

# FIONA DUNBAR

**Email:** [fiona.dunbar@uwaterloo.ca](mailto:fiona.dunbar@uwaterloo.ca)

**Website:** [uwaterloo.ca/scholar/fesdunba](http://uwaterloo.ca/scholar/fesdunba)

**Linked In:** [linkedin.com/in/fiona-dunbar](https://www.linkedin.com/in/fiona-dunbar)

## PROFILE

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A seasoned Educator with 15 years of dynamic experience with the University of Waterloo as Lecturer in the Faculty of Mathematics. Highly organized and able to manage multiple projects at one given time. Has a demonstrated ability to communicate effectively with key stakeholders, at all levels, within the University. Has acute technical capabilities and a strong working knowledge of various academic software, as well as experience using online modules and giving training demonstrations. Ability to seamlessly adapt and apply skills to technology start-up industry. Brings a solid work ethic to the table which is characterized by a high level of integrity, professionalism, and a passion for helping students achieve their academic goals.

## EDUCATION

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University of Waterloo M.Math in Combinatorics & Optimization Specialization in Cryptography	Waterloo ON <i>June 2003</i>
Wilfrid Laurier University B.Sc. in Mathematics <i>with High Distinction</i>	Waterloo ON <i>June 2001</i>
A.R.C.T. in Piano Performance Royal Conservatory of Music	Toronto ON <i>2002</i>

## MASTER'S THESIS

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Title: "Digital Signature Scheme Variations"  
Advisor: Professor Alfred Menezes

A broad scope of key and signature generation algorithms and verification protocols and their applications are presented. Some of these schemes allow for the client to use a small secure device while borrowing computing power from an untrusted server. Other schemes offer solutions to prevent against forgery and detect fraudulent activity. These specialized schemes are analyzed by their increased efficiency, heightened security, anonymity services and enhanced signing and verifying capabilities. Applications of these features as they pertain to digital payments schemes is discussed.

## ACADEMIC HONORS

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- Excellence in Online Teaching Award, 2020
- Ontario Graduate Scholarship, 2001-2002
- University of Waterloo Provost's Scholarship, 2002

- Alumni Mathematics Gold Medalist: awarded to the student graduating with the highest GPA in mathematics, Wilfrid Laurier University, 2001
- Ken McDowell Scholarship (awarded to a student entering 3rd or 4th year with the highest mathematics GPA, 2000)
- Dean's Honour Roll, 1997-2001
- Wilfrid Laurier University Entrance and Incentive Scholarships, (awarded for outstanding academic achievement), 1997-2001
- Warner Lambert Inc. Scholarship, 1997-2001

## **WORK EXPERIENCE**

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### **CONTINUING LECTURER**

Faculty of Mathematics, University of Waterloo, July 2005 - May 2018

- Effectively prepares lessons and teaches math to University Students including various versions that cater to students in different programs, such as: Math; Engineering; Computer Science and first year Algebra and Calculus.
- Creates detailed course notes for students which includes basic content, space for personal note-taking; elaborating in class with concrete examples of the content provided.
- Prepares 10 detailed assignments per course, as well as creates all relevant content for midterms and exams, demonstrating a strong working knowledge of each curriculum to ensure the best possible learning experience for the students.
- Manages a team of, as many as 22 Graduate Teaching Assistants for each course by preparing various materials for them (summaries of course notes and examples of difficult topics), and advising them on effectively running tutorials.
- Manages a team of Undergraduate Markers (as many as 8 at a time) that help with grading of weekly assignments; provides coaching and feedback when required to ensure the best possible outcome.
- Conducts performance reviews for teaching assistant each term, for all direct-reports, taking disciplinary action when required and providing very specific feedback.
- Teaches Linear Algebra for Engineers, Linear Algebra for Honours Mathematics, Mathematics for Accounting, Calculus for Engineers, Calculus I & II for the Sciences, and Calculus II for Honours Math & Computer Science; with a focus on how the key elements align with specific careers.
- Exercises a high level of professionalism and composure when dealing with difficult situations including, but not limited to, plagiarism, cheating on assignments and test; escalating to the appropriate Dean when necessary, to determine next steps.
- Works in collaboration with the Centre that runs Canadian Math Competitions to create contests from grade 7-12; managing the Euclid committee that meets twice per year to discuss content for contests and alternative solutions.

