what you learn during your studies in the real world.

Typical non-Computer Science bachelor degrees, suited for the Master of Applied Computer Science program, could include engineering, geology, statistics, math, sciences.

This is an excellent opportunity for you to enter the technology industry with an edge over the competition and open a world of prospects in Canada and overseas.

Example course schedule*

*The following is an example of courses for fall students. Please check the [academic calendar](#) for available courses for this academic year or speak to an advisor.

<table>
<thead>
<tr>
<th>Year 1 (Term 1)</th>
<th>Year 2 (Term 1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSCI 2110: Computer Science III</td>
<td>CSCI 5100: Written and Oral Communication Skills</td>
</tr>
<tr>
<td>CSCI 2132: Software Development</td>
<td>2 graduate elective courses, total 6 credit hours</td>
</tr>
<tr>
<td>CSCI 2141: Introduction to Database Systems</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year 1 (Term 2)</th>
<th>Year 2 (Term 2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSCI 3130: Introduction to Software Engineering</td>
<td>CSCI 5408: Data Management, Warehousing and Analytics</td>
</tr>
<tr>
<td>CSCI 3171: Network Computing</td>
<td>2 graduate elective courses, total 6 credit hours</td>
</tr>
<tr>
<td>CSCI 2121: Computer Organization with Assembly Language</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year 1 (Term 3)</th>
<th>Year 2 (Term 3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSCI 5708: Mobile Computing</td>
<td>Internship: Obtain technical experience in the context of an industrial work placement.</td>
</tr>
<tr>
<td>2 graduate elective courses, total 6 credit hours</td>
<td></td>
</tr>
</tbody>
</table>
Entrepreneurial Project: Learn the technical and business knowledge needed to create your own business.
Master of Applied Computer Science
MACS
Faculty of Computer Science

Home

INTERNSHIP

Employers that hire interns
Cisco
Dalhousie University
Dell Canada
Department of National Defence
ExxonMobile
General Dynamics
HB Studios
IBM Canada
J.D. Irving Limited
Lockheed Martin
Microsoft
North American Construction Group
Shell Canada
Syncrude Canada
Telus

Learn more about
Advising & resources
Funding and support
MACS grad life
Apply now

On-the-job experience and training
Students in the internship stream will gain hands-on experience and use their skills, education, and knowledge in a real-world IT environment. Here are just a few of things you will experience during your internship:

- an understanding of how IT is impacting the delivery of services in an application sector, such as retail, logistics, manufacturing, security, customer relationship management, sales and marketing
- networking opportunities with IT professionals and potential employers
- a greater chance of being hired by the institution after your internship

Typical activities may include: software development, systems design, software testing, network management, network engineering, and web and mobile computing

Fast facts about your MACS internship
Paid position with an organization that either develops or uses IT
Salary ranges from $17-25 per hour
Significant portion of the internship must be IT-related work
Internships are 1 or 2 terms in length and happen after completing the MACS coursework

Finding an internship
The process of finding an internship is straightforward and we are here to help you every step of the way: Find out more about the process of setting up an internship.

At the end of your internship
You’ll submit an internship report signed by your workplace supervisor
You may get an offer of employment from your internship employer or other employers

<table>
<thead>
<tr>
<th>Internship Stream (Possible Schedule)</th>
<th>Term 1</th>
<th>Mobile Computing</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CS Elective 1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>CS Elective 2</td>
<td></td>
</tr>
<tr>
<td>Term 2</td>
<td>Data Management, Warehousing, and Analytics</td>
<td></td>
</tr>
<tr>
<td></td>
<td>CS Elective 3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>CS Elective 4</td>
<td></td>
</tr>
<tr>
<td>Term 3</td>
<td>Written and Oral Communication Skills</td>
<td></td>
</tr>
<tr>
<td></td>
<td>CS Elective 5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>CS Elective 6</td>
<td></td>
</tr>
<tr>
<td>Term 4</td>
<td>Internship</td>
<td></td>
</tr>
<tr>
<td>Final Deliverable</td>
<td>Work Term Report &amp; Presentation</td>
<td></td>
</tr>
</tbody>
</table>

Before you begin your internship
Master of Applied Computer Science
MACS
Faculty of Computer Science

BEFORE BEGINNING YOUR INTERNSHIP

Resources to get you started
A range of services and courses are available to support internship students as they transition from the academic world to the workplace. Learn more about the Science, Information Technology, and Engineering Co-operative office.

