

OPEN HOUSE

Department of Mathematics and Statistics

Faculty Members



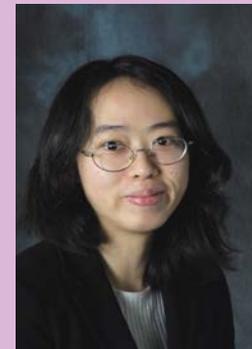
Dr. Myron Hlynka Dr. Sudhir Paul Dr. Sévérrien Nkurunziza Dr. Abdul Hussein
Statistics



Dr. Ronald Barron Dr. Abdo Alfakih Dr. Richard Caron
Applied Mathematics



Dr. Zhiguo Hu Dr. Mehdi Monfared Dr. Dilian Yang
Analysis



Dr. Ilya Shapiro Dr. Wai Ling Yee
Algebra



Dr. Animesh Sarker
Full-Time Lecturer



Justin Lariviere

Faculty & Staff

- Justin Lariviere – Director of Math & Stats Learning Centre
- Other Faculty:
 - Dr. Abida Mansoor
 - Dr. Jing Wang
 - Dr. Shabnam Chitsaz
 - Dr. Mohammed Hassanzadeh
 - John Battaglia
- Secretaries:
 - Rose Spence
 - Dina Labelle
- Professors Emeriti
 - Dr. Frank Lemire
 - Dr. Dan Britten
 - Dr. Tim Traynor
 - Dr. Purna Kaloni
 - Dr. Krish Duggal
 - Dr. Om Chandna
 - Dr. Karen Fung

Specializing

- Bachelor of Mathematics
 - Looks great on transcript rather than standard Bachelor of Science in Mathematics
- Degrees offered:
 - General Mathematics
 - Honours Mathematics
 - Honours Mathematics and Statistics
 - Honours Mathematics and Computer Science
 - Other Combined Programmes
- Degree requirements depend on programme
- If you wish to concentrate on a particular area of mathematics, take courses starting from 2nd or 3rd year accordingly
 - Pure Math
 - Statistics
 - Applied Math
 - Actuarial
- Lots of flexibility

First Year Schedule

Fall	Winter
MATH 140: Differential Calculus	MATH 141: Integral Calculus
MATH 120: Linear Algebra I	MATH 190: Mathematical Foundations
CS 140: Introduction to Algorithms and Programming I (language: C)	CS 141: Introduction to Algorithms and Programming II (language: C)
<i>Elective</i>	<i>Elective</i>
<i>Elective</i>	<i>Elective</i>

Popular Electives:

- ECON 110: Introduction to Microeconomics I
- PHILOSOPHY 160: Reasoning Skills
- BUSINESS 100: Introduction to Business
- PHYSICS 140: Introduction to Physics I
- CHEM 140: General Chemistry I
- Etc.

Popular Electives:

- ECON 111: Introduction to Macroeconomics II
- PHILOSOPHY 160: Reasoning Skills
- ACCOUNTING 151: Principles of Financial Accounting
- PHYSICS 141: Introduction to Physics II
- CHEM 141: General Chemistry II

Second Year Schedule

Fall	Winter
MATH 215: Vector Calculus	MATH 216: Differential Equations
MATH 220: Linear Algebra II	MATH 221: Linear Algebra III
STATS 250: Introduction to Probability	STATS 251: Introduction to Statistics
<i>Elective</i>	<i>Elective</i>
<i>Elective</i>	<i>Elective</i>

Popular Electives:

- FINANCE 270: Business Finance I
- ECON 221: Intermediate Microeconomics I
- Etc.

Popular Electives:

- MATH 392: Theory of Interest
- FINANCE 271: Business Finance II
- ECON 231: Intermediate Macroeconomics I
- Etc.

Third Year Schedule

Fall	Winter
MATH 314: Introduction to Analysis I	MATH 315: Introduction to Analysis II
MATH 321: Abstract Algebra	MATH 318: Complex Variables
<i>STATS 350: Probability</i>	<i>STATS 351: Statistics</i>
<i>Elective</i>	<i>Elective</i>
<i>Elective</i>	<i>Elective</i>

Programs and Courses

The regular load is 5 courses per semester and the General Program requires 30 courses while the Honours Programs require 40 courses.

