



SMU[®]

Master of Science in Data Science

MSDS 6210: Capstone Course Syllabus

Welcome to the Capstone Course

Welcome to MSDS 6210, Capstone. The objective of this course is to provide students the opportunity to solve a complex, ill-defined, and open-ended problem in the realm of data science. The objective of this course syllabus document is to acquaint you with the administration, procedures, and policies of this course. Refer to this document throughout this course and save this document for future reference.

Course Overview

The Master of Science in Data Science (MSDS) program provides a rigorous education, providing the foundation of data science for both data analysts and data engineers. The Capstone Course is a two-unit course designed to have groups of 2 students solve a significant problem. Students may define a problem statement of their choosing or may attempt to work on a sponsored project. Students will find an advisor or advisors for their projects to guide them along their course of problem-solving. Students report their work through a combination of writing and presentations at the conference this term and a journal paper published in the SMU Data Science Review-Journal.

Course Student Learning Outcomes (SLO)

Learning outcomes, or learning goals, are what you can do as a result of the activities that you participate in and complete during this course. The primary learning outcomes of this course are:

The student shall be able to:

SLO 1: Formulate a research question that addresses a significant problem or knowledge gap in the field of data science.

SLO 2: Conduct a comprehensive literature review to contextualize the research problem and identify relevant methodologies.

SLO 3: Design and implement appropriate data-driven methodologies, including statistical, machine learning, or computational techniques, to address the research question.

SLO 4: Evaluate the ethical implications of data usage, ensuring compliance with relevant data privacy and security standards throughout the research process.

SLO 5: Synthesize research findings into a clear, coherent, and logically structured academic manuscript, adhering to the formatting and stylistic requirements of the targeted journal.

SLO 6: Apply appropriate data visualization techniques to effectively communicate complex

data insights in the research paper.

SLO 7: Collaborate with faculty mentors and peers to review, critique, and revise the research manuscript, improving clarity, rigor, and impact.

SLO 8: Present research findings effectively through oral presentations, conference talks, or poster sessions, demonstrating mastery of both technical and non-technical communication skills.

Course Instruction Using Synchronous and Asynchronous Sessions

The course uses a combination of Synchronous class sessions and an Immersion Conference and activities to teach students the course material and guide them through the learning process. Synchronous class sessions occur once occasionally during the course of the term.

Course Prerequisite

A student taking MSDS 6210 must be enrolled in the Master of Science in Data Science program at SMU, and they must have passed MSDS 7331 with a grade of C- or better. Cannot have any open incompletes.

Course Textbook and Other Course Material

Belcher, Wendy Laura. *Writing Your Journal Article in 12 Weeks: A Guide to Academic Publishing Success*. 2nd ed., University of Chicago Press, 2019.

Technology Requirements

MSDS 6210 is a course taught online with Synchronous and Asynchronous portions requiring the transfer of video. Students are expected to have access to a computer with reliable, high-speed Internet access. Students are expected to have access to a computer with a web camera with the computer capable of running the required software to access the Learning Management System, read online documents, watch course videos, and participate in Synchronous classes (including being on camera). Students are also expected to have access to a reliable phone connection in order to participate in the Synchronous classes.

All students enrolled in SMU have an SMU email account. Notifications from the Learning Management System and from the course instructor utilize your SMU email account. Students are encouraged to check this email regularly.

Course Access

This course is accessible to registered students in the SMU MSDS program only. Course asynchronous material, course information, and course communications occur through the 2DS Learning Management System.

Students who experience technical issues with the Learning Management System should contact technical support as described below.

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Students will have access to only those courses and course sections in which they are currently enrolled or have been enrolled in previous terms. Access to other sections is at the discretion of the section instructor. Access to recordings of synchronous sections where the student did not participate or was not an enrolled student is prohibited to protect the privacy of the students that do attend and participate.

Communication and Technical Support

Direct communications with the instructor should be made in the manner indicated by the instructor. General questions and questions that are relevant to multiple students, that is, questions that are not specific to an individual and involve that individual's private information, should be posted on the course wall.

Technical support for the Learning Management System and the online classroom may be reached 24 hours a day, seven days a week via:

- *Chat Support:* Click on 'Live Support' in the lower right-hand corner of the 2DS screen after logging into the system to chat with a technical support representative. Chat support generally responds and engages in five minutes or less.
- *Phone:* Students should call 1-844-768-5637 (Toll-Free) to speak with a Technical Support Representative.
- *Email:* studentsupport@datascience.smu.edu to initiate a support request with a Technical Support Representative.