If you are not a Canadian student
Upon enrollment to the internship stream, apply for a Social Insurance Number and work permit, if possible. Please note: work permits are required for off-campus jobs but not for on-campus jobs. The internship coordinator will, at your request, prepare the letter required to accompany the work permit request.

General information

1. You must have finished your first full year of 8 core classes in the Master of Applied Computer Science program before you can do an internship.

2. Decide that you want to do an internship and give us this information on your Graduate Student Program Form [PDF - 102 kB]. If you change from an entrepreneurship or project to an internship, please submit a Program Update Form [PDF - 143 kB] and let us know.

3. Register with the Co-op Office to initiate the internship placement process. The office will provide support in securing an internship position, as well as advertise potential MACS internship positions. As a student, you’re expected to apply to the advertised positions to secure an internship.

4. Start looking for an internship early. January is a good time to start looking if you are planning to do a spring/summer internship. Most organizations do their budget planning in March—if you do not approach them early, they may not have funding for your placement. Keep in touch with the Co-op Office to get news about new internship positions.

5. Your internship must be related to computer science. While the exact nature of the work might change during the internship, it should always be mostly computer science work.

6. You must negotiate your own salary with your employer. The minimum salary will be based on the Nova Scotia minimum wage. Average salary rates are between $17 and $25 per hour. All internships must be paid.

7. All internships must be a minimum of 13 weeks long. Usually internships are not longer than 16 weeks unless special permission is obtained.

8. You must have a designated workplace supervisor. You will report to this person and get feedback on your performance from them. Your supervisor will also sign the report that you produce at the end of the internship.

9. You must work at the organization’s location.

10. If you are doing the program part-time and working in a suitable location for an internship, you may request permission to do your internship at your workplace. You must present a proposal to the Master of Applied Computer Science Committee. The proposed internship must be related to computer science and be approved by the committee.

11. If you want to do an out-of-country internship, you may request permission from the Master of Applied Computer Science Committee. You must have the employer send the internship information (in English) on company letterhead to the committee. At the end of the internship, the supervisor must also send his/her final assessment of you to the committee.

Please send to:
12. You must fill out a Student Internship Form [PDF - 75 kB] and submit it to the internship coordinator (see contact information below) for approval prior to starting your internship. Information required on this form includes:
   - your name
   - student ID
   - duration of the internship
   - employer
   - supervisor's name and contact information
   - job description
   - lessons to be learned

13. You must register for the internship (LINK OUT?) for the term in which you are doing the internship. Make sure to update your program information on the Graduate Student Program Form [PDF - 102 kB] to show that you have selected to do an internship. The internship is a class, so failure to register for the internship (LINK OUT?) may result in the internship not being credited.

If you are unable to secure a paid internship position

You will be given an opportunity to complete a Master of Applied Computer Science project under the supervision of a Master of Applied Computer Science committee member.

Questions?

If you have any questions, please contact macsprogram@dal.ca.
Resources to get you started
A range of services and courses are available to support internship students as they transition from the academic world to the workplace. Learn more about the Science, Information Technology, and Engineering Co-operative office.

General information
1. If any issues arise with your internship, please contact the Co-op Office and the internship coordinator (see contact information below) immediately so that he/she can help you deal with it.
2. The Co-op Office will maintain communication with both you and your employer during the internship and will take immediate action to address any issues as they arise.
3. At the mid-point of your internship, the Co-op Office will contact you and your supervisor to check on performance and any other work-related issues.
4. You must have the opportunity to improve your performance should it not be at the level expected by your employer. In this case, your workplace supervisor should give you feedback on your performance and contact the Co-op Office immediately if there is a perceived problem.
5. We strongly suggest that you keep a weekly progress report to help you feel more confident and prepared when you write your internship report. In your weekly progress report include such things as:
   - your overall internship goal
   - internship deliverable(s)
   - work in progress
   - work completed
   - any issues encountered that impede your progress
   - on-the-job learning
   - how learning from the Master of Applied Computer Science curriculum was related to your internship work
   - other learning

Questions?
If you have any questions, please contact macsprogram@dal.ca.

