**Department of Mathematics**

**Math 3157A Course Outline**

**1. Course Information**

**Course Information**

Math 3157A Introduction to Game Theory, Fall 2025,

**List of Prerequisites**

[Mathematics 1600A/B](https://westerncalendar.uwo.ca/Courses.cfm?CourseAcadCalendarID=MAIN_023092_1&SelectedCalendar=Live&ArchiveID=) or [Mathematics 1700A/B,](https://westerncalendar.uwo.ca/Courses.cfm?CourseAcadCalendarID=MAIN_031207_1&SelectedCalendar=Live&ArchiveID=) [Calculus 1301A/B](https://westerncalendar.uwo.ca/Courses.cfm?CourseAcadCalendarID=MAIN_013892_1&SelectedCalendar=Live&ArchiveID=) or [Calculus 1501A/B,](https://westerncalendar.uwo.ca/Courses.cfm?CourseAcadCalendarID=MAIN_013891_1&SelectedCalendar=Live&ArchiveID=) and one of [Mathematics 1120A/B,](https://westerncalendar.uwo.ca/Courses.cfm?CourseAcadCalendarID=MAIN_017786_1&SelectedCalendar=Live&ArchiveID=) [Mathematics 2122A/B,](https://westerncalendar.uwo.ca/Courses.cfm?CourseAcadCalendarID=MAIN_005955_1&SelectedCalendar=Live&ArchiveID=) [Mathematics 2124A/B,](https://westerncalendar.uwo.ca/Courses.cfm?CourseAcadCalendarID=MAIN_010500_1&SelectedCalendar=Live&ArchiveID=) [Mathematics 2155F/G,](https://westerncalendar.uwo.ca/Courses.cfm?CourseAcadCalendarID=MAIN_012129_1&SelectedCalendar=Live&ArchiveID=) [Mathematics 2700A/B,](https://westerncalendar.uwo.ca/Courses.cfm?CourseAcadCalendarID=MAIN_031210_1&SelectedCalendar=Live&ArchiveID=) the former Mathematics 2120A/B.

Unless you have either the prerequisites for this course or written special permission from the Department of Mathematics to enroll in it, you may be removed and withdrawn from this course in accordance with university policy. This may be done after the add/drop deadline of the academic term, and the course will be marked as withdrawn (WDN) on your academic record. This decision may not be appealed.

**2. Instructor Information**

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| --- | --- | --- | --- | --- |
| **Instructors** | **Email@uwo.ca** | **Office** | **Phone** | **Office Hours** |
| Prof. Matthias Franz | mfranz | MC |  | TBA |
| TA (TBA) | TBA |  |  |  |

Students must use their Western (@uwo.ca) email addresses when contacting their instructors. The course number (Math 3157A) must be included in the subject line. The email must adhere to professional standards (proper salutation, complete sentences, correct English etc.).

Office hours (2h/week) will be held in person, details TBA. In case of an ongoing pandemic (flu, covid, etc.), office hours may be conducted online.

**3. Course Syllabus, Schedule, Delivery Mode**

A first course in the mathematical theory of games. Topics begin with the modelling of games: extensive and strategic forms; perfect information; chance. Sprague-Grundy theory of impartial combinatorial games. Modelling preferences with utility functions. Nash equilibria, analysis of two-player games. If time permits, additional topics will be discussed.

At a successful completion of the course, a student will be able to

* explain and apply basic game theorical concepts and methods,
* determine the optimal strategies, outcomes, and equilibrium of various forms of games,
* demonstrate competence in his/her ability to evaluate, decide, and predict the behaviours of others involved in a strategic situation,
* apply the theory to real world examples,
* state important definitions and results from the course in a precise way,
* present written answers in a complete, correct and well-structured way, using correct notation.

Classes are held in person MWF 12:30-1:30pm.

Classes begin: September 4, 2025; January 5, 2026

Fall Reading Week: November 3 – 9, 2025

Spring Reading Week: February 14 – 22, 2026

Classes end: December 9, 2025; April 9, 2026

Exam period: December 11 – 22, 2025; April 12 – 30, 2026

**4. Course Materials**

**Required textbook** (ebook or print):

Matt DeVos, Deborah A. Kent

Game Theory: A Playful Introduction

American Mathematical Society, 2016

<https://bookstore.ams.org/stml-80>

Prices can be found on the course page at the Western Bookstore:

https://bookstore.uwo.ca/textbook-search?campus=UWO&term=W2025A&courses%5B0%5D=001\_UW/MAT3157A

(Note that on the AMS page the ebook is cheaper than the printed copy.)