Required Math Courses and Typical Schedule (A mark of at least C- in the required in each of these courses)		General (3 years)	Honours (4 years)		
Term	Course	General	Math	Math & Stats	Math & Comp. Sci.
Year 1: Fall	62-120: Linear Algebra I	X	X	X	X
	62-140: Differential Calculus	X	X	X	X
Year 1: Winter	62-190: Mathematical Foundations	X	X	X	X
	62-141: Integral Calculus	X	X	X	X
Year 2: Fall	62-215: Vector Calculus	X	X	X	X
	62-220: Linear Algebra II		X	X	X
	65-250: Introduction to Probability	X	X	X	X
Year 2: Winter	62-216: Differential Equations	X	X	X	X
	62-221: Linear Algebra III		X	X	X
	65-251: Introduction to Statistics	X	X	X	X
Year 3: Fall	62-314: Introduction to Analysis I		X	X	X
	62-321: Abstract Algebra		X	X	X
	65-350: Probability			X	
Year 3: Winter	62-318: Complex Variables	X	X	X	X
	62-315: Introduction to Analysis II		X	X	X
	65-351: Statistics			X	

Program Requirements / Course Credit Requirement	General	Math	Math & Stats	Math & Comp. Sci.
Number of Courses Listed above	9	14	16	14
Math and Stats Courses 200 level or above (at least a C-)	4			
Math and Stats Courses 300 level or above (at least a C-)		8	4	2
Stats Courses 300 level or above (at least a C- grade)			2	
Computer Science 60-140 and 60-141 (Taken in first year)	2	2	2	2
Comp.Sci. 60-100, 212, 214, 231, 254, 255, 265, 315, plus 3 at 300 level or above.				11
Math, Stats, or Comp.Sci at 200 level or above (at least C-)				
Arts and Social Sciences courses	4	4	4	

Adding Majors and Minors

- Combined Honours Mathematics + Another Subject
 - Core courses in each + 2 courses at 300-level or higher
- Minor: 6 courses in that subject
 - Popular minors include:
 - Statistics
 - Economics (*satisfies FAHSS degree requirement*)
 - Business
 - Computer Science
- Second Teachable: 6 courses in that subject
 - Less stringent course requirements than a full minor

Teaching

- Calculus has tutorial sections of max. 25 students
- Smaller classes in upper years
- Easy access to faculty members
 - Better acquaintance with students – advice, reference letters
- *Dr. Richard Caron*
 - OCUFA Ontario-Wide Teaching Award 2012-2013
 - UWindsor awards for teaching: 2012, 2011, 2011
- *Dr. Aminesh Sarker*
 - Faculty Teaching Score Award: 2014
- *Dr. Ronald Barron*
 - Faculty Teaching Score Award: 2009
- *Dr. Sudhir Paul*
 - Faculty of Science Performance Award: 2005

STUDENT SUPPORT

Services and Scholarships

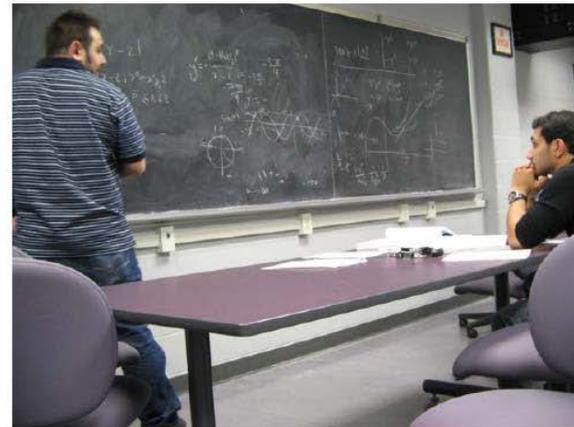
Scholarships

- Automatic Entrance Awards
 - All programs
 - Amount based on the average of your best six grade 12 U/M **final** grades
 - Must be full-time and maintain 85% average in university to keep
- Awards requiring applications
 - MyUWindsor > Financial Matters > Search for Awards

