		Room		
		E3-270	E2-399	E2-350
Wed	17.00 – 20.00	Registration and welcome reception at University Centre 204		
Thu	8.00 – 8.30	Breakfast in E2-229		
	8.30 – 9.20	Opening session		
	9.20 – 10.10	F[1] 1 - Charly Pazdor		
	10.10 – 10.30	Coffee in E2-229		
	10.30 – 12.10	P[2] 1A: Finance I	P1B: ERM	P1C: Risk theory I
	12.10 – 13.50	Lunch at University Centre 210		
	14.00 – 14.50	F2 - Rob Stapleford		
	14.50 – 15.40	F3 - Elias Shiu et al.		
	15.40 – 16.00	Coffee in E2-229		
	16.00 – 17.20	P2A: Agricul. risk management	P2B: Stat. methods I	
	17.30 – 21.00	Centennial Dinner at University Centre 204		
Fri	8.00 – 8.30	Breakfast in E2-229		
	8.30 – 9.20	F4 - Dave Snell		
	9.20 – 10.10	F5 - Gary Wang		
	10.10 – 10.30	Coffee in E2-229		
	10.30 – 12.10	P3A: Finance II	P3B: Actuarial education	P3C: Mortality
	12.10 – 13.50	Lunch at University Centre 210		
	14.00 – 14.50	F6 - Mary Hardy		
	14.50 – 15.40	F7 - Linda Golden		
	15.40 – 16.00	Coffee in E2-229		
	16.00 – 17.00	P4A: Pensions	P4B: Stat. methods II	P4C: Appl. of Act. Models
	18.00 – 22.00	Conference Banquet at Manitoba Club		
Sat	8.00 – 8.30	Breakfast in E2-229		
	8.30 – 10.10	P5A: Finance III	P5B: Casualty	P5C: Risk theory II
	10.10 – 10.30	Coffee in E2-229		
	10.30 – 11.20	P6A: Genetic algorithms	P6B: How to be a CAE?	
	11.25 – 11.50	Closing session		
	11.50	Box lunch in E2-229		

[1] F - Feature session; [2] P - Parallel session

17.00–20.00 **Registration and welcome reception at University Centre 204**

Join us for an opportunity to meet participants and enjoy fruit, cheese, hot hors d'oeuvre, and drinks at Marshall McLuhan Hall (UC204).

8.00–8.30 **Breakfast** (E2-229)

8.30–9.20 **Opening session** (E3-270)

- Jeffrey Pai to open the conference
- Welcome by Michael Benarroch, Dean of Asper School of Business
- Welcome by Sunny Oh, Vice President, Great-West Life Assurance Co.

9.20–10.10 **Feature session 1** (E3-270) *Chair: Jeffrey Pai*

Ethics and Professionalism in Actuarial Practice *Charly Pazdor*

10.10–10.30 **Coffee break** (E2-229)

10.30–12.10 **P1A: Finance I** (E3-270) *Chair: Rui Zhou*

1. **Analytic Solution for Ratchet Guaranteed Minimum Death Benefit Options Under a Variety of Mortality Laws** *Eric R. Ulm*
2. **Pricing of Debt and Loan Guarantees using Stochastic Delay Differential Equations** *Elisabeth Kemajou*
3. **Estimation and Pricing with a Diffusion Model with Jumps** *Claire Bilodeau and Andrew Luong*
4. **Model Selection in Regime-switching Models of Various Types** *Brian Hartman and Chris Groendyke*
5. **Pricing and Hedging GMWBs in a Binomial Model** *Menachem M. Wenger*

10.30–12.10 **P1B: Entreprise risk management** (E2-399) *Chair: Ken Seng Tan*

1. **Economic capital approaches and solvency of UK annuity portfolios** *Mayukh Gayen*
2. **Estimating the required surplus, benchmark profit, and optimal reinsurance retention for an insurance enterprise using the compound Poisson distribution** *Joseph Boor*
3. **The Marginal Cost of Risk, Risk Measures, and Capital Allocation** *Daniel Bauer and George Zanjani*
4. **Loss Given Default in the Presence of Multivariate Regular Variation. Part 1: Introduction** *Qihe Tang and Zhongyi Yuan*
5. **Loss Given Default in the Presence of Multivariate Regular Variation. Part 2: Main Results** *Qihe Tang and Zhongyi Yuan*

10.30–12.10 **P1C: Risk theory I** (E2-350) *Chair: Arnold Shapiro*

1. **Optimal Asset Allocation for Endowment Management** *Rina Ashkenazi, Sandra Paterlini and Francesco Pattarin*

2. **VaR and ruin probabilities for the Geometric Brownian motion with jump model** *Yu Zhao and Jiandong Ren*
3. **Analysis of a bivariate risk model** *Jingyan Chen and Jiandong Ren*
4. **The application of the number of IBNR claims for Erlang (n) inter-arrival times** *David Landriault , Ya Fang Wang and Gordon E. Willmot*
5. **Ultimate Ruin Probability with Correlation** *Emmanuel Thompson and Rohana S. Ambagaspitiya*

12.10–13.50 **Lunch at University Centre 210**

- During the conference lunch, Simon Curtis, President of CIA, will give a speech from 1:05-1:25. Simon Curtis then is to present a gift to Michael Benarroch, Dean of Asper School of Business.
- CKER lunch meeting at Souris Hall (UC224B). Please pick up lunch from UC210 first.