All course material will be posted to OWL: https://westernu.brightspace.com/

Students are responsible for checking the course OWL site (https://westernu.brightspace.com/) regularly for news and updates. This is the primary method by which information will be disseminated to all students in the class.

If students need assistance with the course OWL site, they can seek support on the [OWL Brightspace Help](https://brightspacehelp.uwo.ca/) page. Alternatively, they can contact the Western Technology Services Helpdesk. They can be contacted by phone at 519-661-3800 or ext. 83800.

**Technical Requirements**

In case of a switch to online learning, students are required to have stable internet connection, computer with working microphone and webcam and an up-to-date web browser like Firefox, Chrome or Safari, a document scanner or scanning app.

**5. Methods of Evaluation**

**Grading Scheme and Assessment Dates**

The overall course grade will be calculated as listed below:

Quizzes (2) 20% (10% each)

Midterm Test 25%

Final Exam 45%

Participation 10%

“Participation” refers to in-class participation, for example to asking or answering questions. This may be in the context of reading parts of the book together in class. In this case (which will be announced ahead of time), each students needs to bring a printed copy of the book, or alternatively the ebook version on a tablet or laptop. Smartphones or other small tiny devices are not acceptable and will lead to a reduction of the participation grade.

Tentatives quiz dates: Wed Oct 1 & Wed Nov 19 in class

Tentative midterm date: Tue Oct 21 7-9pm

There will be homework assignments, roughly every week. These assignments will be graded, but the grade only serves as a feedback to the student, without affecting the final grade for the course. To receive feedback, a student must upload his or her solution to Gradescope before the deadline.

**Use of Generative AI Tools**

Generative AI tools (e.g., ChatGPT, Copilot, Gemini) are prohibited for each assessment.

**General information about missed coursework**

Students must familiarize themselves with the *University Policy on Academic Consideration – Undergraduate Students in First Entry Programs,* posted on the Academic Calendar:

<https://www.uwo.ca/univsec/pdf/academic_policies/appeals/academic_consideration_Sep24.pdf>,

This policy does not apply to requests for Academic Consideration submitted for **attempted or completed work**, whether online or in person.

The policy also does not apply to students experiencing longer-term impacts on their academic responsibilities. These students should consult [Accessible Education](http://academicsupport.uwo.ca/accessible_education/).

For procedures on how to submit Academic Consideration requests, please see the information posted on the Office of the Registrar’s webpage:

<https://registrar.uwo.ca/academics/academic_considerations/>

All requests for Academic Consideration must be made within 48 hours after the assessment date or submission deadline.

All Academic Consideration requests must include supporting documentation; however, recognizing that formal documentation may not be available in some extenuating circumstances, the policy allows students to make one Academic Consideration request **without supporting documentation** in this course. However, the following assessments are excluded from this, and therefore always require formal supporting documentation:

* Examinations scheduled during official examination periods (Defined by policy)

When a student *mistakenly* submits their one allowed Academic Consideration request **without supporting documentation** for the assessments listed above or those in the **Coursework with Assessment Flexibility** section below, the request cannot be recalled and reapplied. This privilege is forfeited.

**Evaluation Scheme for Missed Assessments**

There are no extensions for any assessment. The weight of any missed assessment will be transferred to the final exam.

When a student misses the Final Exam and their Academic Consideration has been granted, they will be allowed to write the Special Examination (the name given by the University to a makeup Final Exam). See the Academic Calendar for details (under [Special Examinations](https://www.westerncalendar.uwo.ca/PolicyPages.cfm?Command=showCategory&PolicyCategoryID=5&SelectedCalendar=Live&ArchiveID=#SubHeading_70)), especially for those who miss multiple final exams within one examination period.

**Essential Learning Requirements**

Even when Academic Considerations are granted for missed coursework, the following are deemed essential to earn a passing grade:

• a minimum grade of 45% on the final exam. If this requirement is not met, the final grade cannot exceed 49%.