At the end of your internship
AT THE END OF YOUR INTERNSHIP

Learn more about

- Advising & resources
- Funding and support
- MACS grad life
- Apply now

Your internship report

When you finish your internship, you must submit an internship report to the Master of Applied Computer Science Committee for evaluation.

What to include in the report

Your internship report should contain four subject areas:
- Description of the organization in which you are working
- Description of your internship work
- Discussion of how your internship work relates to health informatics
- Critical analysis of some problem that you experienced in the workplace that you feel merits a health informatics solution

Any additional information you and/or your supervisor consider valuable

A signed letter from your supervisor stating that they have read the report and found your internship satisfactory

An Evaluation Form [PDF - 86 kB] completed by your supervisor


Due date for report

The report is usually due two weeks after the completion of the internship. In exceptional circumstances, the internship coordinator may grant your written request for an extension of this deadline. If approval is given, you will receive an "In Progress" grade until your internship report is submitted and marked.

If you need to register for the next term, you should be aware of the academic and financial implications of extending an internship over more than one term.

If you plan on graduating at the next convocation following your internship, you must bear in mind that grade deadlines are enforced by the Registrar’s Office. This takes precedence over the usual two-week post-internship deadline for report submission. Therefore, you may be required to expedite your report submission in order to meet the convocation deadlines.

Please contact the internship coordinator (see contact information below) if you have questions about the report submission deadlines.

Evaluation of report

Each internship report is assigned a reviewer from the Master of Applied Computer Science Committee who will grade the report. If your reviewer feels that there was not sufficient detail for your internship report to be evaluated, you will be asked to revise and resubmit your report. Your reviewer will give you feedback on what was lacking.

The internship is graded as P (pass) or F (fail).
Once your internship report has been graded as a pass, it will be stored on DalSpace (with your permission). DalSpace is an institutional repository that collects, preserves and distributes digital content produced by members of the Dalhousie community. Please ensure that your document includes title, author, subject and keywords.

Taking a class during your internship
If you are interested in taking a class during the internship, you must first get permission from the Master of Applied Computer Science Committee and your internship employer. This class must not be a core class.

Leaving an internship before completion
If you choose to leave an internship before it is completed, it will be treated as a Fail unless the withdrawal is before the Registrar’s deadline for class withdrawal.

Exceptions will be considered on a case-by-case basis if the employer is unable to provide you with a suitable internship environment. If this is the case, you will be allowed to withdraw from the internship without penalty. You will receive an “In Progress” grade and will be expected to complete a new internship later.

Questions?
If you have any questions, please contact macsprogram@dal.ca.
Master of Applied Computer Science
MACS
Faculty of Computer Science

Internship

HIRE OUR STUDENTS

Hire our students
Whether you seek new talent for long-term recruitment or need skilled support for a special project, Dalhousie students are eager to contribute. Learn more about the Science, Information Technology, and Engineering Co-operative office.

Connecting forward-thinking employers with talented students
Consider hiring one of our skilled computer science graduate students if you are an employer in a field that involves:

- Software design
- Programming computers
- Developing websites
- Testing software reliability and user experience
- Technical support
- Data management
- Designing and evaluating data networks

Industries that have hired our computer science students:

- Government
- Technology
- Online business
- Telecommunications
- Gaming
- Energy
- Defence

Our internship program provides you with the opportunity to acquire short-term services of a well-trained computer scientists who can help your organization address technological issues. They can also help you:

- meet staffing challenges in a competitive market
- bring new energy and knowledge into your organization
- strategically position your organization with our well-trained new grads

Internship funding available
Your organization may qualify for a variety of funding programs designed to offset or cover the costs of hiring our interns. See the available funding programs.

Hiring made easy
Follow these steps to secure your intern:
1. Plan your internship opportunity
2. Create your job posting
3. Review applications and interview candidates
4. Rank applicants and make a job offer

See more details on the hiring process.

Apply now
To hire one of our students, contact the Co-op Office at 902-494-4353 or coopjobs@dal.ca.

Questions?
Questions about the hiring process
Contact the Co-op Office at 902-494-4353 or coopjobs@dal.ca.

Questions about the Master of Applied Computer Science program and the skills our students have
Contact macsprogram@dal.ca.
Master of Applied Computer Science
MACS
Faculty of Computer Science

ENTREPRENEURSHIP

A community to support you
The Halifax start-up ecosystem is strong. Dalhousie University, Halifax, and Nova Scotia are home to many supports to help you take your ideas to market. Learn more about what supports exist for you - and how Nova Scotia is supporting international entrepreneurs.

