CSCI 391: Sports Analysis  
Spring 2020 Syllabus

Decision making in sports, such as which players to draft, trade, develop, coach and which system to play have traditionally been made by a "gut" feeling or adherence to past traditions. In the early 2000’s Oakland Athletics' General Manager, former baseball player Billy Beane, was the first known person to use statistics and data to make personnel decisions in professional sports.

Today’s sports industry uses sports analysis to increase revenue, improve player performance, improve team’s quality of play, prevent injury, enhance fan experience and so much more. As smart technologies are evolving, data collection is easier than ever. All sports at all levels are using some sort of analytics to keep the competitive edge. This course will introduce students to several computer science topics that are used to analyze all aspects of the sports industry.

Administrative

Instructor: Trish Duce | ducepa@mso.umt.edu | Social Science 412 | 406-370-9432

Class: Monday, Wednesday, 9:30am-10:50am, SS362

Office hours: Monday & Wednesday 11am-11:50am; or by appt

Prerequisites: None.

Required Textbook: None.

Website: Moodle (http://umonline.umt.edu)

Learning Outcomes

Upon successful completion of this class, students should have:

1. A basic understanding of the following computer science topics and how they apply to the analysis of sports:
   - Data Science
   - Data Visualization
   - Machine Learning
   - Computer Vision
   - Artificial Intelligence
   - Programming and API’s (Application Programming Interfaces).
2. An understanding of the type of tools available and experience needed to perform analysis of:
   - Performance and Training
   - Athlete’s Safety
   - Game Strategy and Recruitment
   - Officiating the Game
   - Real Time Game Decisions
   - Fan Experience

3. An understanding of the ethical consequences of technology and sports

4. An ability to function effectively on teams to accomplish a common goal

**Evaluation & Grading**

Your grade for the course will be determined by the following elements. Some of these elements are individually-based, and others are group-based. For group-based items, all team members will receive the same grade unless I learn that some are not contributing equally. In those cases, I reserve the right to downgrade certain team members.

*Attendance: (10%) [individual grade]*

Students are expected to attend all class periods. Attendance will be taken, if you are late for class, attendance points will be deducted.

*Engagement: (10%) [individual grade]*

Your interest and engagement in whatever is going on in-class at any given time will be assessed by me, the instructor, over the course of the semester and will count substantially towards your final grade. Sleeping in class, yawning, looking at your phone, or engaging in activities other than what the group is doing during meeting time all constitute a low level of class engagement and will detract significantly from your final grade. On the other hand, following along, looking alert, asking questions, offering opinions, contributing to discussions, etc., are all activities that indicate a high level of class engagement and thus will positively impact your final grade.

*Projects with Presentation: (35%) [team grade]*

Throughout the semester, you will work on several projects in teams. Each project will conclude with a presentation.

*Peer Evaluation: (15%) [individual grade]*

You will evaluate and be evaluated by your peers at the conclusion of each project. These combined evaluations will be used to determine this portion of your final grade.

*In Class Assignments: (30%) [individual grade]*

In class assignments and quizzes will make up this portion of your final grade.
Grading Scale

- 100-90 A
- 89-80 B
- 79-70 C
- 69-60 D
- 59-and beyond F

P/NP – pass/no pass, 70 or greater is passing determined by Computer Science Department policy, which is a C or better.

Late Work Policy
Late work will NOT be accepted.

Academic Dishonesty
All students must practice academic honesty. Academic misconduct is subject to an academic penalty by the course instructor and/or a disciplinary sanction by the University. All students need to be familiar with the Student Conduct Code. The Code is available for review online at [http://www.umt.edu/student-affairs/community-standards/default.php](http://www.umt.edu/student-affairs/community-standards/default.php)

Additional class policies and information:
- If you miss a class, you and you alone are responsible for the material covered. This includes handouts, schedule changes, and lecture notes.
- For important dates and deadlines related to classes, visit: [http://catalog.umt.edu/academics/policies-procedures](http://catalog.umt.edu/academics/policies-procedures)
- Also in the University catalog, review the policy on incompletes. In particular, note that incompletes can only be assigned when the student has “been in attendance and doing passing work up to three weeks before the end of the semester.” Incompletes will not be issued simply to prevent a failing grade.
- Students with disabilities will receive reasonable modifications in this course. Your responsibilities are to request them from me with sufficient advance notice, and to be prepared to provide verification of disability and its impact from Disability Services for Students. Please speak with me after class or during my office hours to discuss the details. For more information, visit the Disability Services for Students website at [http://www.umt.edu/disability](http://www.umt.edu/disability).