VALUE	AUTOMATIC ENTRANCE AWARDS	SCHOLARSHIP AVG.	VALUE/TERM
\$500	University of Windsor Entrance Scholarship	80-84.9%	\$250
\$1000	University of Windsor Entrance Scholarship	85-89.9%	\$500
\$10000	University of Windsor Renewable Entrance Scholarship*	90-94.9%	\$1250
\$16000	University of Windsor Renewable Entrance Scholarship*	95-100%	\$2000
\$1500	Outstanding Scholars Candidate Scholarship	95-100%	\$750

Math and Stats Learning Centre

- Free tutoring Monday-Friday, 10am-5pm



Teaching Assistantships

- Jobs available starting second year
- Chances of hiring depends on grades and math courses taken
- Tutors – 4 hours/week
- Graders – 100 hours/term
- \$18.99/hour

Research Opportunities

- 100% of faculty members are actively publishing research articles in leading academic journals
- Researchers are eager to have good undergraduate (or graduate) students working with them
- Outstanding Scholars
- NSERC USRA: Natural Sciences and Engineering Research Council of Canada Undergraduate Summer Research Award
 - Top students have a good chance of receiving a USRA in their senior years



Outstanding Scholars: Sample Projects

Research

- Computational Fluid Dynamics
- Extreme point identification in higher dimensions
- Optimal location of fire stations for a local municipality using Geographical Information Systems (GIS)
- Limiting probability matrix computations
- Optimal Vaccination Scheduling
- M/M 1 Transient Queues and Path Counting
- Computing signed Kazhdan
- Lusztig polynomials
- Educational research with the Faculty of Ed

Learning

- Actuarial Science workshops
- Mathematics competitions:
 - Putnam Competition preparation
 - Outreach activities for elementary/high school students and teachers
- Setting up a tutoring program for at-risk students
- Mentoring first-year students through the Faculty of Ed

Putnam Math Contest

- For integers $n > 0$,

let $c(n)$ satisfy $c(1)=1$, $c(2n)=c(n)$, $c(2n+1)=(-1)^n \cdot c(n)$.

Find $\sum_1^{2013} c(n)c(n+2)$

- (B1, December, 2013)
- Training sessions: Fall term each year
- Award for top performer at UWindsor

CAREERS

What to do with a Math degree

Wall Street Journal / CareerCast.com

Best Jobs of 2014 / Midlevel Income

1. **Mathematician** / \$101,360
2. **Tenured University Professor** / \$68,970
3. **Statistician** / \$75,560
4. **Actuary** / \$93,680
5. **Audiologist** / \$69,720
6. **Dental Hygienist** / \$70,210
7. **Software Engineer** / \$93,350
8. **Computer Systems Analyst** / \$79,680
9. **Occupational Therapist** / \$75,400
10. **Speech Pathologist** / \$69,870

<http://blogs.wsj.com/atwork/2014/04/15/best-jobs-of-2014-congratulations-mathematicians/>

Popular Careers



MATHEMATICAL ASSOCIATION OF AMERICA

MAA100

CELEBRATING A CENTURY OF
ADVANCING MATHEMATICS

Teaching

The teaching of mathematics at the K-12 level is a high-demand field and the need is expected to grow in the future. The place to go for explicit career information is the [National Council of Teachers of Mathematics](#) homepage.

Actuarial Science

Actuarial science takes mathematics and statistics and applies them to finance and insurance. Actuarial science includes a number of interrelating disciplines, including probability and statistics, finance, and economics. Check out [Be An Actuary](#).

Computer Science

Computer science is the study of the theoretical foundations of information and computation and their implementation and application in computer systems. Mathematicians, with their training in logical and precise thinking, are highly prized in this field. See the [student section](#) of the Association for Computing Machinery for career advice.