Learn more about

- ShiftKey Labs
- Funding and support
- MACS grad life

Apply now

Get started on your own venture
Students in the entrepreneurial stream gain the technical and business experience in a new venture creation. In place of two technical electives, you will take the Starting Lean and New Venture courses from the School of Business Administration.

This stream is perfect for anyone looking to start their own for-profit business or social enterprise. Whether you have an idea already, or want to work through an idea during your time at Dal, this program will equip you with the tools to make it happen.

Get out of the classroom
The goal of this stream is to get you out of the classroom and into real-world customer discovery. Beyond the technical skills, you will work on the practical, hands-on learnings around what it takes to actually start a scalable company or enterprise.

For support, in addition to the MACS program advisors from both the Faculty of Computer Science and the Rowe School of Business, ShiftKey Labs - our ICT sandbox and pre-incubator - will provide you with space, extra resources and advice to help you through this venture.

A vibrant local network
Startups are a critical component to the strength of local economies and our alumni are doing their part. Halifax is home to many support networks that will help you get started, including our network of alumni.

Nova Scotia supports international entrepreneurs
To attract, retain, and support entrepreneurs, Nova Scotia has launched an International Graduate Entrepreneur Stream. This provides immigration opportunity for students who have graduated from a Nova Scotia university and have started their own business. Learn more about the benefits of this once you've completed your entrepreneurship stream in MACS.

Entrepreneurship Stream (Possible Schedule)

<table>
<thead>
<tr>
<th>Term 1</th>
<th>Mobile Computing</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CS Elective 1</td>
</tr>
<tr>
<td>Term</td>
<td>Course</td>
</tr>
<tr>
<td>-------</td>
<td>-------------------------------------------------</td>
</tr>
<tr>
<td>Term 2</td>
<td>Starting Lean</td>
</tr>
<tr>
<td></td>
<td>Data Management, Warehousing, and Analytics</td>
</tr>
<tr>
<td></td>
<td>CS Elective 2</td>
</tr>
<tr>
<td></td>
<td>New Venture Creation</td>
</tr>
<tr>
<td>Term 3</td>
<td>Written and Oral Communication Skills</td>
</tr>
<tr>
<td></td>
<td>CS Elective 3</td>
</tr>
<tr>
<td></td>
<td>CS Elective 4</td>
</tr>
<tr>
<td>Term 4</td>
<td>Entrepreneurship Work Term</td>
</tr>
<tr>
<td>Final Deliverable</td>
<td>Presentation</td>
</tr>
</tbody>
</table>
MACS students taking the entrepreneurship stream will take the following two classes in lieu of electives. These courses will give you the framework to combine your technical knowledge with the business knowledge needed to start your own for-profit business or social enterprise.

Starting Lean Course
Students will have a real-world, hands-on look at what it’s like - and what it will take - to start a scalable company or enterprise. This course will create an entrepreneurial experience for you with all of the pressures and demands of the real world in an early stage start up. Learn more about Starting Learn offered through The Norman Newman Centre of Entrepreneurship.

New Venture Creation
Students will learn about the proess of creating new businesses. Students will work through experiential exercises, and a major project that will expose students to the issues, problems, and challenges of creating viable new businesses. The project provides students with the opportunity to explore and develop business ideas they have been considering or wish to investigate. Learn more about the New Venture Creation course.
A community to support you
The Halifax start-up ecosystem is strong. Dalhousie University, Halifax, and Nova Scotia are home to many supports to help you take your ideas to market. Learn more about what supports exist for you - and how Nova Scotia is supporting international entrepreneurs.

A sandbox space for creating technology-related start-ups
All students within the Faculty of Computer Science have access to ShiftKey Labs - our technology sandbox. Students going through the entrepreneurship stream of our MACS program will have space within ShiftKey Labs to work during their 4 - 8 month term.

ShiftKey Labs is a joint initiative of the Faculty of Computer Science and the Faculty of Management’s LaunchPad at Dalhousie University that integrates both the computing aspects and the business aspects needed to be successful.

What can ShiftKey Labs do for you?
ShiftKey Labs offers a broad mix of resources, supports, and opportunities for individuals wishing to experiment with and develop start-up ideas containing a technical component.

