

DSA 4003: Applied Data Science

Semester TBA

Days of the Week, Time of Day, Location TBA

	Instructor	Teaching Assistant
Name	TBA	TBA
Email	TBA	TBA
Office	TBA	TBA
Office Hours	TBA	TBA

Course description:

In this course you will get an opportunity to apply the knowledge and skills you have gained throughout the data science course series. You will complete multiple larger-scale team projects on real-world complex data sets. The projects will allow you to develop and continue to refine your skills in problem identification, data visualization, data wrangling, data organization, machine learning, communication, and presentation. Additionally, you will learn new topics relating to the broader implications of data science projects as well as technical implementation nuances, e.g., ethical and security concerns; team work and data science pipeline tools. For the course projects, you will receive much less guidance from the instructor as compared to typical undergraduate courses. When you complete this course, ideally you will have multiple data products to show off to potential employers or educational programs, as a strong demonstration of your expertise in the field of data science.

Student outcomes:

1. Knowledge and experience with the CRISP-DM process and data science project pipelines, including problem identification, solution ideation, data access and manipulation, machine learning, results analysis and communication.
2. Successful demonstration of the knowledge base and skills learned throughout the data science series on real-world data intensive problems.
3. Ability to identify critical insights and communicate a compelling narrative from the data using data visualization and advanced presentation skills.
4. General knowledge of the broader implications of data science projects and their potential impacts.

Prerequisites:

CS 1213 or CS 1313 or CS 1321 or CS 1323 or CS 1324; and DSA 3013 and DSA 3023

Required Materials:

No textbook is required for this course.

The Canvas Course Management System will be used as the main mode of communication and information for this class, in that all announcements, notes, assignments and additional class resources can be found there. For fastest response, email should be sent directly to the instructor and not through Canvas email.



Communication Plan:

E-mail communication is the primary method with me in this course. I will respond to students' e-mails within 48 hours or sooner. To ensure a prompt response, please put "DSA 4003" in your e-mail subject line as a prefix. For example, your subject line could be: DSA 4003: Question about Assignment.

Tech Support: If you cannot access canvas.ou.edu, please contact 405-325-HELP

Grading:

All assignments must be uploaded to course website by the due date and time indicated for that assignment on the course website. Ensure your familiarity with the system in advance, and allot a sufficient amount of time for assignment submission *and any technical difficulties that may arise*. Assignments should be submitted in advance of an anticipated absence.

GRADING STRUCTURE

Homework & Quizzes	10%
Participation	20%
Projects	55%
Final Exam	15%

Total grade percentages in the following intervals result in the associated letter grade:

[90-100] ← A; [80-90) ← B; [70,80) ← C; [60,70) ← D; [0,60) ← F

Missed Deliverables:

Make-up homework, exams and quizzes will only be permitted for officially documented absences. All documented absences due to religious observances and officially approved trips will be guaranteed a make-up opportunity. Absences due to other unavoidable reasons (e.g., death in the family, illness) will be considered on a case-by-case basis, with appropriate documentation required. Except in the case of an emergency, the student must **always** seek instructor consent **prior to** the absence. If an emergency, you must contact the instructor as soon as feasibly possible. Make-up work will be scheduled at the discretion of the instructor and might occur before the scheduled absence. Typically, make-up work will be scheduled as close to the original assignment date as possible.

Class Projects:

Multiple projects will be developed during the semester. Instructions, guidelines and due dates will be posted on the course website. Each project has several deliverables. Make sure you are aware of the deadlines for each.

- Project Team Selection and Proposal: Teams will be assigned. Project proposals must be approved.
- Initial draft: Must include problem description, data analysis, modeling approach, and initial results
- Peer critique: You will provide a critique of 3 other drafts (for each project)
- Presentation: Powerpoint slides must meet the standard of the class in terms of professionalism in content and style. All slide decks will be made available to the entire class.
- Final draft: Graded for quality of content, approach, results, insights, clarity, and professionalism. You should demonstrate the **student outcomes** listed in the syllabus.

Tentative Schedule:

Week	Topic	Notes
1	Introduction to Course; Data science overview	Project #1 Team Assignment / Selection
2	CRISP-DM	
3	Problem Identification and Scope	CRISP-DM quiz
4	Data visualization: Concepts	
5	Data visualization: Tools	Visualization quiz
6	Case Study/Project presentations and review	Project #2 Team Assignment / Selection
7	Effective communication: visual	
8	Effective communication: verbal	
9	Data Science: Insights	Communication quiz
10	Data Science: Ethics	
11	Case Study/Project presentations and review	Project #3 Team Assignment / Selection
12	Data science pipeline and teamwork	Ethics quiz
13	Data science pipeline tools	
14	Data Science: Security	Pipeline quiz
15	Project leadership and decision-making traps	
16	Case Study/Project presentations and review	

Attendance, Participation, Assessment:

Participation is evaluated and counts toward your final grade.

For online students: you are expected to view all videos and complete all reading assignments. Also, you will be expected to participate in online discussions and attempt all Self-Check Quizzes.

