

**University of Waterloo
Faculty of Mathematics**

**DRAFT Strategic Plan
2012-2017**

INTERNAL CONSULTATION DOCUMENT

7 March 2012

**University of Waterloo
Faculty of Mathematics**

MESSAGE FROM THE DEAN

Last spring, I initiated the process of creating a five year Strategic Plan for the Faculty of Mathematics. The process of developing this plan has been guided by a small Strategic Planning Working Group (SPWG) that has focused on gathering feedback from the community through surveys, focus groups and interviews with key informants. In December, the SPWG hosted a one-day workshop with 30 people to review and discuss the feedback, and identify priority areas, goals and actions for the Faculty to 2017. The results are summarized in Sections 5 through 9 of this document.

The Strategic Planning Working Group consists of faculty members Christiane Lemieux, Jeff Orchard, Ross Willard, staff members Amy Aldous, Jack Rehder, Ingrid Town, and undergraduate student Andre Magalhaes, working with external consultant Diana Royce. Amy has worked tirelessly to provide writing and logistical support, and most importantly, sound advice for moving ahead with this new activity for our Faculty - Amy's contributions remind me once again how vital strong staff support is to so much of what we do at the University.

An effective five-year Strategic Plan should maximize our ability to enhance our place in the world. Our strategy is centred on our people - faculty, staff and students. Our people are what define this Faculty, and determine how we will achieve success as an organization. We need to recruit and retain the very best scholars and teachers, support staff and students. Our facilities, programs and communications need to properly support our activities and our vision as world leaders. Our reach should be international and our collective actions should facilitate our ability to act as a community.

This document is a DRAFT Strategic Plan that is ready for broad discussion and feedback. We have tried to make it specific enough so that it promotes serious discussion about our future priorities and directions, but "draft" enough that it is still open to modifications based on your input. During the consultation period, I and members of the SPWG will also be meeting with groups within the Faculty for in-person discussions about the draft plan. We seek your active participation and feedback to help us finalize this Strategic Plan on behalf of the Faculty. Following receipt and analysis of your feedback, we will firm up the plan's priorities, activities and associated timeframes by June 2012.

I would greatly appreciate any feedback that you may have about the draft plan **by April 20, 2012**, regarding:

1. The appropriateness of the Faculty's proposed mission, vision and values.
2. The appropriateness of the seven strategic goals for the Faculty and their related objectives and activities, which will guide our efforts over the next five years.
3. Any additional comments you may have.

I welcome your feedback, which can be provided anonymously online, although input in any format (personal, email, fax) will be gratefully received.

Ian Goulden
Dean, Faculty of Mathematics

7 March 2012

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1. Waterloo Math

The Faculty of Mathematics has a remarkable history. From the founding of the University of Waterloo in 1957, and the establishment of the Faculty in 1967, it has developed into a thriving centre for teaching and research in the mathematical and computer sciences that is perhaps unique worldwide in scope. Through the Centre for Education in Mathematics and Computing (CEMC), we run enrichment and outreach programs in schools worldwide. As part of these activities, we run competitions in mathematics and computer science for more than 200,000 school students in more than 50 countries. This helps us attract outstanding students from around the world. We have over 6,000 undergraduate students, enrolled in a variety of programs in mathematics, computer science, statistics, actuarial science, business and accounting. Our students perform with consistent success in the Putnam Mathematics Competition (for Universities in North America), and the ACM Computer Programming Competition (for Universities from around the world). More than 70% of our students are enrolled in cooperative education programs, in which they alternate between academic terms at the University, and external employment. Our graduates are highly sought after by employers and go on to achieve great success in industry, government and academia. Many of our best students are accepted for advanced research and study at internationally renowned graduate programs.

