

University of Alberta  
CMPUT 497/670 game theories  
Sections B1/B1 Winter 2024

**instructor** Prof. Hayward <https://webdocs.cs.ualberta.ca/~hayward>  
**office** Ath 301  
**e-mail** lastname@ualberta.ca  
**webpage** <https://webdocs.cs.ualberta.ca/~hayward/cgt/jem/cgt.html>  
**office hours** after each lecture, outside the lecture hall  
**lectures** see beartracks for room and time

## course content

**UAlberta calendar description (revised)** A brief intro to combinatorial game theory (CGT), economic game theory (EGT), and implementing a game solver. CGT: the math of 2-player alternate-turn games such as nim or go. Zermelo's theorem, sums, outcome classes, nim, Sprague-Gundy theorem, Hackenbush. EGT: the math of 2-player 0-sum matrix games such as rock/paper/scissors. Von-Neuman's theorem. Hex solver: knowledge (virtual connections, inferior cells) and search (expected work search).

**prerequisites** CMPUT 175 (or equiv); any of CMPUT 272, MATH 222, PHIL 220; and any CMPUT/MATH/PHIL 3xx

**course objectives and expected learning outcomes** to become familiar with the topics covered: for each concept, to be able to give an example and sketch the proofs of any relevant theorems. for each algorithm, to be able to trace sample executions and discuss suitability for the particular game.

**course schedule** see course webpage

**learning resources** see course webpage

**academic success centre** <https://www.ualberta.ca/current-students/academic-success-centre/index.html> The ASC provides professional academic support to help students strengthen their academic skills and achieve their academic goals. Individual advising, appointments, and group workshops are available year round in the areas of Accessibility, Communication, Learning, and Writing Resources. Modest fees apply for some services.

**grade evaluation** (\* closed book, pencil/paper/eraser, no devices)

<b>497 course work</b>	<b>date</b>	<b>weight</b>
50-min in-class quizzes*	Thu Jan 25, Feb 8, 29, Mar 14, 28	60% (best 4 of 5)
3-hour in-person final exam*	2pm Apr 19 (tentative)	40%
deferred exam (if approved)	10am May 10 (CSC 349)	40%

<b>670 course work</b>	<b>date</b>	<b>weight</b>
quizzes* (same as for 497)	same as for 497	45% (best 4 of 5)
project	Feb 8, Feb 29, Apr 4, Apr 11	25%
3-hour in-person final exam*	same as for 497	30%
deferred exam (if approved)	same as for 497	30%

**final grades** Course percentage scores will be partitioned into letter grades by finding appropriate gaps among the scores. Grades are not curved: there is no target distribution of final grades. Historically, this instructor's break points have been close to that shown below, but this course's break points might differ. Break points are not published.

A+ 95   A 90   A- 85   B+ 80   B 75   B- 70   C+ 65   C 60   C- 55   D+ 50   D 45

Grades are unofficial until approved by the Department and/or Faculty offering the course.

**re-evaluation of term work** Any questions concerning marked work must be brought to the attention of the marker within one week of the work being marked, otherwise the marks will not be changed.

**checking for cheating** We might at some point ask you to explain your answers on a quiz or exam. If you cannot adequately explain your answer, we might deduct some or all marks for that work and/or report the case for further investigation.

**re-examination** A student who writes the final examination and fails the course may apply for a re-examination. Re-examinations are rarely granted in the Faculty of Science. Re-examinations are governed by university-wide Academic Regulations

<https://calendar.ualberta.ca/content.php?catoid=39&navoid=12216#reexaminations>

and Faculty of Science Academic Regulations.

<https://calendar.ualberta.ca/content.php?catoid=39&navoid=12231#reexamination>

Misrepresentation of Facts to gain a re-examination is a serious breach of the Code of Student Behaviour.

**past or representative evaluative material** see course webpage

# Policies for missed work

## Missed Quiz or Exam Due to Non-medical Protected Grounds (e.g., religious beliefs)

When a quiz or final exam presents a conflict based on non-medical protected grounds,

<https://www.ualberta.ca/current-students/academic-success-centre/accessibility-resources/register/eligibility.html> students must apply to the Academic Success Centre for accommodations via their Register for Accommodations website:

<https://www.ualberta.ca/current-students/academic-success-centre/accessibility-resources/register/index.html>

Students can review their eligibility and choose the application process specific for Accommodations Based on Non-medical Protected Grounds. It is imperative that students review the dates of all course assessments upon receipt of the course syllabus, and apply AS SOON AS POSSIBLE to ensure the timely application of the accommodation. Students who apply later in the term may experience unavoidable delays in the processing of the application, which can affect the accommodation.

