AMS80A: Gambling and Gaming

Description

This course is an introduction to probability and game theory for people with little mathematical background. The emphasis is on concepts and ideas, which are applied to common games. The class has no prerequisites, but a good working knowledge of algebra is recommended.

General class information

Lectures: Tuesdays and Thursdays, 2:00 pm to 3:45 pm
Kresge Classroom 321

Instructor: Lelys Bravo
lbravo@soe.ucsc.edu
JBE 357B - Tuesdays and Thursdays 11:00 am to 12:00 m

Teaching Assistants: Lars Johnson
lagjohns@soe.ucsc.edu
Changhui Mao
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Evaluation

Exams: Most of your grade (90%) will be assessed from two midterms and one final exam. The final exam is cumulative, but will focus mostly on the material covered after 02/28.
Midterm 1 - Tu 02/07 during class hours (25%)
Midterm 2 - Tu 03/01 during class hours (25%)
Final - Mo 03/19 between 7:30 pm and 10:30 pm (Set by the Registrar) (40%)

Homeworks: Between four and five homeworks will be assigned. These will not be graded, but at least 50% of the questions used in the exams will be taken from them. Some solutions will be provided, and a discussion forum on this website will be setup for students to discuss among themselves and post questions. The discussion forum will be monitored between by the TAs, who will serve as moderators.
Movie summaries: Students must turn in a one-page summary for each one of the five movies to be screened. These summaries are due by the beginning of the class following the movie screening; the deadlines have been posted in the course calendar. The summaries must be no longer than 400 words long and contain a reference to events in the beginning, middle and end of the movie. They are to be submitted electronically using the Assignments tool in eCommons.

Extra-credit: A number of extra-credit assignments will be assigned as the course progresses. Please check the Announcements site often for updates.

Bibliography

There is no required textbook for this course; lecture notes, supplementary materials and homework problems will be available electronically. Please check the Resources link in eCommons.

For the first part of the course, a few recommended books that can be used to complement the materials presented in the class include:


For the second part of the course we recommend:


Class schedule

*Tu 01/10* Introduction to the class.

*Th 01/12* Introduction to probability. Equiprobable spaces.

*Tu 01/17* Expectation and variance. Utility.

*Th 01/19* A brief history of gambling in the US: Screening of History Channel *High Rollers*

*Tu 01/24* Playing roulette: rules and bets.
Th 01/26  Screening of History Channel *Beat the Wheel*. Discussion on biased wheels.

Tu 01/31  Screening of History Channel *Roulette Attack*. Discussion on gambling systems.

Th 02/02  Playing Lotto: Some advanced counting rules.

Tu 02/07  Midterm Exam 1.

Th 02/09  Conditional probabilities and Bayes theorem.

Tu 02/14  Craps: rules and bets. Screening of History Channel *Dice Dominator*.

Th 02/16  Playing blackjack: Rules and bets.

Tu 02/21  Screening of *Professor Blackjack*. Card counting.

Th 02/23  Roulette revisited: Biased wheels, lengths of games and the distribution of profits.

Tu 02/28  Playing poker: Rules and bets.

Th 03/01  Midterm Exam 2.

Tu 03/06  Two-person, zero-sum games with non-random equilibriums.

Th 03/08  The general, two-person zero-sum game.

Tu 03/13  The two-person, non-zero-sum game.

Th 03/15  Games of perfect information, Zermelo's theorem and unraveling

Mo 03/19  Final exam, between 7:30 pm and 10:30 pm.

**Accommodations for students with disabilities**

Every effort will be made to accommodate students with special needs. If you qualify for classroom accommodations because of a disability, please get an Accommodation Authorization from the Disability Resource Center (DRC) and submit it to me in person outside of class (e.g., office hours) within the first two weeks of the quarter. Contact DRC at 459-2089 (voice), 459-4806 (TTY), or http://drc.ucsc.edu for more information on the requirements and/or process.

**Academic integrity**

All work you submit for this class must be your own, and a strict code of honor will be enforced. Please check the UCSC student code of conduct at [http://www2.ucsc.edu/judicial/student-conduct07.pdf](http://www2.ucsc.edu/judicial/student-conduct07.pdf).
Please avoid plagiarism! I strongly recommend that you check the information literacy tutorials at http://nettrail.ucsc.edu/.