**6. Additional Statements**

**6.1 Religious Accommodation**

When conflicts arise with a religious holiday that requires an absence from the University or prohibits certain activities, students should request an accommodation for their absence in writing to the course instructor and/or the Academic Advising office of their Faculty of Registration. This notice should be made as early as possible, but not later than two weeks prior to the writing of the examination (or one week prior to the writing of the test).

Please visit the Diversity Calendars posted on our university’s EDID website for the recognized religious holidays - [https://www.edi.uwo.ca](https://www.edi.uwo.ca/)

**6.2 Academic 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](https://www.uwo.ca/univsec/pdf/academic_policies/appeals/Academic%20Accommodation_disabilities.pdf).

**6.3 General Academic Policies**

The website for Registrar Services is <https://www.registrar.uwo.ca/>.

**Use of @uwo.ca email:** In accordance with policy, <https://www.uwo.ca/univsec/pdf/policies_procedures/section1/mapp113.pdf>, the centrally administered e-mail account provided to students will be considered the individual’s official university email address. It is the responsibility of the account holder to ensure that emails received from the University at their official university address are attended to in a timely manner.

**Requests for Relief** (formally known as “appeals”)

Policy on Request for Relief from Academic Decision:

<https://uwo.ca/univsec//pdf/academic_policies/appeals/requests_for_relief_from_academic_decisions.pdf>

Procedures on Request for Relief from Academic Decision (Undergraduate):

<https://uwo.ca/univsec//pdf/academic_policies/appeals/undergrad_requests_for_relief_procedure.pdf>

Procedures on Request for Relief from Academic Decision (Graduate):

<https://uwo.ca/univsec//pdf/academic_policies/appeals/graduate_requests_for_relief_procedure.pdf>

**6.4 Scholastic Offences**

Policy on Scholastic Offences: <https://uwo.ca/univsec//pdf/academic_policies/appeals/scholastic_offences.pdf>

Procedures on Scholastic Offences:

<https://uwo.ca/univsec//pdf/academic_policies/appeals/undergrad_scholastic_offence_procedure.pdf>

**Use of Electronic Devices During Assessments**

In courses offered by the Faculty of Science, the possession of unauthorized electronic devices during any in-person assessment (such as tests, midterms, and final examinations) is strictly prohibited. This includes, but is not limited to: mobile phones, smart watches, smart glasses, and wireless earbuds or headphones.

Unless explicitly stated otherwise in advance by the instructor, the presence of any such device at your desk, on your person, or within reach during an assessment will be treated as a *scholastic offence*, even if the device is not in use.

Only devices expressly permitted by the instructor (e.g., non-programmable calculators) may be brought into the assessment room. It is your responsibility to review and comply with these expectations.

**Use of Generative AI Tools**

The use of generative AI tools (e.g., ChatGPT, Microsoft Copilot, Google Gemini, or similar platforms) is **not permitted** in the completion of any course assessments, including but not limited to: assignments, lab reports, presentations, tests, and final examinations.

Using such tools for content generation, code writing, problem solving, translation, or summarization—when not explicitly allowed—will be treated as a **scholastic offence**.

If the use of generative AI is permitted for a particular assessment, the conditions of use will be specified by the instructor in advance. If no such permission is granted, students must assume that use is prohibited. It is your responsibility to seek clarification before using any AI tools in academic work.

In the event of a health lockdown, tests and examinations in this course will be conducted using a remote proctoring service. By taking this course, you are consenting to the use of this software and acknowledge that you will be required to provide **personal information** (including some biometric data) and the session will be **recorded**. Completion of this course will require you to have a reliable internet connection and a device that meets the technical requirements for this service. More information about this remote proctoring service, including technical requirements, is available on Western’s Remote Proctoring website at:

[https://remoteproctoring.uwo.ca](https://remoteproctoring.uwo.ca/).

**6.5 Support Services**

Please visit the Science & Basic Medical Sciences Academic Advising webpage for information on adding/dropping courses, academic considerations for absences, requests for relief, 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.

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. If you have any questions regarding accommodations, you may also wish to contact Accessible Education at

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

Learning-skills counsellors at Learning Development and Success ([https://learning.uwo.ca](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.

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