14.00–14.50 **Feature session 2** (E3-270) *Chair: Jeffrey Pai*

The Canadian Institute of Actuaries' University Accreditation Program *Rob Stapleford*

14.50–15.40 **Feature session 3** (E3-270) *Chair: Elias Shiu*

Open Forum for MLC Teachers *Elias Shiu, Aaron Tenenbein and Heekyung Youn*

15.40–16.00 **Coffee break** (E2-229)

16.00–17.20 **P2A: Agricultural risk management** (E3-270) *Chair: Donald Behan*

1. **Factors Affecting the Use of Futures Hedging by Commodity Producing Firms: A Multifactor Risk Management Approach** *Charles Grant*
2. **An Actuarial Framework for Modeling Loss Cost Ratio's in Crop Insurance: Trend Testing, Data Detrending, and Pricing, Using an Erlang Mixture Distribution** *Wenjun Zhu, Lysa Porth and Ken Seng Tan*
3. **Modeling Spatial Dependence and Optimal Retention for a Reinsurance Decision Model Under a Copula Framework** *Lysa Porth, Milton Boyd and Jeffrey Pai*
4. **A Framework for Developing Livestock Insurance** *Milton Boyd, Jeffrey Pai and Lysa Porth*

16.00–17.20 **P2B: Statistical methods I** (E2-399) *Chair: David Promislow*

1. **Log-Folded-t Models for Insurance Loss Data** *Vytaras Brazauskas and Andreas Kleefeld*
2. **Small Sample Stochastic Tail Modeling: Tackling Sampling Errors and Sampling Bias by Pivot-Distance Sampling and Parametric Curve Fitting Techniques** *Yvonne C. Chueh and Paul H. Johnson*
3. **Predictive Modeling in Healthcare Costs using Regression Techniques** *Michael V. Loginov, Emily Marlow and Victoria Potruch*
4. **An Introduction to Causal Analysis on Observational Data using Propensity Scores** *Margie Rosenberg, Brian Hartman and Shannon Lane*

17.30–21.00 **Centennial dinner at University Centre 204**

8.00–8.30 **Breakfast** (E2-229)

8.30–9.20 **Feature session 4** (E3-270) *Chair: Xuemiao Hao*

Complexity Science – what it is and why you want to know about it *Dave Snell*

9.20–10.10 **Feature session 5** (E3-270) *Chair: Xuemiao Hao*

Usage Based Insurance and the Evolving Analytics Environment *Gary Wang*

10.10–10.30 **Coffee break** (E2-229)

10.30–12.10 **P3A: Finance II** (E3-270) *Chair: Phelim Boyle*

1. **Optimal Allocation and Consumption with Guaranteed Minimum Death Benefits with Labor Income and Term Life Insurance** *Jin Gao and Eric R. Ulm*
2. **Capital asset pricing model with fuzzy returns and hypothesis testing** *Moussa Alfred Mbairadjim, J. Sadefo Kamdem, Arnold F. Shapiro and M. Terraza*
3. **Revisiting the Risk-Neutral Approach to Optimal Policyholder Behavior: A Study of Withdrawal Guarantees in Variable Annuities** *Thorsten Moenig and Daniel Bauer*
4. **Hyperbolic Discounting: Implications for Actuarial Science and Financial Risk Management** *Rick Gorvett*
5. **Risk analysis of annuity conversion options in a stochastic mortality environment** *Alexander Kling, Jochen Russ and Katja Schilling*

10.30–12.10 **P3B: Actuarial education** (E2-399) *Chair: Curtis Huntington*

1. **What do you want your students to know? What are you doing?** *Mark M. Maxwell*
2. **Society of Actuaries Education Update** *Stuart Klugman*
3. **Variance of a Single Deferred Annuity - A Simpler Way** *Claire Bilodeau*
4. **Technology Enhanced Learning Project for Actuarial Science Education** *Douglas J. Bujakowski*
5. **The Society of Actuaries' New Research Strategy** *Sara Teppema*

10.30–12.10 **P3C: Mortality** (E2-350) *Chair: Ian Duncan*

1. **Modeling and Forecasting Mortality Rates** *Patrick L. Brockett, Daniel Mitchell, Rafael Mendoza-Arriaga and Kumar Muthuraman*
2. **Longitudinal Analysis of Mortality Risk Factors** *Daniel H. Alai and Michael Sherris*
3. **Investigating Causal Mortality using the Multinomial Logistic Model** *Daniel H. Alai, Severine Gaille and Michael Sherris*
4. **Assessing systematic bias in mortality prediction of the Lee-Carter model** *Defang Wu, Xiaoming Liu and Yu Hao*

5. **Dynamic Population Structure with Stochastic Mortality and Fertility Rates** *Yu Lin and Xiaoming Liu*

12.10–13.50 **Lunch at University Centre 210**

- During the conference lunch, David Cummins from Temple University will give a speech on "Next Year's ARC".
- E&R lunch meeting at Souris Hall (UC224B). Please pick up lunch from UC210 first.

