

SIADS 687 Syllabus

Course Overview and Prerequisites

In this course students will study how supervised machine learning techniques are applied in the domain of sports analytics including in individual sporting events, team events, and emerging wearable sensor technologies. Students will engage in applying their knowledge of machine learning through a hands-on competition in one or more sports analytics domains.

There are no course prerequisites.

Instructor and Course Assistants

- Instructor: Ryan Maley - rjmaley@umich.edu
- Course Support: Anthony Giove - agiove@umich.edu

Contacting instructor and course assistant: *Please only use the course channel in Slack.* Please ask all questions in public if possible so others can learn from your question. If you need to ask a private question please direct message both the instructor and the course assistants.

- **Email response time:** 48 hours
- **Slack response time:** 48 hours
- **Office hours:** as noted in the Coursera platform

Required Textbook

None.

Learning Outcomes

By the end of this course, students will be able to:

- Understand the different areas data science is being applied in sports
- Be aware of the technical and policy issues related to scraping web data
- Be able to optimize a classifier for a particular problem
- Understand ensembles and how they fit in supervised learning tasks
- Understand the technical, ethical, and legal considerations related to web scraping
- Be able to critique experimental designs in context
- Be able to critique the use of supervised learning methods in context
- Demonstrate their ability to build a given classifier in scikit-learn
- Demonstrate understanding of data mining and feature engineering approaches

Course Schedule

This course **begins on Tuesday, November 21, 2023**, and **ends on Monday, December 18, 2023**.

Assignments will be due as noted on the Coursera platform.

Office Hours

The passcode is always 687.

The following office hours are available for this course:

Ryan Maley office hours:

- Saturday, Nov 25th, 8am-9am: <https://umich.zoom.us/j/94684099779>
- Saturday, Dec 2nd, 8am-9am: <https://umich.zoom.us/j/93156744732>
- Saturday, Dec 9th, 8am-9am: <https://umich.zoom.us/j/99053787400>
- Saturday, Dec 16th, 8am-9am: <https://umich.zoom.us/j/98169327792>

Anthony Giove office hours:

- Monday, Nov 27th, 9am-10am: <https://umich.zoom.us/j/98688793050>
- Monday, Dec 4th, 9am-10am: <https://umich.zoom.us/j/95609444550>
- Monday, Dec 11th, 9am-10am: <https://umich.zoom.us/j/95552514282>
- Monday, Dec 18th, 9am-10am: <https://umich.zoom.us/j/93607631647>

Instructors may also be available for 1:1 meetings to discuss your approaches, solutions, and code challenges you might be having. To book a time with an instructor, send a DM in slack.

Grading

Readings and reflections for the first three weeks of the course are mandatory (i.e. you must pass them) in order to gain a passing grade for the course but do not factor into the final letter grade. The final grade of the course depends upon the score achieved in the MADS Sports Analytics Invitational.

In keeping with the norms of machine learning competitions, only five (5) submissions will be allowed for the MADS Sports Analytics Invitational by each student. In this course, two (2) of those submissions will be in the pre-season (the first ten days of the course) and three (3) in the playoffs (the rest of the course). The best score in the playoffs will be used to determine the student's letter grade for the course. In extraordinary circumstances, the instructor may allow for additional submissions to be considered.

The letter grade will be determined **in part** by hitting different thresholds of the autograder using the table below, keeping in mind that lower scores are better:

Score on holdout	Letter grade
≤ 0.27	A
> 0.27 but ≤ 0.30	B
> 0.30 but ≤ 0.33	C

Within each of the C and B bands the instructional team will examine the last student submission to read the notebook and may apply a modifier as they see fit (including a completely different letter grade). You are highly encouraged to take this opportunity to do exploratory analysis, make your code clean, describe with comments, and demonstrate your abilities.

In keeping with the nature of both sport and machine learning competitions, the best score for the MADS Sports Analytics Invitational will be declared the winner of the course, and afforded an A+ for their performance. Ties are allowed, in which multiple A+ grades will be awarded. In extraordinary circumstances, the instructor may award additional A+ grades. Please note: an A+ at the University of Michigan School of Information contributes the same as an A to your grade point average, and is only a recognition of excellence.

Accommodations

Refer to the [Accommodations for Students with Disabilities](#) section of the UMSI Student Handbook.

Use the Student Application Form [in Accommodate](#) to begin the process of working with the University's Office of Services for Students with Disabilities.

Accessibility

[Screen reader configuration for Jupyter Notebook Content](#)

Help Desk(s): How to Get Help

- Degree program questions or general help - umsimadshelp@umich.edu
- Coursera's Technical Support (24/7) - <https://learner.coursera.help/>

Library Access

Refer to the [U-M Library's information sheet](#) on accessing library resources from off-campus. For more information regarding library support services, please refer to the [U-M Library](#)

[Resources](#) section of the UMSI Student Handbook (access to the Student Orientation course required).

Student Mental Health

Refer to the University's [Resources for Stress and Mental Health website](#) for a listing of resources for students.

Student Services

Refer to the [Introduction to UMSI Student Life](#) section of the UMSI Student Handbook (access to the Student Orientation course required).

Data

University instructors, administrators, and researchers use course- and program-based information about your interactions with learning tools to support the U-M teaching and learning mission. Data is used by U-M and its vendors to both support your immediate learning as well as to improve the teaching and learning environment through research and innovation. Data may include, but is not limited to, activity within the Coursera environment, use of learning tools such as Jupyter, Slack, and Zoom, and use of business, research, and learning tools developed by U-M. More information about how the University of Michigan protects your privacy, as well as for instructions on how to learn more about data and privacy at the university, can be found in the [U-M Privacy Statement](#).