They provide free, physical space to collaborate on ideas within your own team and learn from other lab resident teams.

They also organize a variety of interesting workshops and events where participants can develop skills, meet new people, gain practical experience, be inspired, and ultimately, explore what is involved in creating a technology-related start-up in casual, risk-free environment.

Learn more about ShiftKey Labs.
Master of Applied Computer Science
MACS
Faculty of Computer Science

Entrepreneurship

HALIFAX ENTREPRENEURSHIP ECOSYSTEM

ShiftKey Labs
MACS students in the entrepreneurship stream will have their very own space within ShiftKey Labs to work during their 4 - 8 month term. Learn more.

A community to support you
Dalhousie hubs for innovation
Dalhousie University recognizes the impact it has as a hub for innovation and the role we play in one of the province’s greatest competitive advantages.

Dalhousie hosts three inter-university sandboxes. Sandboxes are collaborative, interdisciplinary spaces where students can come together with peers, mentors and external advisors to take business concepts from idea to execution. The information communications technology sandbox hosted at Dal is ShiftKey Labs.

Halifax start up ecosystem
The Halifax start-up ecosystem is strong. Halifax is home to many support networks that will help you get started: from the design and innovation component in university; to incubators and accelerators; to early-stage investment supports.

Key places of interest

Volta Labs
Start UP Halifax
Innovacorp
Early Stage Commercialization Fund
Entrepreneurs’ 3.0
Fusion Halifax’s Entrepreneurship Action Group
Halifax Start-Up Weekend

Nova Scotia supports international entrepreneurs
In an effort to attract, retain, and support entrepreneurs, Nova Scotia will be launching an International Graduate Entrepreneur Stream on January 1, 2016. This provides immigration opportunity for students who have graduated from a Nova Scotia university and have started their own business. Learn more about the benefits of this once you’ve completed your entrepreneurship stream in MACS.
LOCAL STARTUPS WITH FCS MEMBERS

A community to support you

The Halifax start-up ecosystem is strong. Dalhousie University, Halifax, and Nova Scotia are home to many supports to help you take your ideas to market. Learn more about what supports exist for you - and how Nova Scotia is supporting international entrepreneurs.

Startups are a critical component to the strength of local economies and our alumni are doing their part. Alumni from the Faculty of Computer Science have founded a diverse set of businesses that are contributing to our economy.

A sampling startups founded by our alumni:

- Leadsift
- TopLog
- Analyze Re
- TitanFile
- Homezilla
- Granify
- Dash Hudson
- HRO Core
- Magic Lamp Software
- bits.co
- Web Savers
- WeUsThem
- 2Keys Corporation
Engage in cutting-edge research

Students in the research project stream have the opportunity to work in research labs at the forefront of technical innovation.

Work hand in hand with other masters, PhD, and post-doctoral students and faculty members to complete a project that will provide a useful demonstration of a novel capability using existing technology. Projects may also survey an area that has high tutorial value.

This project stream is intended for students with an undergraduate degree in computer science. Up to three additional undergraduate courses, to be taken in the first two terms in the program, may be required to fill particular gaps in the student’s background.

Past projects have included:

- Jiang, Yuqing. *A Framework for Predicting User Preferences on Images Based on Users Social Media Data.*
- Seyedzamani, Marjansadat. *Seizure detection with machine learning techniques.*
- Bahekar, Pankaj S. *Network-based collaborative 3D Game Development engine prototype.*
- Thakkar, Chittra K. *Design and Development of End-to-End Remote Health Monitoring (RHM) System.*
- Canteenwala, Astad. *In-depth Analysis of Acoustic Ranging Techniques.*

Project stream details
This stream includes coursework consisting of 3 required courses, 5 additional elective courses, and a research project. The student undertakes a research project under the direction of a faculty supervisor. The goal is to gain technical experience in the context of an established research program. The project would start during the third term of the program.

Project report

The project report is submitted in writing and must be presented in a seminar forum before its approval by the supervisor and another faculty member.

