

Advanced Honours: Combinatorial Game Theory

MATH4907, Winter 2020

[School of Mathematics and Statistics, Carleton University](#)

Instructor:

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General Information

Textbook:

Lessons in Play by Michael Albert, Richard Nowakowski, and David Wolfe. I have ordered this book at [Haven Books](#). Additionally I will put books on reserve at the library. They will be

- Combinatorial games by Richard K. Guy
- Winning Ways Vols I-IV by Elwyn R. Berlekamp, John H. Conway, and Richard K. Guy
- Game theory: a playful introduction by Matthew DeVos and Deborah A. Kent,

[Combinatorial Game Suite](#) is an Open Source software package that can make some calculations in combinatorial game theory much easier. It has many combinatorial games built in and it can be extended, by programming, to include any combinatorial game.

Classes:

Friday 10:00-11:30

Room: HP4351.

Office and Games hour: TBD

Classes begin: 2020-01-10 **Classes end:** 2020-04-03

Term mark: There will be two assignments and a presentation project. The tentative schedule of is:

Item	Due Date	Worth
Homework 1	2020-02-28	30%
Homework 2	2020-04-07	30%
Project	Last weeks of classes	40%

Emergencies recognized by the University Regulations with verifiable supporting documentation, will be the only excuses accepted for any missed term work. Students who miss writing a test or submitting an assignment should bring appropriate documentation and contact the instructor as soon as possible to make arrangements.

Plagiarism and Cheating:

Plagiarism is defined in the undergraduate calendar as an instructional offense that occurs when a student uses or passes off "as one's own idea or product, work of another without expressly giving credit". This includes plagiarism involving material lifted from the Internet. Plagiarism is a serious offense. The penalties for students who have been found to have plagiarized are a failed grade at the least sever and suspension, expulsion or notation on transcripts for serious or repeated cases. Plagiarism is just one form of **Cheating**. All forms of cheating are taken very seriously and will be

dealt with swiftly and severely.

Academic Accommodation You may need special arrangements to meet your academic obligations during the term. For an accommodation request the processes are as follows:

- **Pregnancy obligation:** write to me with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details see the [Student Guide](#)
- **Religious obligation:** write to me with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details see the [Student Guide](#)
- **Students with disabilities** requiring academic accommodations in this course must register with the Paul Menton Centre for Students with Disabilities (PMC) for a formal evaluation of disability-related needs. Documented disabilities could include but are not limited to mobility/physical impairments, specific Learning Disabilities (LD), psychiatric/psychological disabilities, sensory disabilities, Attention Deficit Hyperactivity Disorder (ADHD), and chronic medical conditions. Registered PMC students are required to contact the PMC, 613-520-6608, every term to ensure that I receive your Letter of Accommodation, no later than two weeks before the first assignment is due or the first in-class test/midterm requiring accommodations. If you only require accommodations for your formally scheduled exam(s) in this course, please submit your request for accommodations to PMC by the deadlines published on the [PMC website](#).

List of Topics Covered: definitions of games; reverse induction; basic strategies; outcome classes; impartial and partisan games; values of games; equality, sums, inequalities of games; canonical forms of games; games that are numbers; infinitesimals; switches; stops; impartial game theory; hot games and cooling.

These topics are subject to change