Operations Research

Operations research is an interdisciplinary branch of mathematics which uses mathematical methods to arrive at optimal decisions to problems in maximizing or minimizing things like costs or profits. The eventual intention behind using Operations Research is to elicit a best possible solution to a problem mathematically, which improves or optimizes the performance of the system. The group [INFORMS](#) is the world's largest society devoted to operations research/management science.

Biomathematics

Mathematical biology or biomathematics is an interdisciplinary field of study. It models natural and biological processes using mathematical techniques and tools. Results have been applied to areas such as cellular neurobiology, epidemic modelling, and population genetics. The [education page](#) of the Society for Mathematical Biology links to schools offering biomath degrees along with a description of the coursework needed.

Cryptography

Cryptography is the practice and study of hiding information. Cryptography is considered to be a branch of both mathematics and computer science. Not just for spies anymore, cryptography applications include the security of ATM cards and computer passwords.

Finance

Finance is a field that studies and addresses the ways in which individuals, businesses, and organizations raise, allocate, and use monetary resources over time, taking into account the risks entailed in their projects. Mathematicians can build models to help explain and predict the behavior of financial markets. Several schools offer Master's degrees in Financial Mathematics. A quick web search will take you to their web pages.

Career Possibilities

- Teaching – elementary, high school, college
- Graduate school
 - Math
 - Stats
 - Operations Research
 - Economics
 - Industrial Engineering
 - Management Science
 - Biostatistics
 - Finance
 - MBA
- Actuary
- Medical School
- Law School
- Operations analyst
- Statistics Canada
- Health Canada
- Pharmaceutical Industry
- Data Analyst (data mining, data analytics)
- Hal Varian, **Chief Economist at Google** – Aug 5, 2009
 - *“I keep saying that the **sexy** job in the next 10 years will be **statisticians**, and I'm not kidding.”*

Graduate and Professional Schools

Better job and graduate school opportunities

Many employers hire mathematics majors even when a job does not directly require mathematics, because studying mathematics is one of the best ways to develop problem-solving and analytical skills. In addition, majoring in mathematics increases your chances of doing well on standardized tests like the LSAT, GRE, GMAT, and MCAT which are required for graduate school in law, business, medicine and other fields. For example, of students taking the LSAT, the required test for students applying to law school, mathematics majors had higher scores on average than any other group of majors. Here's a chart showing how the average scores of mathematics majors stack up on graduate school exams:

Exam	On average math majors scored higher than the mean by:	Source:
GRE, required for graduate school in arts and sciences	16.7%	Graduate Record Examination Guide to the Use of Scores, 2006-2007
LSAT, required for law school	12.8%	National Institute of Education, Chronicle of Higher Education
MCAT, required for medical school	7.5%	AAMC
GMAT, required for business school	13.3%	National Institute of Education, Chronicle of Higher Education

ACTUARIAL SCIENCE

Ranked as one of the best careers, yet it is one of the most misunderstood

What does an Actuary do?

- Finance, risk, valuation
- Can work on:
 - Insurance, disability, awards and damages
 - Pensions
 - Investments
 - Healthcare costs

How do I become an Actuary?

- Specialized degree not necessary, Society of Actuary professional exams provide the certification
- Available at UWindsor:
 - Courses in Actuarial Science + other related topic courses
 - Weekly study sessions and lectures for exam P and FM
 - Test site for professional exams
 - Good relationship with Towers Watson in Detroit
 - Summer internship opportunities for strong senior students

SOA Professional Exams

- Preliminary Exams
 - **P: Probability**
 - **FM: Financial Mathematics**
 - MFE: Models of Financial Economics
 - **MLC: Models for Life Contingencies and Statistics**
 - C: Construction and Evaluation of Actuarial Models
- Associateship Courses:
 - Fundamentals of Actuarial Practice Course
 - Associateship Professionalism Course
- Fellowship Exams:
 - Advanced Finance
 - Financial Economic Theory and Engineering
 - Other options available for different tracks: finance, investment, annuities, retirement, group health

