



Department of Mathematics
Course outline for Winter 2024

MATH 3157 - Game Theory

1. Course Information

Course information

Title: MATH 3157 - Game Theory, Winter Semester 2024

Class Time & Place: MWF 12:30pm-1:30pm in MC-17

List of Prerequisites: Mathematics 1600A/B, Calculus 1301A/B or Calculus 1501A/B, and one of Mathematics 1120A/B, Mathematics 2120A/B, Mathematics 2122A/B, Mathematics 2124A/B or Mathematics 2155F/G, the former Mathematics 2155A/B.

List of Antirequisite(s): None

Unless you have either the requisites for this course or written special permission from your Dean to enrol in it, you may be removed from this course and it will be deleted from your record. This decision may not be appealed. You will receive no adjustment to your fees in the event that you are dropped from a course for failing to have the necessary prerequisites.

2. Instructor Information

Instructors	Email	Office	Phone	Office Hours
Hristo Sendov	hsendov@uwo.ca	WSC205	x86985	Tuesdays 10:30-11:30am on Zoom
TA: Prakash Singh	psing69@uwo.ca			Thursdays 2:30-3:30pm in MC 204

Students must use their Western (@uwo.ca) email addresses when contacting their instructors. Please include 'MATH3157' in the subject line of your e-mails.

3. Course Syllabus, Schedule, and Delivery Mode

The course will cover approximately the following topics

1. Combinatorial Games
2. Normal-Play Games
3. Impartial Games
4. Hackenbush and Partizan Games
5. Zero-Sum Matrix Games
6. Von Neumann's Minimax Theorem
7. General Games
8. Nash Equilibrium and Applications
9. Nash's Equilibrium Theorem
10. Cooperation
11. n -Player Games
12. Preferences and Society

Important dates:

Classes begin: January 8, 2024
Reading Week: February 17 – 25, 2024
Classes end: April 8, 2024
Exam period: April 11 – 30, 2024

4. Course Materials

Text Book: Game Theory A playful Introduction, by Matt DeVos and Deborah A. Kent (2016)

Copies of the text book can be found in the book store.

Students should check OWL (<http://owl.uwo.ca>) on a regular basis for news and updates. This is the primary method by which information will be disseminated to all students in the class. Students are responsible for checking OWL on a regular basis.

All course material will be posted to OWL: <http://owl.uwo.ca>. Any changes will be indicated on the OWL site and discussed with the class.

If students need assistance, they can seek support on the [OWL Help page](#). Alternatively, they can contact the [Western Technology Services Helpdesk](#). They can be contacted by phone at 519-661-3800 or ext. 83800.

[Google Chrome](#) or [Mozilla Firefox](#) are the preferred browsers to optimally use OWL; update your browsers frequently. Students interested in evaluating their internet speed, please click [here](#).

5. Methods of Evaluation

There will be two midterms, and one final exam.

The overall course grade will be calculated as listed below:

Midterm Exams (2)	33%
Final Exam	34%

Midterm Exam 1: Thursday, February 8, 2024, 8:00-10:00pm, in Social Science Centre 3028. The last lecture covered on the midterm is Friday, February 4.

Midterm Exam 2: Thursday, March 14, 2024, 8:00-10:00pm, in Social Science Centre 3028. The last lecture covered on the midterm is Friday, March 8.

Final Exam: 2 hours. The date and time will be scheduled by the Registrar's Office.

Accommodated Evaluations

One may miss a midterm exam only for a valid reason presented to the Faculty of Science Academic Counsellors. In that case the weight of the midterm will be moved onto the final exam.

Rounding of Marks Statement

Across the Sciences Undergraduate Education programs, we strive to maintain high standards that reflect the effort that both students and faculty put into the teaching and learning experience during this course. All students will be treated equally and evaluated based only on their actual achievement. **Final grades** on this course, irrespective of the number of decimal places used in marking individual assignments and tests, will be calculated to one decimal place and rounded to the nearest integer, e.g., 74.4 becomes 74, and 74.5 becomes 75. Marks WILL NOT be bumped to the next grade or GPA, e.g. a 79 will NOT be bumped up to an 80, an 84 WILL NOT be bumped up to an 85, etc. The mark attained is the mark you achieved, and the mark assigned; requests for mark "bumping" will be denied.