<table>
<thead>
<tr>
<th>Project Stream (Possible Schedule)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Term 1</td>
</tr>
<tr>
<td>Mobile Computing</td>
</tr>
<tr>
<td>CS Elective 1</td>
</tr>
<tr>
<td>CS Elective 2</td>
</tr>
<tr>
<td>Term 2</td>
</tr>
<tr>
<td>Data Management, Warehousing, and Analytics</td>
</tr>
<tr>
<td>CS Elective 3</td>
</tr>
<tr>
<td>Project (Start)</td>
</tr>
<tr>
<td>Term 3</td>
</tr>
<tr>
<td>Written and Oral Communication Skills</td>
</tr>
<tr>
<td>Project (Continued)</td>
</tr>
<tr>
<td>Term 4</td>
</tr>
<tr>
<td>Project (Continued)</td>
</tr>
<tr>
<td>Final Deliverable</td>
</tr>
<tr>
<td>Project Report &amp; Presentation</td>
</tr>
</tbody>
</table>

Learn about our research strengths
Master of Applied Computer Science
MACS
Faculty of Computer Science

RESEARCH STRENGTHS

Cutting-edge research
Learn more about research happening in the Faculty of Computer Science.

Learn more about
Advising & resources
Funding and support
MACS grad life
Apply now

Research Themes

Big Data Analytics
- Artificial Intelligence
- Data Management & Information Systems

Systems
- Computer Networks
- Parallel & Distributed Computing
- Privacy & Security

HCI & Visualization
- Visualization
- Human Computer Interaction

Data Mining
- Knowledge Management
- Human Mobility Data Analytics
- Algorithms for Massive Datasets
- Health Data Analytics
- Machine Learning
- Digital Libraries
- Risk Analytics
- Metagenomics
- Bioinformatics
- Visual Text Analytics
- Social Media Analytics
- Ocean Data Analytics
- Computer Vision & Robotics
- Retail Analytics

Intrusion Detection
- Network Traffic Analytics
- Wireless Network Security
- Network Management
- Information Retrieval
- Health Informatics
- Efficient Algorithms
- Streaming Algorithms
- Algorithms Engineering
- High-Performance Computing
- Data Privacy Management
- Privacy Software Architectures

Hypertext
- Collaborative Technologies
- Usability
- Mobile Graphic Interfaces
- Geospatial Information Systems
- Ubiquitous Computing
- Information Visualization
- Personal Visual Analytics
- Natural User Interfaces
- Mixed & Augmented Reality
- Graphics Algorithms
- Rendering & Visual Encoding
It pays to study here

Awards, scholarships & grants
The Faculty of Computer Science offers its own awards and scholarships to energetic and committed computer science students involved with the Computer Science Society. Ranging from $1,000 to $3,000, the Leadership and Citizenship Awards recognize just how important community spirit and social development are to personal and academic growth.

More on-campus funding opportunities:
Faculty of Graduate Studies funding opportunities
Faculty of Computer Science funding opportunities

Tuition fees
Tuition and incidental fees are determined by Student Accounts.

Internships & research positions
MACS students can pay part of their tuition through paid internships or research positions. Though the money earned varies, students have found that these positions have helped make the degree program highly affordable."
Master of Applied Computer Science
MACS
Faculty of Computer Science

HOW TO APPLY

How much will it cost?

Fee calculator
Budget calculator
Find out about current graduate student fees

Your document checklist

Graduate Studies Application
Faculty of Computer Science online form
Two confidential reference letters
CS Background Worksheet (MACS and MCS applicants only)
Statement of Intent
General resume
Official transcripts mailed directly from all institutions previously attended.
Official English test scores
Evidence of research experience, such as publications and thesis summaries (PhD applicants only)
Graduate studies application fee. The application fee is currently $100.

Admission requirements

To be considered for a graduate program within the Faculty of Computer Science, all applicants must have the equivalent of a four-year undergraduate university degree, a minimum Grade Point Average (GPA) of 3.0, and meet the following program-specific admission requirements. Visit the Faculty of Graduate Studies for full details on admissions for graduate students at Dalhousie University.

Master of Applied Computer Science (MACS)

If applying from a non-CS background, qualifying year courses may be necessary
Non-Canadian applicants whose first language is not English require a TOEFL score of at least 92 (IBT) or IELTS score of 7.0
Please note: MACS program does not accept students for the summer term. Applicants should follow the application deadlines for September and January.

Application process

It is a three-stage process to apply to a graduate program in the Faculty of Computer Science.

