



*Accelerating discovery in Atlantic Canada through
Advanced Research Computing*

ACENET RESEARCH FELLOWSHIP PROGRAM 2014-17

Information Package

November, 2014

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What is Advanced Research Computing (ARC)?

Advanced Research Computing (ARC) involves a cluster of computers working together to solve scientific, engineering, business or data analysis problems that are too large or complex for any single computer. Used by researchers, governments and industry, advanced computing can remove years from timelines for research or product innovation and makes new types of analysis and problem solving possible. Advanced computing is a rapidly-growing combination of hardware, software and skills that is advancing Canada's expertise and capabilities in science and technology, with resulting benefits for both economic development and society at large. The availability and quality of advanced computing services is critical to attracting top research talent in the region and Canada.

Context for ACEnet Research Fellowship Program

ACEnet is the consortium of universities in Atlantic Canada responsible for providing advanced research computing resources and expertise to researchers in the region. Additionally, we support several government organizations as well as industry, and we are the regional partner to Compute Canada.

ACEnet clients have access to over 180,000 CPUs nationally, 500 GPUs, over 25 petabytes of storage and a wide array of applications and software.

Beyond infrastructure, ACEnet provides computational research assistance and training. Some of what we do includes:

- Helping researchers specify their computing needs;
- Designing, optimizing and troubleshooting computer code;
- Customizing tools;
- Providing group and individual training and ongoing support from novice to advanced; and
- Installing, operating and maintaining ARC equipment.

Education has been a long-standing priority for ACEnet. Encouraging students at all levels to learn advanced computing skills and providing the tools and training to do so is a cornerstone of our mandate. These skills are increasingly in demand across universities, government and the private sector, and this demand will continue to increase as computing capabilities grow and Big Data becomes more accessible.

Objectives of the ACEnet Research Fellowship Program

- 1) To encourage undergraduates and graduate students to do research using ARC.
- 2) To increase the number and quality of researchers involved in advanced computing across ACEnet member institutions.
- 3) To facilitate the exploitation of ACEnet's computing infrastructure towards research discoveries of international significance.
- 4) To encourage the adoption of advanced computing by traditionally non-computational research disciplines.
- 5) To raise the profile of ACEnet.

Program Description

The current round of the ACEnet Research Fellowship Program is aimed at graduate and undergraduate students, where a significant component of their research will use ACEnet support and ARC resources.

Undergraduate students employed as research assistants will be eligible for up to \$5,000 per student, to be used to fund a minimum of 400 hours of employment. The work term is to be completed within a five-month period, normally over the summer between April 1st and August 31st. Individual universities may establish higher minimum hours, and/or require supervisors to contribute matching funds, at their discretion. Individual universities will decide on whether ACEnet undergraduate Fellowships can be combined with other internal or external awards or sources of support.

Full-time graduate students (masters or doctoral) will be eligible for up to \$20,000 over two years (i.e. up to \$10,000 per year), where a significant component of their thesis research will use ACEnet support and advanced research computing resources. If students have significant awards or support apart from their ACEnet Fellowship, a top-up award of \$5,000 per year can be given instead of the usual \$10,000, at the discretion of the university. Individual universities will also typically require departments or supervisors to contribute matching funds in order to meet or exceed standard graduate funding levels.

ACEnet will award a total of up to \$440,000 in Fellowships by March 31, 2017, the closing date of the program. A lump sum allocation has been made to each ACEnet partner institution on the basis of a 50/50 weighting formula of full time student enrolment and federal funding dollars allocated in fiscal year 2013. Institutions will determine the split of their allotted funds across graduate and undergraduate students and are encouraged to offer these awards across all disciplines.

Participant Eligibility

The ACEnet Fellowships are offered only to students at the ACEnet member institutions who have signed an Inter-Institutional Agreement supporting ACEnet. These are:

Acadia University	St. Francis Xavier University
Cape Breton University	Saint Mary's University
Dalhousie University	University of New Brunswick
Memorial University	University of Prince Edward Island
Mount Allison University	

Supervisors are required for both types of Fellowship. These must be regular, full-time, tenured or tenure-track faculty at one of the ACEnet member institutions. Students supervised by adjunct, limited-term, or emeritus faculty are not eligible. Supervisors must have, or agree to obtain, an ACEnet account as the Principal Investigator in order for students to complete their Fellowship project.