14.00–14.50 **Feature session 6** (E3-270) *Chair: Sam Cox*

Divided by a common language: communicating applied research in actuarial science *Mary Hardy*

14.50–15.40 **Feature session 7** (E3-270) *Chair: Sam Cox*

The shape of the insurance marketplace in 2020 *Linda Golden*

15.40–16.00 **Coffee break** (E2-229)

16.00–17.00 **P4A: Pensions** (E3-270) *Chair: Ron Gebhardtsbauer*

1. **Mortality Improvement for Canadian Pensioners: Proposed Projection Scales** *Louis Adam*
2. **On the Impact of Raising the Full Retirement Age in the Social Security Program** *Kidane Testfu*
3. **The Impact of Investment Strategy of DC Pension Plan on Reirement Age Distribution** *Minxian Lv, Xiaoming Liu and Yu Hao*

16.00–17.00 **P4B: Statistical methods II** (E2-399) *Chair: Jed Frees*

1. **A Multivariate Analysis of Intercompany Loss Triangles** *Peng Shi*
2. **Implementing Fuzzy Random Variables** *Arnold F. Shapiro*
3. **Approximate Copula Regression** *Paul G. Ferrara and Rahul A. Parsa*

16.00–17.00 **P4C: Applications of Actuarial Models** (E2-350) *Chair: Margie Rosenberg*

1. **Forward transition rates in a multi-state model** *Marcus C. Christiansen and Andreas J. Niemeyer*
2. **Paid Claims Projection and Cash Flow Testing Models. Illustrative Approach.** *Natalia A. Humphreys*
3. **Incurred but Unreported Deaths in Life Settlements** *Donald F. Behan*

18.00–22.00 **Conference banquet at Manitoba Club**

8.00–8.30 **Breakfast** (E2-229)

8.30–10.10 **P5A: Finance III** (E3-270) *Chair: Yafang Wang*

1. **Combinatorics for Moments of a Randomly Stopped Quadratic Variation Process** *James G. Bridgeman*
2. **Positive Weights on the Efficient Frontier** *Phelim Boyle*
3. **Market dependent fees for GMMB and GMDB riders** *Anne MacKay, Carole Bernard and Mary Hardy*
4. **Modeling Trades in the Life Market as Nash Bargaining Problems** *Rui Zhou, Johnny S.H. Li and Ken Seng Tan*
5. **A Comonotonicity-based Valuation Method for Annuity-linked Contracts** *Xiaoming Liu, Rogemar Mamon and Huan Gao*

8.30–10.10 **P5B: Casualty** (E2-399) *Chair: Sam Cox*

1. **Insurance Ratemaking and a Gini Index** *E. W. (Jed) Frees, Glenn Meyers and A. David Cummings*
2. **A renewal model for medical malpractice** *Ghislain Leveille and Emmanuel Hamel*
3. **Micro-Level Loss Reserving Models for P&C Insurance** *Xiaoli Jin*
4. **An Experience Rating Approach to Insurer Projected Loss Ratios** *Marc-André Desrosiers*
5. **Experience Rating in Motor Insurance** *Pervin Baylan-Irven and Jeffrey Pai*

8.30–10.10 **P5C: Risk theory II** (E2-350) *Chair: Lysa Porth*

1. **First- and Second-order Asymptotics for the Tail Distortion Risk Measure of Extreme Risks** *Fan Yang*
2. **Default risk of a jump-diffusion model subject to Chapter 7 and Chapter 11 bankruptcy codes** *Bin Li, Qihe Tang and Xiaowen Zhou*
3. **Credibility Theory in a Fuzzy Environment** *Arnold F. Shapiro and Marie-Claire Koissi*
4. **Analysis of Disability Insurance Portfolios with Stochastic Interest Rates** *Yu Xia*

10.10–10.30 **Coffee break** (E2-229)

10.30–11.20 **P6A: Genetic algorithms** (E3-270) *Chair: Xuemiao Hao*

Genetic Algorithms - what they are and how to apply them to actuarial problems *Dave Snell*

10.30–11.20 **P6B: How to be a CAE?** (E2-399) *Chair: Warren Luckner*

Being or becoming a Society of Actuaries Center of Actuarial Excellence: Challenges and Opportunities *Sam Broverman, Ron Gebhardtsbauer, Warren Luckner and Kris Presler*

11.25–11.50 **Closing session** (E3-270) *Chair: Jeffrey Pai*

- Closing remarks by Mark Whitmore, Dean of the Faculty of Science
- Closing remarks by David Stangeland, Associate Dean of Asper School of Business
- Jeffrey Pai to end the 47th Actuarial Research Conference

11.50 **Box lunch** (E2-229)