**Missed quizzes:** You can miss 1 quiz for any reason: your total quiz score will be the best 4 out of the 5 quizzes.

If due to incapacitating illness, severe domestic affliction, or some other mishap, you miss more than 1 quiz, you must contact the instructor within two working days of missing that second quiz, or as soon as possible, to request an excused absence for that quiz. If the excused absence is granted, then your total quiz score will be the best 3 out of 5 quizzes, and the weight of one quiz (15% for CMPUT 497, 11.25% for CMPUT 670) will be moved to the weight of the final exam. An excused absence is a privilege and not a right: there is no guarantee that an absence will be excused. Misrepresentation of facts to gain an excused absence is a serious breach of the Code of Student Behaviour. In all cases, instructors may request adequate documentation to substantiate the reason for the absence at their discretion.

**Deferred final examination** A student who cannot write the final examination due to incapacitating illness, severe domestic affliction or other compelling reasons can apply for a deferred final examination. Such an application must be made to the student's Faculty office within two working days of the missed examination and must be supported by appropriate documentation or a Statutory Declaration (see calendar on Attendance).

<https://calendar.ualberta.ca/content.php?catoid=39&navoid=12216#attendance>

Deferred examinations are a privilege and not a right: there is no guarantee that a deferred examination will be granted. The Faculty may deny deferral requests in cases where less than 50% of term work has been completed. Misrepresentation of facts to gain a deferred examination is a serious breach of the Code of Student Behaviour.

## Student responsibilities

Academic Integrity and Student Conduct: The University of Alberta is committed to the highest standards of academic integrity and honesty, as well as maintaining a learning environment that fosters the safety, security, and the inherent dignity of each member of the community, ensuring students conduct themselves accordingly. Students are expected to be familiar with the standards of academic honesty and appropriate student conduct, and to uphold the policies of the University in this respect. Students are particularly urged to familiarize themselves with the provisions of the Code of Student Behaviour <https://www.ualberta.ca/governance/resources/policies-standards-and-codes-of-conduct/code-of-student-behaviour.html> and the Student Conduct Policy,

<https://policiesonline.ualberta.ca/PoliciesProcedures/Policies/Student-Conduct-Policy.pdf#search=Student%20Conduct%20Policy>

and avoid any behaviour that could potentially result in suspicions of academic misconduct (e.g., cheating, plagiarism, misrepresentation of facts) and non-academic misconduct (e.g., discrimination, harassment, physical assault). Academic and non-academic misconduct are taken very seriously and can result in suspension or expulsion from the University.

All students are expected to consult the Academic Integrity website:

<https://www.ualberta.ca/current-students/academic-resources/academic-integrity/index.html>

for clarification on the various academic offences. All forms of academic dishonesty are unacceptable at the University. Any suspected academic offence in this course will be reported to the College of Natural and Applied Sciences. Suspected cases of non-academic misconduct will be reported to the Dean of Students. The College, the Faculty of Science, and the Dean of Students are committed to student rights and responsibilities, and adhere to due process and administrative fairness, as outlined in the Code of Student Behaviour and the Student Conduct Policy. Anyone who is found in violation is likely to receive a sanction. Typical sanctions for academic misconduct include conduct probation, a mark reduction or a mark of 0 on an assessment, a grade reduction or a grade of F in a course, a remark on the transcript, and a recommendation for suspension or expulsion. Sanctions for non-academic misconduct include conduct conditions, fines, suspension of essential or non-essential University services and resources, and suspension or expulsion from the University.

## **Exam and quiz conduct**

- please consider wearing a mask.
- your student photo ID is required to verify your identity.
- you will not be allowed to begin a quiz/exam after it has been in progress for 30 minutes.
- you must remain in the quiz/exam room until at least 30 minutes has elapsed.
- your cell phones must be turned off and stored in your bags.
- no calculators or computers of any kind are allowed in a quiz/exam: pencil/pen and eraser only.