For other questions or concerns, please contact the appropriate SMU department for your questions or concerns or send an email to datascience@smu.edu.

It is the student's responsibility to ensure that all communications are received or acted upon.

Course Procedures and Policies

This course has a number of policies and procedures that students should understand and follow if appropriate. The following sections present the general course policies and procedures that students must follow. Additional policies and procedures may be given by the instructor. Please discuss as early in the term as possible with the instructor any questions or concerns that you may have regarding the course procedures and policies as defined herein or any additions made by the instructor to the course procedures and policies.

Course Grading Policy

This course consists of a number of seminars and a conference that are to be attended throughout the term. It is expected that all students will put forth the effort required to earn an 'A' letter grade for this course. Assignment grades will be determined using evaluation rubrics and/or direct feedback. You are responsible for reviewing the rubrics or feedback and raising questions or concerns related to the assignments, their rubrics, and their grading prior to the submission of each assignment. Questions regarding the grading of any assignments should be directed to the course instructor as soon as possible and in accordance with any regarding policy instituted by the instructor.

The final grade for the course will be calculated on the bases of the earned cumulative percentage and the grade received for each of the components of the cumulative percentage. This course is not graded on a curve. The required cumulative percentage needed to earn each letter grade is given in Table 1.

Table 1: Cumulative Percentage Required to Reach Each Letter Grade

Cumulative Percentage	Earned Grade
100 – 92	A
92 – 90	A-
90 – 88	B+
88 – 82	B
82 – 80	B-
80 – 78	C+
78 – 72	C
72 – 70	C-
70 – 60	D
< 60	F

The cumulative percentage for the course is determined by the course assignment components with their corresponding point value defined in Table 2.

Table 2: Grade Components and Weightings of the Cumulative Percentage

Point value	Component
10	Live Session Attendance
10	1 st Draft Review
10	2 nd Draft Review
10	Recording of Presentation
10	Peer Review of Presentation
25	Presentation at Immersion
20	Draft 3
5	Final Publishable Paper Review

You will receive a grade for each component. If you earn less than 60% (grade of D) in any one of these components, you will receive a final grade of F for this course.

A course grade of *Incomplete* (I) will be given only in the case of extraordinary circumstances that prevent the student from finishing the semester. Students must have completed at least 50% of the course with a passing grade to be eligible for an *Incomplete* grade.

Grade Grievance Policy

Students are responsible for saving all graded materials as evidence in case of a discrepancy with the assigned grades. Students are responsible for ensuring that all grades are correctly reflected on the grade store. Any identified discrepancies should be brought to the attention of the instructor as soon as the discrepancy is found. From the date the grade of the assignment is posted, students have 1 week to email the instructor of their grievance. After 1 week, the grade is final.

Refer to the university catalog for the university policy and process for grade grievances.

Assignment and Collaboration Policy

Data Science is an inherently collaborative subject and learning often occurs best when subjects are taught both to and from peers. Collaboration is expected to occur both in learning the course material and in performing the course work. However, each student must hand in their own work performed by themselves unless explicitly allowed by written directions given by the instructor. Collaboration means helping one another learn the material. Collaboration does not mean copying answers from one another.

Assignment submissions that contain substantially the same answers shall receive a grade of zero on the first instance and a course grade of F upon a second instance. In order to mitigate potential issues and questions of similarity, peers with whom a student collaborates should be clearly identified by that student in their submissions.

Scholarly Expectations

Work submitted at the graduate level is expected to demonstrate critical and creative thinking skills and be of significantly higher quality than work produced at the undergraduate level.

- To achieve this expectation, all students are responsible for giving and receiving peer feedback of their work.
- Students are also expected to resolve technical issues, be active problem solvers, and embrace challenges as positive learning opportunities.
- Data Science professionals must be able to teach themselves and teach others to fill in any gaps in their knowledge or to find a way of learning new material that is most conducive to their learning style.
- Data Science professionals must also be able to work cooperatively and collaboratively with others – skills that students are expected to practice in this course. Students are expected to ask questions and ask for help when they need it and to offer help when others are in need.

Absent questions or requests for assistance, instructors must assume that students understand the material being covered and are able to complete the assignments. It is primarily through your questions that the instructor learns where the students are struggling to understand and on which topics more time needs to be spent for the students' benefit.

Timeliness

Because a 15-week term goes by quickly, assignments must be submitted by the designated due dates. Full credit cannot be earned by late or incomplete assignments. Assignments may lose up to 10% of their possible value each day late if submitted after the posted due date/time (e.g. Assignments can lose all of their value at 10 days past due). When a project incorporates peer review, it is imperative that all projects be available at the beginning of the review period and that reviews are completed by the end of the review period so that others may incorporate feedback into project revisions. You will have plenty of notification and time to complete course assignments.