Actuarial Science at UWindsor

- Exam P
 - STATS 250: Introduction to Probability
 - STATS 251: Introduction to Statistics
- Exam FM
 - MATH 392: Theory of Interest
- Exam MLC
 - MATH 490: Actuarial Mathematics I
 - MATH 492: Actuarial Mathematics II
- Exam MFE
 - STATS 455-22 (reading course)
- Exam C
 - STATS 455-24 (reading course)
- VEE (Verification by Educational Equivalent)
 - ECON 110, 111: Introduction to Economics I/II
 - FINANCE 270, 271: Business Finance I/II
 - STATS 455-09 (reading course)

Actuarial Science Further Information

- Society of Actuaries
 - www.SoA.org/education
- Be An Actuary
 - www.BeAnActuary.org
- Actuarial Science at UWindsor
 - <http://web2.uwindsor.ca/math/hlynka/actuarial>

STUDENT SUCCESS

Academic and Professional

Mary Jean Gallagher, B.Sc. Math 1974

- Assistant Deputy Minister of the Student Achievement Division of the Ontario Ministry of Education, 2008-present
- Chief Student Achievement Officer of Ontario
- Director of Education of Greater Essex County District School Board (GECDSB), 1995-2008
- Chair of the Council of Ontario Directors of Education, 2006-2007
- CEO of the Ontario Education Improvement Commission, 1997-2000
- President of her district's Ontario Secondary School Teachers' Federation (OSSTF)
- Superintendent of Staffing and Development
- High School principal
- Math and Computer Science teacher
- UWindsor Honourary Doctor of Laws degree, 2006



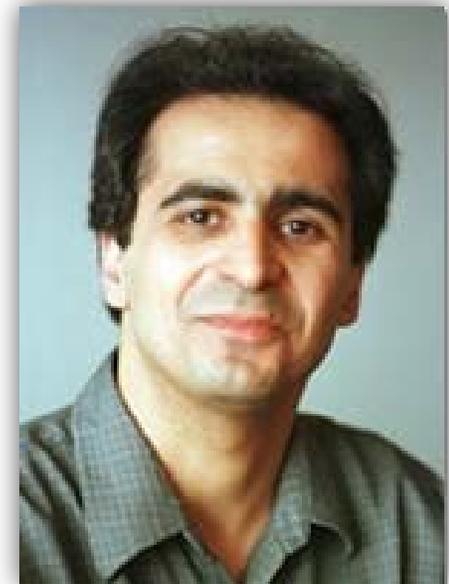
Nicole Lemire, B.Sc. Math 1991

- Mathematics professor, **University of Western Ontario**
- Held an NSERC University Faculty Award, 2002-2007



Vahid Tarokh, M.Sc. Math 1992

- Academic Appointments:
 - Perkins Professor and Vinton Hayes Senior Research Fellow of Electrical Engineering, **Harvard University**, 07/05-Present
 - Gordon McKay Professor of Electrical Engineering, **Harvard University**, 07/02-06/05
 - Associate Professor of Electrical Engineering and Computer Science, **MIT**, 09/00-06/02
- Industrial Appointments:
 - Department Head , **AT&T Labs - Research**, 11/99-08/00
 - Principal Technical Staff Member, **AT&T Labs - Research**, 04/98-10/99



Kevin Atkinson, B.Sc. Math & CS 1993

THE WINDSOR STAR • FRIDAY, JANUARY 8, 2010 C3



Avatar characters Neytiri and Jake make final preparations for an epic battle. **Former Windsorite Kevin Atkinson** was one of hundreds of computer technicians who helped create the creatures and planet Pandora for the movie. *Handout*

Bringing sci-fi to life

Ex-Windsorite creates effects for Avatar

TED SHAW
The Windsor Star

Blink and you'll miss Kevin Atkinson's name in the credits of *Avatar*. But the **Windsor-born** computer programmer is basking in the reflected glory of one of the most successful movies ever made.

Atkinson was among the hundreds of special effects technicians who created the alien planet of Pandora for James Cameron's sci-fi hit.

