

## **ISS 328-732: The Social Science of Sports**

### **Instructor**

Alex Johann

E-mail: [ajohann@msu.edu](mailto:ajohann@msu.edu)

Office Hours:

By appointment on Calendly: <https://calendly.com/alexjohann/officehours>

### **Email policy**

I will do my best to reply to all emails within 48 hours. If you email late Friday afternoon, you may not receive a reply until Monday. If it has been less than 48 hours and your situation has not changed, please do not email again. If your question can be answered by reading the syllabus, you may not receive a reply.

### **Help**

There are two main resources for assistance: my office hours and email. You are free to come to my Tuesday morning office hours at any time without an appointment. If you are unable to attend my regularly scheduled office hours, use the Calendly link posted above to schedule a time for a Zoom meeting or email me questions. Office hours are available beginning the first week of class and extending through the last week of class and I will be available by email during that time as well. I am there ready to assist you with homework questions, exam preparation, and review. Please do not come to office hours or send me emails expecting answers to homework. I will not provide answers to problem sets, only guidance, tips, examples, and further explanations.

### **Course description**

Sports are a pervasive activity throughout the world, and social scientists have done much research. This course studies some of the issues addressed in the study of sports by social scientists. The tools of social science are used increasingly in sports to analyze strategy, design contests, form leagues, determine pay, assess discrimination, evaluate rules changes, monitor umpires, rank performance and organize betting markets. These tools include such techniques as dynamic programming, game theory, market analysis, rank ordering and statistical reasoning. In this sense, the course is an exercise in thinking about a fascinating and fun topic. There is another reason to study sports: sports are the laboratory of social science. Sports provide a controlled setting where one can examine social forces at work. In the study of sports one

confronts many of the important questions of the discipline: what determines earnings, how do incentives affect performance, is discrimination declining in significance, where does collusion exist and what are its consequences, how does the law influence outcomes, are asset markets efficient and what is the role of the public sector. I am an economist, so much of the material draws on economics, statistics, game theory, dynamic programming and regression analysis. There is also a section on sport psychology, where I examine the psychology of learning and performance, especially choking.

## Textbook

There is no textbook for this course. All material is posted on D2L.

## Course grade components

There are five parts to the course: sports statistics, sports strategy, sports contests, sports markets and sports psychology. Each part has a problem set and a quiz. The quiz dates are given below.

**Problem sets must be turned in by the deadlines listed below.** After the deadline for submitting problem sets, I will post answers.

Your lowest quiz score out of the first four quizzes will be dropped when calculating your final grade. The final quiz, quiz 5, will be cumulative.

Each section has video lectures, slides, readings, problem sets, assignments, and quizzes. You may complete the assignments at any time during the course. The problem sets are due before the relevant quiz at the listed times below. The quizzes must be taken at the times listed below. They should take about 20 minutes, or so, but you have 45 minutes to complete each quiz. Note that the last quiz is comprehensive; that is, it covers all of the material in the course.

### *Schedule of Due Dates*

Part 1	May 16 to May 23	Sports Statistics
Problem set 1	due May 21 (11:59 PM)	
Quiz 1	May 23 (9:00 AM to 11:59 PM)	
Part 2	May 24 to June 2	Sports Strategy
Problem set 2	due May 31 (11:59 PM)	
Quiz 2	June 2 (9:00 AM to 11:59 PM)	
Part 3	June 3 to June 13	Contests
Problem set 3	due June 11 (11:59 PM)	

Quiz 3	June 13 (9:00 AM to 11:59 PM)	
Part 4	June 14 to June 21	Markets
Problem set 4	due June 19 (11:59 PM)	
Quiz 4	June 21 (9:00 AM to 11:59 PM)	
Part 5	June 22 to June 30	Psychology of Sports
Problem set 5	due June 28 (11:59 PM)	
Quiz 5	June 30 (9:00 AM to 11:59 PM)	

### *Quiz Policy*

For a funeral/grief absence, please follow the university policy found here (<https://reg.msu.edu/ROInfo/Notices/GriefAbsence.aspx>), and also email me.

For school-sponsored events, please email a letter from the organization's advisor to me. For illnesses and doctor's appointments, please email a doctor's note to me.

For religious commitments, please email me.