- Participates in regular faculty meetings, as well as meetings with the Student Workshop Committee, Contests Committee and Internal Contest Review Committees for each contest once a month to discuss any issues, ongoing projects.
- Visits 20-30 schools each year in Canada and abroad to give talks on applications of mathematics, studying mathematics at university and preparing for math competitions
- Leads group of 50 teachers, grad students and faculty members in grading full solution senior mathematics contests
- Responsible for regrading top Euclid papers to determine ranking of top finishers on Grade 12 math competition in the world
- Reviews and grades Master of Mathematics for Teachers Capstone final project each year, determining whether or not degree is granted

### **CROWDMARK LIAISON AND CONSULTANT**

University of Waterloo, July 2015 - May 2018

- Primary contact for the university faculty, staff, and graduate students using the online grading platform Crowdmark
- Monitors feature development and inform users
- Prepares up to date documentation for use
- Liaises with on campus Information Technology groups, Registrar's Office, Exam Management and AccessAbility Services, and Media services
- Supports faculty with incorporating grading platform into their courses
- Troubleshoots user issues with Crowdmark Software Development team
- Gives presentations to faculty members across the university
- Tests platform and integration with on campus technologies in advance of each new release
- Exceeded targets for uptake of use from July 2015 to date
- Promoted use of Crowdmark at University of Waterloo from 200 graders to over 3000
- Accelerated number of Waterloo students with assessments graded by Crowdmark from 5800 to 36 700
- Number of pages uploaded to Crowdmark by Waterloo faculty has surpassed 7 300 000
- Grew user base at University of Waterloo to make them Crowdmark's largest customer to date

**Instructor**, Department of Mathematics, Wilfrid Laurier University, Jan. 2003 - June 2005

**Professor**, George Brown College, Sept. - Dec. 2004

## TEACHING EXPERIENCE

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- **Online Course Instructor**, Fall 2021  
MATH 127: Calculus I for the Sciences, 300 students
- **On Campus Course Coordinator**, Fall 2021  
MATH 127: Calculus I for the Sciences, 650 students
- **Online Course Instructor**, Winter 2018  
MATH 127: Calculus I for the Sciences, 60 students
- **Coordinator**, Spring 2017  
MATH 138: Calculus II for Honours Mathematics, 2 sections, 240 students
- **Instructor**, Fall 2016  
MATH 127: Calculus I for the Sciences, 2 sections, 240 students  
MATH 116: Calculus I for Engineering, 1 section, 100 students
- **Coordinator**, Spring 2016  
MATH 138: Calculus II for Honours Mathematics, 2 sections, 240 students
- **Instructor**, Fall 2015  
MATH 127: Calculus I for the Sciences, 2 sections, 240 students  
MATH 116: Calculus I for Engineering, 1 section, 100 students
- **Coordinator**, Spring 2015  
MATH 138: Calculus II for Honours Mathematics, 2 sections, 240 students
- **Instructor**, Fall 2014  
MATH 127: Calculus I for the Sciences, 2 sections, 240 students  
MATH 116: Calculus I for Engineering, 1 section, 100 students
- **Coordinator**, Winter 2014  
MATH 127: Calculus I for the Sciences, 4 sections, 450 students
- **Instructor**, Fall 2012  
Math 127: Calculus I for the Sciences, 2 section, 205 students
- **Instructor**, Winter 2012  
MATH 128: Calculus II for the Sciences, 2 section, 200 students
- **Coordinator**, Fall 2011  
MATH 115: Linear Algebra for Engineering, 8 sections, 1000 students, 22 grad TAs
- **Instructor**, Fall 2011  
MATH 109, 178 students
- **Coordinator**, Winter 2010  
MATH 109: Mathematics for Accounting, 2 sections, 400 students
- **Instructor**, Fall 2009  
MATH 115: Linear Algebra for Engineers, 2 sections, 250 students
- **Coordinator**, Winter 2009  
MATH 109: Mathematics for Accounting, 156 students