Working at the New Zealand studio of Weta Digital, he played a small but significant role as a software developer and engineer.

"I mostly worked on the application which was used to paint textures on all the models in the 3-D world we made," said 35-year-old Atkinson, who has a math degree from the University of Windsor.

All the creatures, including the eight-foot Na'vi, and much of the background in *Avatar* were computer-generated.

"It's a testimony to the realism Weta achieved," he said, "that some people have a hard time grasping that the Na'vi are actually completely CG."

Even **Atkinson's mother, Mary, in Windsor** asked if blue



Former Windsor resident Kevin Atkinson poses on the balcony of his home in Seaford, New Zealand. The computer software engineer worked on the movie *Avatar*. *Handout*

sidney Neytiri, the movie's main character, is a "real woman."

Avatar, he said, employed computer effects that are 10 times more complex than any film ever made. Weta, based in Wellington, N.Z., also created special effects for Peter Jackson's *Lord of the Rings* trilogy and more recent science-fiction films *District 9*, *Jumpier* and *The Day the Earth Stood Still*.

"I personally think Neytiri deserves to be considered among the great screen goddesses of cinema history," said Atkinson.

One of the programs Atkinson worked on helped create the textured effects on Neytiri's skin — the "bumps and creases and pores" that bring her to life.

His infatuation with the imaginary Neytiri is a reflection of his love for his new home. In Seaford, a seaside suburb of Wellington, where he and his wife Julie moved in June.

Following university, Atkinson worked in computer design in the auto industry in Windsor and Detroit. A stint at First Technology Safety Systems, a Plymouth, Mich., firm that manufactures crash-test dummies, taught him marketable skills in robotics, 3-D animation and computer design.

But it was a British-made music video for Björk's 1995 hit, *All Is Full of Love*, that

convinced him to try his hand at film.

The Chris Cunningham-directed video about the love of two robots used many of the computer effects Atkinson had encountered in auto design. "I thought it was the most beautiful thing I'd ever seen," he said. "Gorgeous, sexy, perfect."

The video is on permanent display at New York City's Museum of Modern Art.

Atkinson was drawn to the video on another level — he is a musician and while in Windsor he had a band with his sister Sarah, called "ouch, yourself, please."

He began hiring himself out as a computer effects consultant and eventually posted some of his work online. Two Los Angeles-based street artists he met offered him work, but he turned them down to freelance from his Windsor home.

Weta found samples of his work on reddit.com, a video site that is voted on by web users. His demo got 30,000 hits, and was posted on reddit.com's front page.

The day after it was posted, Weta offered him a job. Although he is on a year-to-year contract with Weta, he developed software while working on *Avatar* that may be used on future projects.

"After scraping by in Windsor," Atkinson said, "we now live in a beautiful house on the ocean. Needless to say, I'll stay as long as they want me."

tsaw@thestarcostar.com
01319 253-0849

Carolyn Britten, B.Sc. Math

- Director of Phase I Clinical Trials at Hollings Cancer Center, South Carolina
- Specializes in cancer research



Pierre Jraiche, B.Sc. Math 1996

- 2008 Recipient of the Alumni Odyssey Award
 - For the past 11 years, Pierre has been an employee of Watson Wyatt Worldwide (now Towers Watson), a major global Human Resources consulting firm. Pierre is a consulting actuary and business leader in the Retirement Practice for Watson Wyatt Worldwide. Particularly consulting in various areas of retirement plan valuation and design, Pierre leads a team of approximately thirty-five associates in the Michigan offices. Pierre and his team deal with clients such as The Dow Chemical Company, General Motors, MAHLE Industries, and other major North American retailers.
- In addition to the Odyssey Award, Pierre is a recipient of the Board of Governor's Medal. He holds great respect among his co-workers, and with the University of Windsor. Since Pierre began working at Watson Wyatt, the company annually visits campus to offer information and recruitment seminars to our Mathematics students. In addition, he maintains a connection to the University of Windsor as an Adjunct Associate professor in the department of mathematics and statistics which is perhaps his greatest contribution to the University. His presence in the classroom as an instructor and mentor severs as great inspiration to our students. Pierre is a genuine individual who is able to provide practical, and much appreciated, career advice.