2. Planning Process

Since March 2011, the Faculty of Mathematics Strategic Planning Working Group (SPWG) has guided the development of the Faculty's first formal five-year strategic plan spanning 2012 - 2017. Below is a timeline of milestones in the planning process:

April 5: Dean Ian Goulden publicly launches strategic planning process

April - May: Establishment of planning principles, critical path and milestones

April - June: Web-based community consultation surveys (n=112 participants) completed (Faculty and staff (46), undergraduate (54), graduate and post-doctoral fellows (12))

June - July: Internal focus group discussion (n=39 participants) undertaken with senior university administrators external to the Faculty (6), staff (8), professors (11), undergraduates (4) graduate students and post-doctoral fellows (10)

June - July: External key informant interviews completed (n=14 participants) including representation from industry (4), academe (9) and not-for-profit (1) sectors

August - October: Review and analyses

November: Development of draft vision, mission, values and identification of priority areas for planning

December: Strategic planning workshop

Development of draft plan: December 2011 - February 2012

Community consultation and finalization: March - May 2012

Release and launch: June 2012.

3. Planning Principles

To guide the planning process, the SPWG adopted the following planning principles:

Visionary – *the plan must contain a compelling vision that inspires commitment to action*

Inclusive – *the process should ensure consideration of internal and external stakeholder perspectives and future needs*

Relevant – *the plan should be relevant to members of the Faculty (faculty, staff, students), partner organizations and society*

Transparent – *opportunities for involvement in the development and implementation of the plan must be clear to all interested parties*

Realistic – *plan must be practical and actionable, leveraging existing opportunities and addressing important challenges achievable in a 1-5 year time-frame*

Ethical – *the plan must be ethical in intent and implementation*

Appropriately resourced – *in all phases - development, implementation, evaluation.*

4. Feedback from Community Consultation

Below is a summary of feedback from the surveys, focus groups and key informant interviews organized as our strengths, weaknesses, opportunities and threats. This information provided important background and context to our strategic planning exercise.

<p>Strengths...to Build Upon</p> <ul style="list-style-type: none"> - Reputation - Co-op program; strong connections to industry and current and emerging jobs - Excellent students, faculty, staff - Breadth and depth of expertise – academic programs are well regarded - Multi- and inter-disciplinarity - Math contests and teacher outreach - International diversity - Unique Faculty structure - Entrepreneurial faculty members, spin-off companies 	<p>Weaknesses...to Address</p> <ul style="list-style-type: none"> - Risk averse, conservative, inward looking - IT infrastructure (MFCF & CSCF) <p>Undergraduate Education</p> <ul style="list-style-type: none"> - Large class sizes - Communication skills of students and instructors - Relevance of course content - Teaching innovation - Academic silos, standards <p>Research and Graduate Studies</p> <ul style="list-style-type: none"> - Limited research reputation - Limited opportunities for graduate students <p>International Students</p> <ul style="list-style-type: none"> - Language skills - Cultural challenges (values, beliefs) - Student services/support <p>Alumni Support</p> <ul style="list-style-type: none"> - Funding
<p>Opportunities...to Exploit</p> <p>Undergraduate education</p> <ul style="list-style-type: none"> - Project work – integrate course work, co-op, presentation skills - Increased integration and recognition of the Math/business students <p>Develop online education</p> <p>Recruit best faculty, emphasize mentoring</p> <p>Meet employer expectations for grads</p> <ul style="list-style-type: none"> - Enhance student communication skills <p>Recruitment/Outreach</p> <ul style="list-style-type: none"> - Extend reputation, visibility internationally - Increase reach of Math competitions and related communications - Attract top students <p>Leadership capacity building</p> <ul style="list-style-type: none"> - Among academic and administrative staff <p>Increase engagement</p> <ul style="list-style-type: none"> - Increase Faculty engagement with local, regional, national employers, and contribute to addressing national policy challenges <p>Physical Plant - Modernize space</p>	<p>Threats...to Mitigate Against</p> <ul style="list-style-type: none"> - Extreme rate of change in industry, society continues to accelerate – need to prepare graduates - Globalization of educational competitors - Competition in online course offerings - Lack of transformative initiatives arising from major gifts - Funding - government cut-backs, economic down-turn in industry and economy generally - Demographics – faculty retirement, planning, hiring competition/constraints - Trailing our reputation; “living in the past, resting on laurels” - Insularity, lack of influence - Partitioning of units – communication challenges

On December 7, 2011, an invitational workshop focusing on strategic planning for the Faculty of Mathematics was attended by 30 individuals representing the Faculty and University. The workshop was hosted by the Faculty of Mathematics Strategic Planning Working Group (SPWG) and was facilitated by Diana Royce, EdD, President, The Deerfield Group Inc.

