Spring 2-1-2022

M 567.01: Advanced Big Data Analytics Projects

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Syllabus: Math 567 Advanced Big Data Analytics Projects

Instructor: Brian Steele. Office: Math 314. 243-5396. `brian.steele@umontana.edu`

Office hours: Monday, Wednesday, 3:00-3:50, and Tuesday 1:00-2:00, and by appointment.

Course Format: Monday, Wednesday, Friday 11:00-11:50 p.m., Math 305.

Learning Outcomes: At the completion of this course, the student will

1. Be able to develop and plan a data analytic project.
2. Be able to effectively describe and communicate solutions and problems related to team-oriented problem solving.
3. Be able to write concise and focused reports on data analytic projects.
4. Have gained experience and understanding regarding team-based problem solving.

Course Content: As a single team, the class members are charged with solving a real-world problem that amounts to identifying one of two states that are generating a process. Observations on the process are central to the solution. Information about the project is available at
`https://umt.capsource.io/courses/data-science-industry-collaboration/`.

The first half of the course focuses on understanding the data and data-generating process. In addition to learning about the data-generating process, students will improve their `Python` programming abilities. The second half of the course centers on implementing methods of identifying the process state (when the process is under observation).

A central focus of the course is communicating results in written and oral form. To this end, the class/team will exchange information with *Eco-Enterprise* (*http://Eco-Enterprise.com*) personnel on a regular basis.

M 567(G) co-convenes with M 467(U). Course content differs however. In particular, theoretical and foundational aspects of predictive algorithms are a significant component of M 567 but a relatively minor component of M 467. Problems assigned to graduate student teams are more difficult. Furthermore, M 567 requires a significantly more sophisticated level of writing compared to M 467.

Prerequisites: M 561 or consent of the instructor.

Grading: Your course grade will be based on written reports and oral presentations (mostly short reports on progress). Written reports must justify the methods from the standpoint of theoretical considerations as well as present results. Oral presentations at the project end are expository and aimed at communicating methods and results.

Additional Information: Incompletes are given at the discretion of the instructor and are only considered in cases where the student has been in attendance and doing passing work up to three weeks before the end of the semester, and for reasons beyond the students control and which are acceptable to the instructor, the student has been unable to complete the requirements of the course on time. Negligence and indifference are not acceptable reasons.

Students with disabilities may request reasonable modifications by contacting me.The University of Montana assures equal access to instruction through collaboration between students with disabilities, instructors, and Disability Services for Students. Reasonable means the University permits no fundamental alterations of academic standards or retroactive modifications.

All students must practice academic honesty. Academic misconduct is subject to an academic penalty by the course instructor and/or a disciplinary action by the University. All students need to be familiar with the Student Conduct Code. You can find it in the A-Z index on the UM home page or at https://www.umt.edu/student-affairs/community-standards/default.php.

Important Dates:

1. Monday, February 21—Presidents' Day. No classes.
2. Monday, March 21 — Friday, March 25. Spring Break. No classes.
3. Friday, May 6—Last Day of class.