Both foreign and Canadian students are eligible. Co-op students are eligible.

Student Selection Criteria

The selection criteria will be determined by the individual universities, but should be a combination of research and academic excellence, together with a convincing research proposal.

Suggestions for criteria include:

- 1) Quality of research proposed and expected outcomes;

- 2) Academic standing of student;
- 3) Potential for collaboration within and across institutions; and
- 4) The potential for development of intellectual property, new relationships with private sector firms, or societal benefits.

The overarching criterion for approval by ACEnet will be the intended use of ACEnet resources. Applicants should clearly outline the computational aspects and needs of the proposed research.

Ambitious projects that will establish new standards within their field are encouraged, as is bringing expertise and techniques into ACEnet that are likely to benefit other researchers.

Award Process

Universities that choose to participate in the program will determine the balance between undergraduate and graduate Fellowships. Thus, some universities may stipulate that their financial contribution be restricted to the support of undergraduate students, while others may decide that their contribution be used for both undergraduate and graduate students. For undergraduate awards, universities may choose to carry over some of their allotted funds to the second year rather than use all their funds at once. Awards cannot be retroactive.

Universities will decide on and carry out the internal process to choose their student nominees for Fellowships as they see fit. That said, universities should provide ACEnet with a brief summary of their selection and evaluation approach for both undergraduate and graduate awards.

All university nominees must receive final approval by the ACEnet Fellowship Committee prior to disbursement of funds by ACEnet. ACEnet expects that nominees will be of high quality. It will review the nominees to ensure that students exhibit academic or research excellence and to confirm that projects involve ARC. In rare circumstances, ACEnet may reject a nominee, in which case clarification can be provided, or an alternative selection made by the university. For each applicant selected the following information should be provided, preferably as a single pdf file.

- 1) The name of the student and supervisor, including contact emails and faculty web-pages, together with the discipline or field of study.
- 2) An unofficial copy of the student's transcript.
- 3) A brief description of the proposed research (preferably one page including a title, a project synopsis, and a description of the role of ARC in the project).

ACEnet will only accept nominations from designated contacts at each institution. Nominations will not be accepted from individual faculty members, or from students. ACEnet will direct interested students to the designated contacts at the relevant university listed later in this document.

For all Fellowships, the deadline for applications is set by the university. However, ACEnet will accept nominations for year-one funding from January 1 to March 31, 2015, and for year-two funding from January 1 to March 31, 2016. Nominations should be grouped and sent in one package (i.e. all graduate students commencing in September 2015, or all 2015 undergraduate summer awards). By doing so, funds will be disbursed in bulk to the appropriate university for all approved nominees, and then

provided to students through the university's internal process. ACEnet will not accept more nominations from an institution than can be funded under its allocation.

Award Conditions & Transfer of Funds

All ACEnet funds related to this program must be disbursed to institutions by March 31, 2017. Funds not disbursed by that date will be forfeited by the institution.

Once the award selections have been finalized and approved, the institution will receive a *Notice of Award & Transfer Agreement* from Memorial University, the host university of the Fellowship funds. Once signed by the institution, a lump-sum funds transfer will be made within 30 business days.

The terms and conditions governing the award are:

- 1) The *Notice of Award & Transfer Agreement* must be signed and received by ACEnet.
- 2) ACEnet Research Fellowship funds may only be used to pay for salary and compulsory benefits for approved student awardees. Other expenses (e.g. travel, publication charges, and equipment) are not eligible.
- 3) Inter-university transfers of funds are not permitted.
- 4) There is no carry-forward provision for unspent funds. All funds must be disbursed from ACEnet by 31 March 2017, and spent by universities by 30 June 2017. Unspent funds from universities must be returned to ACEnet by 1 September 2017.
- 5) ACEnet requires a short financial report from the grants/research office stating the total amount received, expenses and amount and source of any matching or top up funds. A template is provided in this package. This report is to be completed:
 - a. When an undergraduate student recipient finishes their work term;
 - b. When a graduate student recipient finishes year one funding and is waiting on year two; and
 - c. When a graduate student recipient finishes their two year funding term.
- 6) While second year funding has been approved for graduate students, transfer of the second year's funds will be contingent on all reporting and participation obligations being met.
- 7) Fellowships are not transferable to other students. If a student leaves their program before a Fellowship has been completed, any unused funds must be returned to ACEnet.
- 8) ACEnet requires a report from all students (or supervisors) on research accomplishments achieved and the use of ACEnet's resources during the term of the Fellowship, as well as feedback on the Fellowship Program and ACEnet's computational support. A template is provided in this package.
- 9) ACEnet should receive recognition for these awards. To that end, institutions are asked to provide appropriate marketing and public relations support, and to ensure that the ACEnet brand and a citation appear in all materials related to the program, including resulting journal publications, oral presentations and posters. Awards should not be publicly announced without prior permission from ACEnet.

- 10) ACEnet reserves the right to use the names and photos of the student and/or supervisor, and a general description of their research, in the public domain. ACEnet Fellows may be asked to participate in ACEnet events during the term or at the conclusion of this award. These events include seminars, ACEnet's Annual Meeting, ACEnet Institute activities, and other ACEnet technical and research meetings. Reasonable eligible travel expenses will be reimbursed if required.

Allocation of Funds Across Universities

University	Allocation
Acadia University	\$15,000
Cape Breton University	\$10,000
Dalhousie University	\$155,000
Memorial University of Newfoundland	\$100,000
Mount Allison University	\$10,000
St. Francis Xavier University	\$25,000
Saint Mary's University	\$30,000
University of New Brunswick	\$65,000
University of Prince Edward Island	\$30,000
TOTAL	\$440,000

University Contacts for Information & Application Procedures

Institution	Name	Email	Telephone	Position
Acadia University	Barb Baker	barbara.baker@acadiau.ca	902-585-1498	Research Office Administrator/ Undergraduate Studies Grants
	Theresa Starratt	theresa.starratt@acadiau.ca	902-585-1914	Graduate Studies Officer
Cape Breton University	Mary Tanya Brann-Barrett	tanya_barrett@cbu.ca	902-563-1843	Associate Dean Research & Grad Studies
Dalhousie University	Marty Leonard	Marty.Leonard@Dal.Ca	902-494-6723	Dean of Graduate Studies
	Maireed Barry	Mairead.Barry@Dal.Ca	902-494-4547	Executive Director Enrolment Services & Deputy Registrar
Mount Allison University	David Bruce	dwbruce@mta.ca	506-364-2618	Director Research Office
Memorial University	Len Zedel	adsr@mun.ca	709-864-3106	Associate Dean of Science, Research & Graduate
	Aimee Surprenant	adsu@mun.ca	709-864-8155	Interim Associate Dean of Science, Administration and Undergraduate
Saint Mary's University	Heather Taylor	Heather.taylor@smu.ca	902-420-5069	Graduate Studies Officer
St. Francis Xavier University	Robert van den Hoogan	rvandenh@stfx.ca	902-867-3903	Dean of Science
University of New Brunswick	John Kershaw	kershaw@unb.ca	506-447-3065/ 506-453-4933	Acting Associate Dean of Graduate Studies
University of Prince Edward Island	Leslie Cudmore	lcudmore@upeu.ca	902-566-0709	Research Grants Coordinator

Program Management

The ACEnet Research Fellowship Program is under the management of the ACEnet Fellowship Committee. This committee consists of:

Peter Poole (Chair), Department of Physics, St. Francis Xavier University
Ian Short, Department of Astronomy & Physics, Saint Mary's University
Ronald Haynes, Department of Mathematics & Statistics, Memorial University

Administration is provided by:

Ray Miller, Executive Director, ACEnet, ray.miller@ace-net.ca
Cathy Perry, Finance Manager, ACEnet, cathy.perry@ace-net.ca
Michele Fash, Marketing & Business Development Manager, ACEnet, michele.fash@ace-net.ca
Dianne O'Leary, Administrative Staff Specialist, ACEnet, dianne.oleary@ace-net.ca

General inquiries regarding the ACEnet Research Fellowship Program may be directed to fellowships@ace-net.ca.