The goal of the workshop was to advance the development of strategic priorities, goals and implementation tactics, as well as to provide feedback on draft mission, vision, and value statements. Input from this workshop provided the foundation for the draft Faculty of Mathematics strategic plan 2012 - 2017.

5. Mission

A mission statement succinctly articulates what an organization does and why. It should answer the following questions:

- Why do you exist?
- What do you do?
- Whom do you serve?

A mission statement should communicate the essence of an organization to its stakeholders and the public. The best mission statements tend to be succinct and avoid value-judgements.

DRAFT MISSION STATEMENT:

The mission of the Faculty of Mathematics at the University of Waterloo is to:

- **Conduct research that has worldwide impact and recognition;**
- **Provide teaching and learning opportunities of unmatched breadth and depth;**
- **Produce graduates that are in worldwide demand;**
- **Undertake educational outreach and community engagement that increases mathematical and computing literacy nationally and globally.**

6. Vision

A vision statement is “a concise and inspirational statement implicitly relating an organization's purpose to its values, thus motivating its actions toward a future state it strives to achieve.”

It should reflect an exciting and attractive future image of where we want the Faculty of Mathematics to be within the next 5-10 years. The best visions are the ones that people understand and “love”.

DRAFT VISION STATEMENT:

A world leader in mathematics and computer science

Possible variants:

To be recognized as world leaders in mathematics and computer science

Changing the world through mathematics and computer science

Optimizing the world through mathematics and computer science

7. Values

Value statements reflect shared beliefs about how people are expected to operate while conducting business on behalf of the organization. They should represent the “lived behaviours” that guide and align behaviour and galvanize an organization’s people’s commitment to a way of being on behalf of the organization – the “Faculty of Mathematics way of working.”

The DRAFT VALUES that guide our decisions, strategies and actions are:

- **Excellence**
- **Integrity**
- **Leadership**
- **Community engagement**
- **Collaboration**
- **Innovation**
- **Impact**
- **Service.**

8. Strategic Goals

The Faculty of Mathematics has identified seven strategic goals to be pursued to 2017. These goals are aligned with and complement the University of Waterloo's *Sixth Decade Plan (2007-2017), Pursuing Global Excellence: Seizing Opportunities for Canada*.

These seven priority areas, and their associated goals, were developed through broad consultation. Many of these goals are interdependent, so our efforts in one area will simultaneously contribute to and accelerate the realization of goals in other areas.

Strategic Goals

PRIORITY AREA 1: RESEARCH AND GRADUATE STUDIES

STRATEGIC GOAL:

A vibrant research environment and enriched graduate student experience

PRIORITY AREA 2: UNDERGRADUATE EDUCATION

STRATEGIC GOAL:

Outstanding undergraduate teaching and learning opportunities across all programs

PRIORITY AREA 3: ACADEMIC PROGRAM DEVELOPMENT AND SUPPORT

STRATEGIC GOAL:

Offer leading-edge, dynamic academic programs

PRIORITY AREA 4: INTERNAL AND EXTERNAL COMMUNICATIONS AND ENGAGEMENT

STRATEGIC GOAL:

Regular, relevant, timely communications and engagement with our communities

PRIORITY AREA 5: INTERNATIONAL STUDENT RECRUITMENT AND SUPPORT

STRATEGIC GOAL:

Be a leader in international student education and support

PRIORITY AREA 6: FACULTY INFRASTRUCTURE AND SERVICES

STRATEGIC GOAL:

Outstanding services and support in all areas of Faculty activity

PRIORITY AREA 7: ADDITIONAL FUNDING

STRATEGIC GOAL:

Ensure appropriate funding to support strategic plan implementation

9. Strategic Objectives - Where we want to be by 2017

Specific objectives to be achieved, and related actions and initiatives to be undertaken towards the achievement of strategic goals, are outlined below:

PRIORITY AREA 1: RESEARCH AND GRADUATE STUDIES

STRATEGIC GOAL:

A vibrant research environment and enriched graduate student experience

To achieve this goal, we aim to:

Objective 1.1: Aspire to the highest possible standing in research
by:

- 1.1.1 Hiring the very best faculty (opportunistically)
- 1.1.2 Developing a broader base for research funding for the Faculty
- 1.1.3 Fostering a highly attractive, positive and supportive environment for research

Objective 1.2: Attract the highest quality graduate students
by:

- 1.2.1 Bolstering promotion of graduate programs and recruitment of graduate students
- 1.2.2 Increasing resources for graduate studies
- 1.2.3 Leveraging the Natural Science and Engineering Research Council (NSERC) Undergraduate Student Research Award (USRA) Program to attract undergraduate students interested in research
- 1.2.4 Attracting more of our own undergraduate students to pursue graduate studies at Waterloo

PRIORITY AREA 2: UNDERGRADUATE EDUCATION

STRATEGIC GOAL:

Outstanding undergraduate teaching and learning opportunities across all programs

To achieve this goal, we aim to:

Objective 2.1: Improve the undergraduate student classroom experience

by:

2.1.1 Establishing a Task Force with a mandate to examine the undergraduate classroom experience and make recommendations to ensure excellence in undergraduate teaching and learning.

Issues to be explored may include:

- a) Hiring practices
- b) Programs to improve teaching performance throughout the Faculty
- c) Improvements to teaching evaluations
- d) Strategies to ensure continuous value of teaching and evaluation processes
- e) Strategies that increase student engagement and mitigate against the effects of large class sizes
- f) Optimal balance between lecturers and professors/scholars teaching undergraduates
- g) Creating an online repository of course descriptions

Objective 2.2: Broaden student learning opportunities

by:

2.2.1 Encouraging regular Faculty wide multidisciplinary, collaborative projects for undergraduate students based on team solutions to real world problems (with prizes) using a “customer-focused,” team approach

- Turn this into an interesting, alternative, for credit, Math “499P” course

2.2.2 Increasing Faculty level coordination and guidance to facilitate international student exchanges

- Create an anonymous database of past student “paths”

Objective 2.3: Increase online learning opportunities
by:

2.3.1 Placing all 1st year Math Faculty core courses online

2.3.2 Providing an array of online learning resources (non-credit courses)

- Making open, online, Waterloo-branded resources and lectures freely available (like MIT)

2.3.3 Making better use of leading online tools for delivery of blended learning courses, as well as credit courses delivered fully online

Objective 2.4: Improve student communication skills
by:

2.4.1 Increasing the number of undergraduate essay/written assignments and oral presentations

2.4.2 Increasing enrolment in communications enhancing course(s)

2.4.3 Adding a mathematical writing course

PRIORITY AREA 3: ACADEMIC PROGRAM DEVELOPMENT AND SUPPORT

STRATEGIC GOAL:

Offer leading-edge, dynamic academic programs

To achieve this goal, we aim to:

Objective 3.1: Establish a regular process for review and renewal of existing academic programs

by:

3.1.1 Tasking the Associate Dean, Undergraduate to develop an implementation plan linked to the Senate-led review cycle

Objective 3.2: Provide support for the development of new academic programs

by:

3.2.1 Increasing the transparency of the budgetary processes for developing new programs

3.2.2 Establishing ongoing environmental scanning and review processes to facilitate the early identification of and appropriate support for new program development opportunities

3.2.3 Offering teaching relief to those developing new programs

Objective 3.3: Establish a plan and processes to support the development of online educational materials

by:

3.3.1 Developing a new teaching credit structure to support faculty developing online course materials

3.3.2 Collaborating with the Centre for Extended Learning (CEL) to support the development of online learning materials

PRIORITY AREA 4: INTERNAL AND EXTERNAL COMMUNICATIONS AND ENGAGEMENT

STRATEGIC GOAL:

Regular, relevant, timely communications and engagement with our communities

To achieve this goal, we aim to:

Objective 4.1: Strengthen external communications and community engagement

by:

