Undergraduate Committee Agenda for the March 25 2019 Meeting.

This will be an evolving document at least until the date of the meeting. Suggestions/comments to ugchair@math.toronto.edu.

The (nearly-) latest version is always at http://drorbn.net/uc/UG_Committee_Agenda_1903.pdf. This version: 2019-03-25 11:36 AM.

I still have no clue, yet...

Report: Summer Courses.

New: MAT344 and MAT337 will be offered this summer for the first time.

Report and Discussion: First Year Foundations Seminars.

New! We added MAT197-199, and we'll need more.

MAT199 Puzzles, Mind, and Math. The course is offered in a seminar/workshop format. Each week students solve puzzles, and develop initial and essential intuitions for the fundamental ideas of each puzzle. Then in the lectures and through the reading materials, the mathematical foundations of each puzzle are studied. Students learn to apply mathematical techniques to strengthen and generalize the puzzles, and to enrich their initial problem solving intuitions.

Topics covered include mathematics of numbers, counting, base and modular arithmetic, geometry and geometric constructions, graph theory, games, decision theory, logic puzzles, and recursion. Restricted to newly-admitted first-year students. Not eligible for CR/NCR option.

MAT198 Cryptology: The Mathematics of Secrecy and Security. How do we send our own confidential information through secure channels, and how can we break codes to uncover the secret information of our adversaries? The mathematical field of cryptology is dedicated to answering such questions. In this course we will study breakthroughs in cryptology, from secret messages in the ancient world and the Enigma cipher in World War II, to modern cryptosystems that facilitate online commerce. Along the way, you will develop a sophisticated understanding of how numbers interact and develop the ability to communicate messages secretly and mathematics clearly. Restricted to newly-admitted first-year students. Not eligible for CR/NCR option.

MAT197 Math and Magic. In this course we will look at magic tricks! Not just any magic tricks, but ones that involve only Mathematics and maybe a flair for the presentation. Some magic tricks involve only elementary Mathematics, others involve very deep Mathematics. In the discussions, we will talk about the tricks and the Mathematics behind them. Restricted to newly-admitted first-year students. Not eligible for CR/NCR option.

Discussion: Awards subcommittee.

I need help with several "internal" PDF CI / GS CI / TA awards.

Report: APM348.

We're in the process of creating "APM348(*) Topics in Mathematical Modelling", in the mold of Stinchcombe's current MAT482 "Topics in Mathematics" course: (*) The course may be re-branded as "APM448".

Calendar Description

An overview of mathematical modelling. A variety of approaches for representing physical situations mathematically followed by analytical techniques and numerical simulations to gain insight. Questions from biology, economics, engineering, medicine, physics, physiology, and the social sciences formulated as problems in optimization, differential equations, and probability. Precise content varies with instructor.

Rationale and Academic Relevance

Our undergraduate students in mathematics, including those in the applied math specialist program, acquire broad mathematical knowledge, but have limited exposure to the process of mathematical modelling.

Mathematical modelling is the link between mathematics and the rest of the world. It is a way of structuring questions about the world so that mathematical techniques may provide insight. The proposed course demonstrates the process of asking a question about a physical situation, deriving a mathematical representation of the problem, studying it using approaches learned primarily in other courses, and then using the mathematical results to address the practical question.

The students practice this process of modelling with a project. They learn how to formulate precise mathematical statements about an imprecise world, to reason with mathematics, and then communicate mathematical ideas. This experience makes the mathematics they have learned in other courses more useful for their future careers. The project also introduces students to applied mathematics research.

Discussion: Shorter Final Exams.

It seems that the examinations office at the FAS is having trouble fitting all final examinations into the examination period, and so there is some early discussion at the faculty level of a proposal to shorten most final exams from 3 hours to 2 or 2.5 hours, so as to have some more flexibility. If I get it right, they just hope that many courses will move over to shorter exams, but not necessarily all, and that instructors will have a say on the length of their own examinations. Instructors already have the option of writing shorter exams, and I'm not quite sure how they plan to apply pressure to make the many exams shorter than they are now. So my question below is still a bit abstract. Yet,

Please write me (ugchair@math) what you think.

If it will be clear from your messages that there is a clear "math department" opinion on the matter, I will see to it that the Faculty will know about it.

My own humble opinion is that on top of the reduction to the length of exams, every hour of teaching should be shortened to 22 minutes to make sure that the quality of teaching at the University of Toronto would go so far down that it would only be possible to go up from there. Okay, maybe I'm a bit sarcastic.

Discussion: The Ethics and Social Responsibility Requirement.

The current requirement reads: "At least 0.5 FCE with a significant emphasis on ethics and social responsibility: ENV333H1/ ETH201H1/ ETH210H1/ ETH220H1/ HPS200H1/ IMC200H1/ JPH441H1/ PHL265H1/ PHL273H1/ PHL275H1/ PHL281H1 or another H course approved by the Department.".

Here are the course titles: ENV333H1: Ecological Worldviews; ETH201H1: Contemporary Moral Problems; ETH210H1: Rationality and Action; ETH220H1: Moral Psychology; HPS200H1: Science and Values; IMC200H1: Innovation and Entrepreneurship; JPH441H1: Physical Science in Contemporary Society; PHL265H1: Introduction to Political Philosophy; PHL273H1: Environmental Ethics; PHL275H1: Introduction to Ethics; PHL281H1: Bioethics.

What? Why? IMC200? Get rich fast? Internships?

Open Floor Discussion.

Just for fun. "Othello" pieces are little disks, much like go pieces, except that they have one side black and one side white (web search!). The two sides are distinguishable only by sight - not by touch or smell or taste or reaction to heat, etc. You are blindfolded, 42 Othello pieces are placed in front of you, and you are told that 14 of them are black side up. Can you subdivide the 42 pieces into two piles, not necessarily of the same size, such that the two will have an equal number of black-side-up pieces each? You can think, count, shuffle, flip, toss, juggle, dance, anything – except look.