## **Lecture conduct**

- please consider wearing a mask.
- turn your cell phone off.
- follow classroom etiquette: <https://webdocs.cs.ualberta.ca/~hayward/etiquette.pdf>

**Students Eligible for Accessibility-Related Accommodations** In accordance with the University of Alberta's Discrimination, Harassment, and Duty to Accommodate policy,

<https://policiesonline.ualberta.ca/PoliciesProcedures/Policies/Discrimination-Harassment-and-Duty-to-Accommodate.pdf>

accommodation support is available to eligible students who encounter limitations or restrictions to their ability to perform the daily activities necessary to pursue studies at a post-secondary level due to medical conditions and/or non-medical protected grounds. Accommodations are coordinated through the Academic Success Centre (see link above) and students can learn more about eligibility on the Register for Accommodations website (see link above).

It is recommended that students apply as early as possible in order to ensure sufficient time to complete accommodation registration and coordination. Students are advised to review and adhere to published deadlines for accommodation approval and for specific accommodation requests (e.g., exam registration submission deadlines). Students who request accommodations less than a month in advance of the academic term for which they require accommodations may experience unavoidable delays or consequences in their academic programs, and may need to consider alternative academic schedules.

**Recording and/or Distribution of Course Materials** Audio or video recording, digital or otherwise, of lectures, labs, seminars or any other teaching environment by students is allowed only with the prior written consent of the instructor or as a part of an approved accommodation plan. Student or instructor content, digital or otherwise, created and/or used within the context of the course is to be used solely

for personal study, and is not to be used or distributed for any other purpose without prior written consent from the content author(s).

**Learning and Working Environment** The Faculty of Science is committed to ensuring that all students, faculty and staff are able to work and study in an environment that is safe and free from discrimination, harassment, and violence of any kind. It does not tolerate behaviour that undermines that environment. This includes virtual environments and platforms.

If you are experiencing harassment, discrimination, fraud, theft or any other issue and would like to get confidential advice, please contact any of these campus services:

- **Office of Safe Disclosure and Human Rights:**

<https://www.ualberta.ca/provost/portfolio/office-of-safe-disclosure-human-rights.html>

A safe, neutral and confidential space to disclose concerns about how the University of Alberta policies, procedures or ethical standards are being applied. They provide strategic advice and referral on matters such as discrimination, harassment, duty to accommodate and wrong-doings. Disclosures can be made in person or online using the Online Reporting Tool.

[https://ualberta-gme-advocate.symplcity.com/titleix\\_report/index.php/pid700773?](https://ualberta-gme-advocate.symplcity.com/titleix_report/index.php/pid700773?)

- **University of Alberta Protective Services**

<https://www.ualberta.ca/protective-services/index.html>

Peace officers dedicated to ensuring the safety and security of U of A campuses and community. Staff or students can contact UAPS to make a report if they feel unsafe, threatened, or targeted on campus or by another member of the university community.

- **Office of the Student Ombuds**

<https://www.ualberta.ca/current-students/ombuds/index.html>

A confidential and free service that strives to ensure that university processes related to students operate as fairly as possible. They offer information, advice, and support to students, faculty, and staff as they deal with academic, discipline, interpersonal, and financial issues related to student programs.

- **Office of the Dean of Students**

<https://www.ualberta.ca/dean-of-students/index.html>

They can assist students in navigating services to ensure they receive appropriate and timely resources. For students who are unsure of the support they may need, are concerned about how to access services on campus, or feel like they may need interim support while you wait to access a service, the Dean of Students office is here to help.

## **Feeling Stressed, Anxious, or Upset?**

It's normal for us to have different mental health experiences throughout the year. Know that there are people who want to help. You can reach out to your friends and access a variety of supports available on and off campus at the Need Help Now webpage

<https://www.ualberta.ca/current-students/need-help-now.html>

or by calling the 24-hour Distress Line: 780-482-4357 (HELP).

## **Student Self-Care Guide**

<https://drive.google.com/file/d/1t5fqgXCG369tt5hDxrzQuvlTdy2W46RB/view>

This Self-Care Guide, originally designed by the Faculty of Native Studies, has broader application for use during students' learning. It provides some ideas and strategies to consider that can help navigate emotionally challenging or triggering material.

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Policy about course outlines can be found in Course Requirements, Evaluations Procedures and Grading of the University Calendar. <https://calendar.ualberta.ca/content.php?catoid=39&navoid=12216#course-requirements>

**Land Acknowledgement** The University of Alberta respectfully acknowledges that we are situated on Treaty 6 territory, traditional lands of First Nations and Métis people.

To learn more about the significance of this land acknowledgement, please read this useful article and associated links to more information.

<https://toronto.citynews.ca/2022/06/24/what-are-land-acknowledgements-and-why-do-they-matter/>

**Disclaimer** Any errors in this syllabus are subject to change and will be announced in class.

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