1. Submit your online Graduate Studies Application. (It is recommended that you first type the required information into a text file and copy and paste into the online application form)
   Supporting documents include:
   2 reference letters:
   Academic references: You must enter the university email address of your academic referee in your online application. Once your application has been submitted, your academic referee will receive an email within one week requesting that they submit their reference letter online. They can choose to submit the letter in paper form instead. For full details on how to submit academic reference letters, read ‘application process’ on the Faculty of Graduate Studies website.
**Non-academic references:** All non-academic referees must submit their reference letters in paper form. 

*Please note:* All paper letters should be mailed to the address below in a signed and sealed envelope.

Application fee of $100

2. Complete the form in the **Faculty of Computer Science GradApp System:**
   You will receive an email (5–7 days) after you apply and pay your application fee with a username and password to log on to our GradApp System to submit your supporting documents.
   Please allow 5 business days to receive the email with your GradApp System login details, after you’ve applied and paid your application fee.
   We **require** that you upload your documents in our form before we can review your application.

3. **Send hard copies** (in addition to submitting scanned copies under step 2) of the following:
   - Official transcripts:
   - Two official sealed copies of your transcripts from all institutions previously attended must be mailed to the address below.
   - Official English Proficiency test score (for international students):
   - Hard copy of English Language Score must be mailed directly from the testing center to the address below.

---

**All hard copy documentation must be mailed to:**

Graduate Admissions  
Faculty of Computer Science, Dalhousie University  
6050 University Avenue  
Halifax, NS B3H 1W5  
Canada

**Application deadlines**

The following deadlines are in effect. Applications received after the deadlines will be considered for admission in the next term. For preferred consideration for financial aid, please apply before November 30.

**Please note:**

There is only September admission for the Master of Electronic Commerce (MEC) or Master of Health Informatics (MHI) programs. Admission for the Master of Applied Computer Science (MACS) is in September and January, there is no admission in May.

<table>
<thead>
<tr>
<th>Deadlines for applications from Canadian Citizens or Permanent Residents</th>
<th>September admission</th>
<th>January admission</th>
<th>May admission (by special arrangement)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Master of Applied Computer Science</td>
<td>June 1</td>
<td>October 31</td>
<td>N/A</td>
</tr>
<tr>
<td>Master of Computer Science</td>
<td>June 1 (For preferred consideration for financial aid: November 30)</td>
<td>October 31</td>
<td>February 28</td>
</tr>
<tr>
<td>PhD</td>
<td>June 1 (For preferred consideration for financial aid: November 30)</td>
<td>October 31</td>
<td>February 28</td>
</tr>
<tr>
<td>Master of Electronic Commerce</td>
<td>June 1 (For preferred consideration for financial aid: November 30)</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Master of Health Informatics</td>
<td>June 1 (For preferred consideration for financial aid: November 30)</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Deadlines for international applications</th>
<th>September admission</th>
<th>January admission</th>
<th>May admission (by special arrangement)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Master of Applied Computer Science</td>
<td>March 1</td>
<td>August 31</td>
<td>N/A</td>
</tr>
<tr>
<td>Master of Computer Science</td>
<td>March 1 (For preferred consideration)</td>
<td>August 31</td>
<td>December 31</td>
</tr>
<tr>
<td>Program</td>
<td>Application Deadline (For preferred consideration for financial aid: November 30)</td>
<td>Financial Aid</td>
<td>Year End</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>----------------------------------------------------------------------------------</td>
<td>--------------</td>
<td>---------</td>
</tr>
<tr>
<td>PhD</td>
<td>April 1</td>
<td>August 31</td>
<td>December 31</td>
</tr>
<tr>
<td>Master of Electronic Commerce</td>
<td>April 1</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Master of Health Informatics</td>
<td>April 1</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

**Additional requirements for international students**

Official TOEFL test scores as listed above by program or **International Degree Equivalencies**. The TOEFL score may be waived where the student has completed a degree program at an institution where the language of instruction is English and the official transcripts reflect this fact.

Applicants with bachelor’s degrees in computer science or engineering from Indian universities are encouraged to submit their JEE or GATE scores. Applicants with high scores in these tests will have increased chance for admission and/or financial support. Please upload a copy of the test results to the online application, and mail an original paper copy.

**Contact us**

Please feel free to contact us if you have any questions.

Email: cs.admissions@dal.ca

---

Apply now