- **Coordinator**, Spring 2008  
MATH 136: Linear Algebra for Honours Mathematics, 4 sections, 400 students, 8 grad TAs
- **Coordinator**, Winter 2008  
MATH 109: Mathematics for Accounting, 2 sections, 200 students, 2 grad TAs
- **Instructor**, Fall 2007  
MATH 115: Linear Algebra for Engineering, 2 sections, 180 students
- **Instructor**, Winter 2007  
MATH 128: Calculus for the Sciences, 2 sections, 200 students
- **Instructor**, Fall 2006  
MATH 115: Linear Algebra for Engineering, 2 sections, 250 students
- **Instructor**, Winter 2006  
MATH 136: Linear Algebra for Honours Mathematics, 2 sections, 200 students
- **Instructor**, Fall 2005  
MATH 115: Linear Algebra for Engineering, 2 sections, 200 students
- **Instructor**, Wilfrid Laurier University, Winter 2003 - Spring 2005  
MA 122: Introductory Linear Algebra  
MA 110: Introduction to Differential and Integral Calculus  
MA 101: Calculus I  
MA 102: Calculus II
- **Professor**, George Brown College, Fall 2004  
MATH 1011: Mathematics for Finance
- **Graduate Teaching Assistant**, 2001-2002, University of Waterloo
- **Undergraduate Lab Assistant**, 2000-2001, Wilfrid Laurier University

## PUBLICATIONS

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1. **Author:** “Tougher Problems and Their Solutions, by Larry Rice, Radford de Peiza, Fiona Dunbar, Michael Eden, Centre for Education in Mathematics and Computing, Faculty of Mathematics, University of Waterloo, 2008.
2. **Editor:** “Math Resource Manual for High School Students and Undergraduate Studies”, 3rd Edition, Centre for Education in Mathematics and Computing, Faculty of Mathematics, University of Waterloo, 2008.
3. **Primary Consultant:** “Is This Going to be on the Math Test?”, by Alexandru Pintilie, Centre for Education in Mathematics and Computing, Faculty of Mathematics, University of Waterloo, 2010

## TALKS

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1. “Cryptography - Race to Crack the Code!” A history of some common ciphers including shift, substitution, Diffie-Hellman key exchange and RSA. Students use a frequency analysis to crack a substitution cipher.

2. “MathImagics” A digital image representation, image processing, facial recognition software and SnapChat filters. Participants will also learn how to convert data into binary code and look at applications of medical imaging such as CT Scans and MRIs.
3. “Problem Solving” A summary of tips and tricks for improving math contest writing skills. Students and teachers work through a booklet of math contest problems and discuss different solutions.

## CONFERENCES

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- Founder and Director of the annual Think About Math workshop in Waterloo, Toronto and Vancouver to encourage young women to continue studies in mathematics, 2009-2018
- Founder and Director of the annual Toronto Math Camp for students with limited access to enrichment opportunities from the GTA, 2015-present

## COMMITTEES

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- Euclid (Grade 12) contest committee Chair, lead meetings of 12 problems contributors and put together initial drafts of contest used for admissions, scholarships, 2011 - 2018
- Faculty Association Council of Representatives, 2017 - present
- Member of Centre for Mathematics Education at Fields Institute, 2016 - 2018
- Women in Math committee chair, 2007 - 2011
- Student Workshops Working Group, 2017 - present
- Contests Working Group Committee, 2017 - present
- Internal contest meetings and problems review for Team competition, Canadian Senior and Intermediate Math Contest, Fryer, Galois, Hypatia, (full solution math contests for grade 9-11), Pascal, Cayley, Fermat (multiple choice contests for grades 9-11), 2005 - present

## TECHNICAL SKILLS

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- Computer programming in Python, Scheme and C
- Database management in Filemaker, Excel
- Proficient in LaTeX, Maple
- Incorporates online platforms Piazza, Skype, Crowdmark and Learn in all courses taught

## EDUCATIONAL TRAVEL

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- Four international trips to China visiting public and private schools across Beijing and Shanghai.
- Multiple trips to schools in Trinidad, Alberta, Quebec, and throughout Ontario

## MEDIA

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Received private media coaching in strategic communications. Links to various media appearances are available to click on below.

- Winner of Excellence in Online Teaching Award, 2020
- Featured in Centre for Teaching Excellence - Teaching Stories
- Featured Interview with Crowdmark
- Interviewed Guest on Global News to promote workshop for girls in STEM
- Guest presenter for top math students from Toronto private schools at Branksome Hall
- Panelist on TVO Your Voice
- Front page story in The Toronto Star
- Interviewed Guest on ABC News
- Interviewed Guest on CBC Ontario Morning