MAT1374 PROBABILITY AND GAMES OF CHANCE: POKER101 COURSE OUTLINE

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Office Hours: Thursdays 12-2, or by appointment

Lectures: The lectures take place on Tuesdays and Thursdays, 5.30-6.50pm in CRX room C140.

Material: There is no compulsory textbook, but on Blackboard you will find recommended reading material, useful links and complete course notes.

Course Contents. The main themes of this course are: making decisions in situations of uncertainty, strategic thinking, and the applications of these to a wide variety of areas, including games of chance such as poker.

- **Game theory:** among the concepts we study are: sequential and simultaneous games, strategies and strategy profiles, Nash equilibria, mixed strategies and randomization. We learn how to apply these ideas to a variety of settings, for example negotiations and auctions.
- **Probability theory:** We learn how to reason about probabilities by introducing the basic laws of probability. We also study conditional probability and its various applications. Finally, we learn how to determine various probabilities which are relevant for dice, card and other games.
- **History:** we follow the historical development of probability theory, games of chance and poker through the eyes of the colorful people who made the subject what it is today.
- **Games:** we look at a variety of casino games and poker variants including roulette, blackjack, texas hold'em and more.
- **Psychology:** using case studies and examples, we learn about various heuristics and cognitive biases, common reasoning fallacies and other mistakes which undermine sound decision making.
- **Gaming today:** we take a look at various practical, political and legal facets of online gaming.

Course Organization. The most important component of the course are the lectures. During these lectures we play and analyze a variety of games, we discuss their background and the tools needed to understand them, and we look for opportunities to apply them in other contexts. The best way of learning the material is by being involved and by participating in the class activities. You are encouraged to ask questions during or after class.

There is no DGD for this course. Exercises can be found in the lecture notes, and some extra practice problems and solutions will be made available as the course progresses. In addition, there are self-tests on Blackboard which you can use to practice and find out how well you understand the material. If you have difficulty understanding some of the material, you can come to my office hours or send me an email.

There are no prerequisites for this course. In particular, *no mathematical background is required* except for elementary high school algebra. Please note also that some aspects of the course material are sophisticated and require substantially more study than others.

Course Evaluation. There are four parts:

(1) **Class participation**: 30%. Every class, you will have an answer sheet in front of you; as the lecture progresses, you are asked to write down your answers to various questions. Most of the time, there are no right or wrong answers, and I'm just asking for your opinion, guess or estimate; your answers will not be graded for correctness, but will only be used to determine whether you actively participated in the lectures. You are supposed to sign your answer sheet and hand it back at the end of the class. **You need to participate in at least 20 out of 24 lectures in order to pass.** Class attendance counts for 10% of your overall grade, and online quizzes for 20%.

    There will also be six online quizzes, administered through Blackboard.

(2) There will be a closed book **midterm exam** consisting mainly of multiple choice questions. This is worth 20% of your final grade. The midterm takes place on Thursday October 31, 5.30-6.50pm during class hours. If you miss the midterm for a valid reason (medical, etc.) then the weight of the midterm will be shifted to the final exam.

(3) There will be a closed book **final exam** consisting mainly of multiple choice questions. This is worth 50% of your final grade.

(4) During the course you will earn **play chips**. These can be used to buy multiple choice questions on the final exam. Make sure that you know your chip balance before going into the exam, so that you know how many questions you can buy. Each question costs 5 chips. For example, if you have made a profit of 14 chips then (rounding off to the nearest multiple of 5) you can buy 3 questions.

Academic Fraud. Plariarism, cheating and other forms of fraud are serious offenses. Consequences range from an F in the course to expulsion from the university. Without exception, suspicions of fraud will be reported to the Faculty for further investigation.

Disclaimer. This course is not meant to encourage gambling. If students do so; they do so at their own risk. Neither the University of Ottawa nor the Professor can be held liable for any losses that students may incur if they choose to participate in any gambling activity.