6. Accommodation and Accessibility

Accommodation Policies

Students with disabilities work with Accessible Education (formerly SSD) which provides recommendations for accommodation based on medical documentation or psychological

and cognitive testing. The Academic Accommodation for Students with Disabilities policy can be found at:

https://www.uwo.ca/univsec/pdf/academic_policies/appeals/Academic_Accommodation_disabilities.pdf

Absences from Final Examinations

If you miss the Final Exam, please contact the Academic Counselling office of your Faculty of Registration as soon as you are able to do so. They will assess your eligibility to write the Special Examination (the name given by the University to a makeup Final Exam).

You may also be eligible to write the Special Exam if you are in a “Multiple Exam Situation” (e.g., more than 2 exams in 23-hour period, more than 3 exams in a 47-hour period).

If a student fails to write a scheduled Special Examination, the date of the next Special Examination (if granted) normally will be the scheduled date for the final exam the next time this course is offered. The maximum course load for that term will be reduced by the credit of the course(s) for which the final examination has been deferred. See the Academic Calendar for details (under [Special Examinations](#)).

Note: missed work can *only* be excused through one of the mechanisms above. Being asked not to attend an in-person course requirement due to potential COVID-19 symptoms is **not** sufficient on its own.

Religious Accommodation

When a course requirement conflicts with a religious holiday that requires an absence from the University or prohibits certain activities, students should request accommodation for their absence in writing at least two weeks prior to the holiday to the course instructor and/or the Academic Counselling office of their Faculty of Registration. Please consult University's list of recognized religious holidays (updated annually) at

www.edi.uwo.ca.

Accommodation Policies

Students with disabilities are encouraged to contact Accessible Education, which provides recommendations for accommodation based on medical documentation or psychological and cognitive testing. The policy on Academic Accommodation for Students with Disabilities can be found at:

https://www.uwo.ca/univsec/pdf/academic_policies/appeals/Academic_Accommodation_disabilities.pdf.

7. Academic Policies

The website for Registrarial Services is <http://www.registrar.uwo.ca>.

In accordance with policy, <http://www.uwo.ca/its/identity/activatenonstudent.html>, the centrally administered e-mail account provided to students will be considered the individual's official university e-mail address. It is the responsibility of the account holder to ensure that e-mail received from the University at his/her official university address is attended to in a timely manner.

8. Support Services

Please visit the Science & Basic Medical Sciences Academic Counselling webpage for information on adding/dropping courses, academic considerations for absences, appeals, exam conflicts, and many other academic related matters: <https://www.uwo.ca/sci/counselling/>.

Students who are in emotional/mental distress should refer to Mental Health@Western (<https://uwo.ca/health/>) for a complete list of options about how to obtain help.

Western is committed to reducing incidents of gender-based and sexual violence and providing compassionate support to anyone who has gone through these traumatic events. If you have experienced sexual or gender-based violence (either recently or in the past), you will find information about support services for survivors, including emergency contacts at https://www.uwo.ca/health/student_support/survivor_support/get-help.html.

To connect with a case manager or set up an appointment, please contact support@uwo.ca.

Please contact the course instructor if you require lecture or printed material in an alternate format or if any other arrangements can make this course more accessible to you. You may also wish to contact Accessible Education at

http://academicsupport.uwo.ca/accessible_education/index.html

if you have any questions regarding accommodations.

Learning-skills counsellors at the Student Development Centre (<https://learning.uwo.ca>) are ready to help you improve your learning skills. They offer presentations on strategies for improving time management, multiple-choice exam preparation/writing, textbook reading, and more. Individual support is offered throughout the Fall/Winter terms in the drop-in Learning Help Centre, and year-round through individual counselling.

Western University is committed to a thriving campus as we deliver our courses in the mixed model of both virtual and face-to-face formats. We encourage you to check out the Digital Student Experience website to manage your academics and well-being: <https://www.uwo.ca/se/digital/>.

Additional student-run support services are offered by the USC, <https://westernusc.ca/services/>.