

# Math 3157B-001 – Introduction to Game Theory

- Instructor:** David Riley  
Department of Mathematics  
MC 136  
DMRiley (at) uwo.ca
- Office hours:** Mondays 3:30-4:00 or by appointment
- Class times:** Mondays, Wednesdays and Fridays 2:30-3:30
- Location:** UC-2110
- Textbook:** *Playing for Real – a Text on Game Theory*, K. Binmore 2007.
- Prerequisites:** Math 1600A/B, Calculus 1301A/B or 1501A/B, and one of Math 1120A/B, 2120A/B, 2122A/B, 2124A/B, 2155F/G, or the former Math 2155A/B.
- Evaluation:** Assignments (5 x 5%), Midterm Exam (25%), Final exam (50%)
- Assignments:** Due at the start of class on: January 22, February 5, February 26, March 18, and April 1. No late assignments will be accepted.
- Midterm Exam:** March 4
- Final Exam:** Date to be determined
- Syllabus:** This course discusses how mathematical methods can be used to analyze various kinds of two-player games. Some topics include:
- how to model games: extensive and strategic forms; perfect information; chance
  - strategies: backwards induction; Nash equilibria
  - Nim, and the theory of Nim-like games (combinatorial games)
  - modelling imperfect information
  - von Neumann-Morgenstern utility functions
  - mixed strategies, and domination of strategies
  - optimization: matching problems, convex hulls, and maximizing functions on convex polyhedra
  - cooperative games

**Accommodation of missed work:** If you are granted accommodation by the academic counsellors in your home faculty (dean's office) for a missed course component, then the following grade reweightings will apply:

- For each missed assignment, the number of assignments used to calculate that portion of your course mark will be reduced by one.
- For a missed midterm exam, there will be no make-up exam: the 25% weight will be added to the final exam weight.
- For a missed final exam, a special exam will be set by the Department of Mathematics.

**Common course policies:** Common policies for all undergraduate courses in the Department of Mathematics can be found here: [https://www.math.uwo.ca/undergraduate/2019-20\\_math\\_common\\_course\\_policies.html](https://www.math.uwo.ca/undergraduate/2019-20_math_common_course_policies.html). Please familiarize yourself with these policies.