For reasons that can be anticipated (e.g., university-sponsored events, religious observances, significant time-zone differences), an alternative midterm exam time will be set for a time **before** the scheduled exam. Notice must be given in writing **at least one week before** the scheduled exam. No make-up midterm exams will be provided after the original scheduled exam for reasons that can be anticipated.

For reasons that cannot be anticipated or documented other than the above, (e.g., sickness, family emergency), the portion of your grade determined by that exam will be reassigned to your remaining exams. **No make-ups after the exam date will be given**, except as directed by the university funeral or grief policy (see above).

Per Academic Programs – General Information, Policies, Procedures and Regulations, A student who does not turn in a final examination without a satisfactory explanation will receive a grade of 0.0 on the numerical system, NC on the CR-NC system, or N in the case of a course authorized for grading on the P-N system. Students unable to take a final examination because of illness or other reason over which they have no control should notify the associate deans of their colleges immediately.

### *Readings*

There is a collection of on-line articles available at the D2L site.

### *Assignments*

A lot of the course involves doing statistical sports analysis ourselves. To this end there are several projects. You can find the detailed instructions for each of these posted on D2L under “Assignments”.

1. Shoot 100 free throws (or other sports related activity). Enter the data. Compute binomial and geometric distributions, mean and standard deviation. (10%)
2. Test for the hot hand in free throw shooting. Compute conditional probabilities, correlation coefficient and perform a runs test. (5%)
3. Sports conjecture. You will propose some conjecture about sports, gather the relevant data and perform a chi-square test. (5%)
4. Run a regression of final scores on first half scores (times two), or some related analysis. Test for regression to the mean. (10%)
5. Observe sporting events and test the predictions of the mixed strategy model. Test for the prediction on the mixing probability and for random strategy choice. (10%)

### *Extra Credit*

Worth four percentage points towards your final grade. Go to FiveThirtyEight's Sports page (<https://fivethirtyeight.com/sports/>) and find an article written in the past two years that uses one of the topics we've covered in this class.

- 1) Summarize the article and its main arguments, including the article title and a link to the article
- 2) Identify explicitly which aspect of the article overlaps with a topic we covered and how the article's use of the concept compares to how we covered it, and
- 3) Suggest an additional topic from the class that might also impact the article's point and defend your argument.

## **Grading**

The grade breakdown for this course is as follows:

Problem sets (5 total) 4% each	20%
Quizzes (5 total, 1 dropped) 10% each	40%
Assignments (5 total) 3 x 10%; 2 x 5%	40%

To calculate your final course grade, add up the points you have received and plug into the following scale:

Course Points	4-point course grade
92	4.0
86	3.5
80	3.0
75	2.5
70	2.0
60	1.5
50	1.0

## **Accommodations for students with disabilities**

Michigan State University is committed to providing equal opportunity for participation in all programs, services and activities. Requests for accommodations by persons with disabilities may be made by contacting the Resource Center for Persons with Disabilities at 517-884-RCPD or on the web at [rcpd.msu.edu](http://rcpd.msu.edu). Once your eligibility for an accommodation has been determined, you will be issued a verified individual services accommodation (“VISA”) form. Please present this form to me at the start of the term and/or two weeks prior to the accommodation date (e.g., exam date). I may not be able to honor requests received after this date.

## **Academic dishonesty policy**

Per General Student Regulation 1.00, Protection of Scholarship and Grades, no student shall:

- 1.01 claim or submit the academic work of another as one’s own.
- 1.02 procure, provide, accept or use any materials containing questions or answers to any examination or assignment without proper authorization.
- 1.03 complete or attempt to complete any assignment or examination for another individual without proper authorization.
- 1.04 allow any examination or assignment to be completed for oneself, in part or in total, by another without proper authorization.
- 1.05 alter, tamper with, appropriate, destroy or otherwise interfere with the research, resources, or other academic work of another person.
- 1.06 fabricate or falsify data or results.

Any student found in violation of this policy will *automatically* receive a failing grade for the relevant assignment. Additional grade penalties, up to and including failure of the course, may be assessed depending on the severity of the action. Furthermore, in accordance with University policy, I *must* submit an Academic Dishonesty Report to the student, the student's dean, and the Dean of Undergraduate studies. An Academic Dishonesty Report will remain on a student's academic record unless the student successfully grieves the allegation, the instructor filing the report requests it be removed, or upon conferral of the student's degree if only one report has been filed, the student has successfully completed the required course on academic integrity, and no additional sanctions were requested by the instructor.