CSCI 391: Sports Analytics  
Spring 2021 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, Friday 2:00pm – 2:50pm, SS362

Office hours: Monday & Wednesday 10:30am-11:20am; or by appt

Zoom link for office hours: https://umontana.zoom.us/j/93321792081

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

Grading

Short Assignments: (40%)
Assignments: (40%)
Final Exam: (20%)

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

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

• 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.