Course Syllabus for SIADS 681: HEALTH ANALYTICS – W24

Course Overview and Prerequisites

Students will learn how to recognize the role of data analytics in healthcare settings and gain experience with consumer informatics / mobile health, electronic health records, and public health datasets. They will also gain domain expertise in the area of diabetes management. They will gain experience with building and evaluating machine learning pipelines and be able to critique their performance for specific healthcare applications.

The prerequisites for SIADS 681 include:

- SIADS 694/695 Milestone II A and B (Required)
- SIADS 655 Applied Natural Language Processing (Advised)

Instructor and Course Assistants

Instructors:

- Sabina Tomkins - stomkins@umich.edu Opens in a new tab
- Shiv Saxena - sshiv@umich.edu Opens in a new tab
- Shashank Gupta - shashang@umich.edu Opens in a new tab

How to Get Help

If you have questions concerning the degree program, encounter a technical issue with Coursera, or issues using Slack, please submit a report to the ticketing system at umsimadshelp@umich.edu Opens in a new tab .

If you have an issue specific to the Coursera environment, you can receive support through the Coursera Learner Help Center Opens in a new tab (you may be asked to log in to your Coursera account). Live chat support is also available through the help center.

For questions regarding course content, refer to the **Communications Expectations** section below.

Course Communication Expectations

Response time on PUBLIC SLACK channels will be **12 hours.**

Response time from instructors on PRIVATE DMs is **48 hours**.

Address questions in the dedicated channels. The Instructional team will be slower to respond to DMs.

Any private questions (unrelated to class content) should be sent as a DM to ALL members of the instructional team. Any class content related questions should be posted on public channels.

Posting on public channels allows the entire class to benefit from your questions.

Weekly Readings or Textbook Information

NO REQUIRED TEXTBOOKS

The weekly readings are a significant part of the course. Please refer to the Coursera page for a current list.

Learning Outcomes

- Recognize the unique challenges of working with health data.
- Formulate machine learning solutions to health data problems.
- Understand critical challenges and open problems in health domains.
- Extract meaning from textual electronic health records.
- Analyze models and assess their potential impact within health settings.
- Extract signal from large and sparse data from health sensors, such as wearables.
- Infer behavioral patterns using, machine learning models, supervised and unsupervised learning and deep learning models.
- Understand ethical challenges within healthcare and learn how to articulate disparate impacts of large-scale models for specific populations.

Course Schedule

- **This course begins on 3/4/2024 and ends on 4/1/2024**
- Weekly assignments will be **due on the specified date at 11:59 pm** (Ann Arbor, Michigan time -- U.S. Eastern).

Weekly Office Hours via Zoom (Ann Arbor, Michigan time):

Your instructor will hold weekly, synchronous office hours using the video-conferencing tool, Zoom. The schedule of office hours can be found by clicking on the **Live Events** link in the left-hand navigation menu. Additionally, all office hours will be recorded and archived so that you can retrieve them at a later date. Office hour recordings will be available in the course.

Grading

PLEASE READ THE DUE DATES CAREFULLY - NOT ALL DATES ARE IN CHRONOLOGICAL ORDER

Course Item	Percentage of Final Grade	Due
Week 1 Quiz	5	3/11/2024
Week 1 Assignment 1A	5	3/16/2024
Week 1 Assignment 1B	5	3/16/2024

Course Item	Percentage of Final Grade	Due
Week 2 Quiz	5	3/18/2024
Week 2 Assignment 2A	5	3/27/2024
Week 2 Assignment 2B	10	3/27/2024
Week 2 Assignment 2C	5	3/27/2024
Week 2 Assignment 2D	10	3/27/2024
Week 3 Quiz	6	3/27/2024
Week 3 Assignment 3A	6	4/1/2024
Week 3 Assignment 3B	6	4/1/2024
Week 3 Assignment 3C	6	4/1/2024
Week 3 Assignment 3D	6	4/1/2024
Week 4 Quiz	5	4/2/2024
Week 4 Assignment 4A	5	4/2/2024
Week 4 Assignment 4B	5	4/2/2024
Week 4 Assignment 4C	5	4/2/2024
Total	**100%**	

Note: All assignments are required to earn credit for this course. Final grade will not be posted till all parts are completed.

Letter Grades, Course Grades, and Late Submission Policy

Coding Assignments - 69%

Quizzes - 21%

Coding Assignment Breakdown

- Week 1 - 2 parts
- Week 2 - 4 parts

- Week 3 - 4 parts
- Week 4 - 3 parts

The grading scale for this course is as follows:

A 93%

A- 90%

B+ 87%

B 83%

B- 80%

C+ 77%

C 73%

C- 70%

D+ 67%

D 63%

D- 60%

F 0%

Academic Integrity/Code of Conduct

Refer to the Academic and Professional Integrity Opens in a new tab section of the UMSI Student Handbook.

Accommodations

Refer to the Accommodations for Students with Disabilities Opens in a new tab section of the UMSI Student Handbook. Use the Student Application Form in Accommodate Opens in a new tab to begin the process of working with the University's Office of Services for Students with Disabilities.

Accessibility

Refer to the Screen reader configuration for Jupyter Notebook Content Opens in a new tab document to learn accessibility tips for Jupyter Notebooks.

Library Access

Refer to the U-M Library's information sheet Opens in a new tab on accessing library resources from off-campus. For more information regarding library support services, please refer to the U-M Library Resources Opens in a new tab 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 Opens in a new tab for a listing of resources for students.

Student Services

Refer to the Introduction to UMSI Student Life Opens in a new tab section of the UMSI Student Handbook (access to the Student Orientation course required).

Technology Tips

- Recommended Technology
    - This program requires Jupyter Notebook for completion of problem sets and Adobe or other PDF viewer for reading articles.
- Working Offline
    - While the Coursera platform has an integrated Jupyter Notebook system, you can work offline on your own computer by installing Python 3.5+ and the Jupyter software packages, including pyspark. For more details, consult the Jupyter Notebook FAQ Opens in a new tab .