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Spring 2-1-2022

### CSCI 370.01: Sports Analytics

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# CSCI 370: Sports Analytics

## Spring 2022 Syllabus

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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.

### **Administrative**

*Instructor:* Trish Duce | [ducepa@mso.umt.edu](mailto:ducepa@mso.umt.edu) | Social Science 412 | 406-370-9432

*Class:* Monday, Wednesday, Friday 2:00pm – 2:50pm, SS362

*Office hours:* Monday & Wednesday 1:00pm-1:50pm; or by appt

*Prerequisites:* None.

*Website:* Moodle (<http://umonline.umt.edu>)

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### **Required Materials and Resources:**

- You will need to have a laptop with the following minimum requirements:
  - Windows, macOS or Linux
  - 4GB of RAM (16GB preferred)
  - 64 GB of HDD space
  - 2.0 GHz processor
- Students will be required to stream 1 - 3 videos throughout the semester.
- We will use the programming language Python for this course. You can download it for free at <https://www.python.org/>.

## Learning Outcomes

Upon successful completion of this class, students will:

1. learn how sports analytics can be used to:
  - Improve player performance
  - Improve team's quality of play
  - Increase revenue
  - Prevent injury
  - Improve officiating
  - Enhance Fan Experience
  - Increase chances of winning when gambling
  - Improve recruiting
2. be exposed to tools for collecting sports data.
3. learn several advanced statistics.
4. discuss how data visualization, machine learning, computer vision, programming and API's are used with sports analytics
5. create visualizations of sports data to gain insight.
6. discuss the ethical consequences of technology and sports.
7. function effectively on teams to accomplish a common goal.

## Course guidelines and policies:

### **Student Conduct Code**

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 [Student Conduct Code](#).

### **Disability modifications**

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 Office for Disability Equity website at <http://www.umt.edu/disability>.

### **Assignment expectations**

All assignments, quizzes and activities have deadlines specified. **NO LATE WORK WILL BE ACCEPTED.**

## Grading Criteria

Assessment	Description	Percentage
Short Assignments	In class assignments and quizzes.	30%
Assignments	Larger assignments.	40%
Exams	There will be two exams worth 15% each.	30%
Total:		100%

## Grading Scale

Grade	Points	How this applies to assignments
A, A-	90-100	<b>Exceeds Standard:</b> The student has gone above and beyond the assignment requirements and has also done an excellent job mentioning and applying concepts found in the course materials to the assignment.
B+, B, B-	80-89	<b>Meets Standard:</b> The student has met the assignment requirements and has made some attempt to apply concepts found in the course materials to the assignment.
C+, C, C-	70-79	<b>Approaching Standard:</b> The student has met some of the assignment requirements and has made some attempt to apply concepts found in the course materials to the assignment.
D+, D, D-	60-69	<b>Needs Work:</b> The student has failed to meet many of the assignment requirements and has not applied the concepts found in the course materials to the assignment.
F	<59	<b>Incomplete:</b> The student has failed to meet any of the assignment requirements and has significant errors in submitted work.

## Pass / No Pass (P/NP)

The Computer Science Department has determined that a passing grade is a 70% or greater, which is a C- or better.