For on-campus students: attendance is required, in-class discussion is expected, and there may be unannounced assessments.

Professional Behavior:

While many of the tools necessary for the completion of this course will be discussed in the course content or via guided assignments, nevertheless ***considerable work outside of class in learning R or researching analytical techniques is expected.***

Academic Honesty:

Cheating, plagiarism, or any act of dishonesty will NOT be tolerated. This policy applies to all parties involved in the incident. Violations will be reported to the office of Academic Integrity.

Never take credit for anyone else's intellectual property, be it on an exam or homework assignment. **This includes, but is not limited to, copying from another student's paper, copying from a paper from a previous semester, using forbidden information on exams, and copying from published writings.** *Students are responsible for knowing the requirements of the Academic Misconduct Code, available at <http://integrity.ou.edu/>.*

Reasonable Accommodation Policy:

Students requiring academic accommodation should contact the Disability Resource Center for



assistance at (405) 325-3852 or TDD: (405) 325-4173. For more information please see the Disability Resource Center website <http://www.ou.edu/drc/home.html>. Any student in this course who has a disability that may prevent him/her from fully demonstrating his/her abilities should contact me personally as soon as possible so we can discuss accommodations necessary to ensure full participation and facilitate your educational opportunities.

Title IX Resources and Reporting Requirement:

For any concerns regarding gender-based discrimination, sexual harassment, sexual assault, dating/domestic violence, or stalking, the University offers a variety of resources. To learn more or to report an incident, please contact the Sexual Misconduct Office at 405/325-2215 (8 to 5, M-F) or smo@ou.edu. Incidents can also be reported confidentially to OU Advocates at 405/615-0013 (phones are answered 24 hours a day, 7 days a week). Also, please be advised that a professor/GA/TA is required to report instances of sexual harassment, sexual assault, or discrimination to the Sexual Misconduct Office. Inquiries regarding non-discrimination policies may be directed to: Bobby J. Mason, University Equal Opportunity Officer and Title IX Coordinator at 405/325-3546 or bjm@ou.edu. For more information, visit <http://www.ou.edu/eoo.html>.

Religious Observance:

It is the policy of the University to excuse the absences of students that result from religious observances and to reschedule examinations and additional required classwork that may fall on religious holidays, without penalty.

Adjustments for Pregnancy/Childbirth Related Issues:

Should you need modifications or adjustments to your course requirements because of documented pregnancy-related or childbirth-related issues, please contact your professor or the Disability Resource Center at 405/325-3852 as soon as possible. Also, see <http://www.ou.edu/eoo/faqs/pregnancy-faqs.html> for answers to commonly asked questions.

Final Exam Preparation Period:

Pre-finals week will be defined as the seven calendar days before the first day of finals. Faculty may cover new course material throughout this week. For specific provisions of the policy please refer to OU's Final Exam Preparation Period policy (<https://apps.hr.ou.edu/FacultyHandbook#4.10>).

Emergency Protocol:

During an emergency, there are official university procedures that will maximize your safety.

Severe Weather: If you receive an OU Alert to seek refuge or hear a tornado siren that signals severe weather 1. LOOK for severe weather refuge location maps located inside most OU buildings near the entrances 2. SEEK refuge inside a building. Do not leave one building to seek shelter in another building that you deem safer. If outside, get into the nearest building. 3. GO to the building's severe weather refuge location. If you do not know where that is, go to the lowest level possible and seek refuge in an innermost room. Avoid outside doors and windows. 4. GET IN, GET DOWN, COVER UP. 5. WAIT for official notice to resume normal activities.

Armed Subject/Campus Intruder:

If you receive an OU Alert to shelter-in-place due to an active shooter or armed intruder situation or you hear what you perceive to be gunshots: 1. GET OUT: If you believe you can get out of the area WITHOUT encountering the armed individual, move quickly towards the nearest building exit, move away from the building, and call 911. 2. HIDE OUT: If you cannot flee, move to an area that can be locked or barricaded, turn off lights, silence devices,



spread out, and formulate a plan of attack if the shooter enters the room. 3. TAKE OUT: As a last resort fight to defend yourself. For more information, visit <http://www.ou.edu/emergencypreparedness.html>

Fire Alarm/General Emergency:

If you receive an OU Alert that there is danger inside or near the building, or the fire alarm inside the building activates: 1. LEAVE the building. Do not use the elevators. 2. KNOW at least two building exits 3. ASSIST those that may need help 4. PROCEED to the emergency assembly area 5 ONCE safely outside, NOTIFY first responders of anyone that may still be inside building due to mobility issues. 6. WAIT for official notice before attempting to re-enter the building.

Mental Health Support Services:

If you are experiencing any mental health issues that are impacting your academic performance, counseling is available at the University Counseling Center (UCC). The Center is located on the second floor of the Goddard Health Center, at 620 Elm Rm. 201, Norman, OK 73019. To schedule an appointment call (405) 325-2911. For more information please visit: <http://www.ou.edu/ucc>

All students are responsible for any changes/additions to this syllabus announced in class.