Debbie Loach, B.O.R. 2007

- Awarded 1st prize in the inaugural Student Poster Competition at the National Meeting of the Canadian Operational Research Society
- Works for Maple Leaf Foods



Jackie Malette, B.Sc. Math & Stats 2007

- Lancer athletics, CIS Top Eight Academic All-Canadian for 2 consecutive years
- MD Residency in London, Ontario



Bradley Howell, B.Sc. Math 2009, M.Sc. Math 2009

- Works for stability assessment division of the financial stability department of the **Bank of Canada**, Ottawa
 - Stringent hiring process
 - Write serious mathematics and statistics tests
 - Interview 200 people, hire a handful



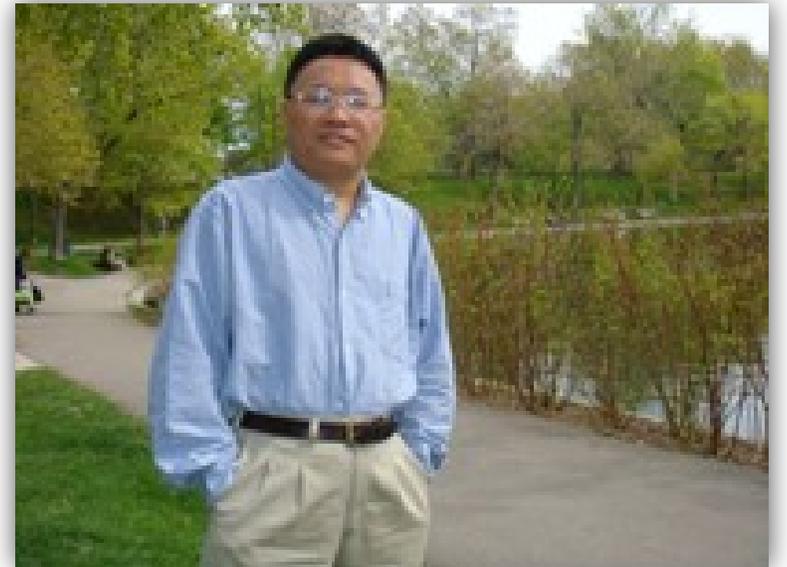
Tolupe Sajobi, M.Sc. Statistics 2007

- Received PhD in Biostatistics from University of Saskatchewan
- Faculty at University of Calgary



Xiaoyong Wu, M.Sc. Statistics 2002, PhD Statistics 2005

- Worked at Yale University, McGill University
- Participated in national interdisciplinary projects involved in Genomic and Proterozoic studies
- Currently a Biostatistician at the James Graham Brown Cancer Centre



Chris Reaume, B.Math 2012

Hi Professor Hlynka:

When I first started working at Towers Watson I thought I was 'behind the game' because all of the recent hires came from actuarial undergrad programs at larger universities, such as Michigan, Michigan State, or Central Michigan, but to be completely honest, in comparing how well I'm doing with my actuarial exams to most associates at the company, I feel I got a much better and well-rounded education. Having taken both theoretical and application-based math & stats courses, I've found that's helped me tremendously with studying for exams, especially exam C. I heard from so many people at Towers Watson that there's a huge amount of information you have to memorize for Exam C, but if you have the theoretical background required to derive many of these 'ugly formulae,' there's not a whole lot of memorizing, it's more a matter of understanding.

- *Email 26/06/2013*



Thank You!

- hlynka@uwindsor.ca
- <http://web2.uwindsor.ca/math/hlynka/reasons>



University
of Windsor



**Mathematics
& Statistics
Student
Association**



mathsocietyclub.wordpress.com



fb.com/UWinMathStatsAssoc



mssa@uwindsor.ca



[@UWinMathStats](https://twitter.com/UWinMathStats)

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