- 4.1.1 Strengthening media relationships and increasing media exposure
- 4.1.2 Increasing Mathematics at Waterloo presence on boards of directors and advisory boards across sectors
- 4.1.3 Increasing opportunities for students to network with leaders across sectors
 - Invite “distinguished” speakers for students, staff, faculty to advance external relationships
- 4.1.4 Expanding the Centre for Education in Mathematics and Computing (CEMC)’s capacity to reach out to students through contests and other engagement strategies
- 4.1.5 Targeting the international community for communications and outreach (broadening the base of those who know about us, increasing our reputation and facilitating student recruitment)

Objective 4.2: Develop a strong sense of community

by:

- 4.2.1 Creating strong affinities for students, faculty and staff, to better equip them as ambassadors to carry positive messages outwards
 - Exploring options around establishing student cohorts that foster strong, enduring friendships among students, relationships with the Faculty, and bolster long-term opportunities for Faculty support
- 4.2.2 Generating pride in the Waterloo brand (tied to the difficult, challenging nature of the programs)
- 4.2.3 Encouraging Faculty social events, sporting events and competitions
- 4.2.4 Developing an internal strategic communications plan to determine key audiences, resources and timing of messages

Objective 4.3: Significantly enhance recognition and reputation - nationally and internationally

by:

4.3.1 Systematically share successes of faculty and students internally and externally

4.3.2 Proactively and systematically nominate Faculty, staff and students to receive a greater proportion of awards

Objective 4.4: Increase student engagement

by:

4.4.1 Facilitating closer relationships between undergraduates and faculty outside the classroom e.g., through program clubs

4.4.2 Facilitating closer relationships between and among students across programs

Objective 4.5: Establish a dynamic, comprehensive, accessible online presence

by:

4.5.1 Creating a dynamic web presence that is strategically focused and utilizes the full range of web-based and social media that enable regular, relevant, timely communications and engagement with our communities

PRIORITY AREA 5: International student recruitment and support

STRATEGIC GOAL:

Be a leader in international student education and support

To achieve this goal, we aim to:

Objective 5.1: Recruit the best students world-wide

by:

5.1.1 Continuing our diversification efforts

5.1.2 Providing increased support and coordination to faculty travelling abroad so that they can contribute to international outreach and recruitment activities

5.1.3 Continuing to work collaboratively with CEMC to expand outreach

Objective 5.2: Improve support and the socio-cultural experience for international students

by:

5.2.1 Hiring or training staff to specialize in international student issues

5.2.2 More effectively leveraging and communicating Student Success Office and counselling resources and associated services (i.e., health services)

5.2.3 Actively leveraging community support services and resources – e.g., Chinese-Canadian Association

5.2.4 Regularly review and update English language competency strategies

PRIORITY AREA 6: Faculty Infrastructure and Services

STRATEGIC GOAL:

Outstanding services and support in all areas of Faculty activity

To achieve this goal, we aim to:

Objective 6.1: Strengthen opportunities for support staff to enhance their expertise, effectiveness and capacity

by:

- 6.1.1 Promoting and supporting targeted, formal training and development for staff
- 6.1.2 Ensuring regular evaluation of existing job descriptions and priorities

Objective 6.2: Implement a physical space improvement plan

by:

- 6.2.1 Creating a strategic plan for refreshing/repurposing existing space and developing new space for faculty, staff, undergraduate and graduate students
- 6.2.2 Prioritizing the protection and development of collaborative space

Objective 6.3: Improve IT operations and infrastructure

by:

- 6.3.1 Improving communications between IST and Faculty Computing units
- 6.3.2 Engaging computing facilities in strategic planning exercises to examine the structure, functioning and mandate of our computing facilities and identify priority actions
- 6.3.3 Coordinating Faculty of Mathematics systems (e.g., graduate interface) to improve internal processes

PRIORITY AREA 7: Additional Funding

STRATEGIC GOAL:

Ensure appropriate funding to support strategic plan implementation

To achieve this goal, we aim to:

Objective 7.1: Attract additional funding to the Faculty
by:

7.1.1 Broadening our development plans and activities

7.1.2 Broadening corporate support from industry

7.1.3 Broadening the sources for research grants

Objective 7.2: Examine our priorities for the use of additional funding
Current areas of concern:

7.2.1 Research and graduate student funding

7.2.2 Large class sizes for undergraduate students