Attendance at Immersion is Mandatory.

If you know you are going to be out of town, involved in a special event/project, or unable to access a computer, please plan ahead and let your instructor know. Also, ensure that you have a backup plan ready in the event you might lose power, Internet access, or your available technology.

Time Commitment

As a technical graduate-level course and a Capstone course, it is expected that students will spend a significant amount of time on this course. The time needed to define and solve an ill-defined and open-ended problem can be considerable. All students will produce a final paper published in a peer-reviewed journal publication. Therefore, it is expected that students will spend between 5 and 15 hours per week on this course, plus attend the immersion held during the term of this course.

Attendance Policy

Attendance and on-camera participation during any presentations is highly encouraged. Scheduled meetings that are noted to be mandatory are, in fact, mandatory. If you are absent please let the instructor know ahead of time (if possible). You are required to review all missed materials. Also, if you are gone for more than 3 weeks (or the instructor does not receive any communication from you), we will need to discuss how to handle the interruption of your studies.

If you miss class due to a medical reason, please fill out the Absence from class form. [SMU Dr. Bob Smith Health Center - Student Affairs](#)

Drop Policy

Refer to the university drop policy for a complete description of the drop and withdrawal policies for this course.

COVID-19 and Other Medical-Related Absences

Students who test positive for COVID-19 and need to isolate, or who are notified of potential exposure, must follow SMU's Contact Tracing Protocol. To ensure academic continuity and avoid any course penalties, students should follow the same procedures described by their

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instructors as they would for any other medical-related absence in order to be provided with appropriate modifications to assignments, deadlines, and exams.

Student Academic Success Programs

Students needing assistance with writing assignments for SMU courses may schedule an appointment with the Writing Center through Canvas. Students who would like support for subject-specific tutoring or success strategies should contact SASP, Loyd All Sports Center, Suite 202; 214-768-3648; <https://www.smu.edu/sasp>.

Caring Community Connections (CCC) Program

CCC is a resource for anyone in the SMU community to refer students of concern to the Office of the Dean of Students. The online referral form can be found at smu.edu/deanofstudentsccc. After a referral form is submitted, students will be contacted to discuss the concern, strategize options, and be connected to appropriate resources. Anyone who is unclear about what steps to take if they have concerns about students should either consult the CCC Reference Guide or contact the Office of the Dean of Students at 214-768-4564.

Campus Concealed Carry

In accordance with Texas Senate Bill 11, also known as the ‘campus carry’ law, and following consultation with entire University community, SMU chooses to remain a weapons-free campus. Specifically, SMU prohibits possession of weapons (either openly or in a concealed manner) on campus. For more information, please see:

http://www.smu.edu/BusinessFinance/Police/Weapons_Policy.

Americans With Disabilities Act

Students who need academic accommodations for a disability must first register with Disability Accommodations & Success Strategies (DASS). Students can call 214-768-1470 or visit <http://www.smu.edu/Provost/SASP/DASS> to begin the process. Once they are registered and approved, students then submit a DASS Accommodation Letter through the electronic portal, DASS Link, and then communicate directly with each of their instructors to make appropriate arrangements. Please note that accommodations are not retroactive, but rather require advance notice in order to implement.

Religious Observance

Religiously observant students wishing to be absent on holidays that require missing class should notify their professors in writing at the beginning of the semester and should discuss with them, in advance, acceptable ways of making up any work missed because of the absence. Click here for a list of holidays.

Excused Absences for University Extracurricular Activities

Students participating in an officially sanctioned, scheduled university extracurricular activity should be given the opportunity to make up class assignments or other graded assignments that were missed as a result of their participation. It is the responsibility of the student to make

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arrangements for make-up work with the instructor prior to any missed scheduled examinations or other missed assignments. (See 2024-2025 SMU Undergraduate Catalog under “Enrollment and Academic Records/Excused Absences.”)

Sexual Harassment

All forms of sexual harassment, including sexual assault, dating violence, domestic violence and stalking, are violations of SMU’s Title IX Sexual Harassment Policy and may also violate Texas law. Students who wish to file a complaint or to receive more information about the grievance process may contact Samantha Thomas, SMU’s Title IX Coordinator, at accessequity@smu.edu or 214-768-3601. Please note that faculty are mandatory reporters. If students notify faculty of sexual harassment, faculty must report it to the Title IX Coordinator. For more information about sexual harassment, including resources available to assist students, please visit www.smu.edu/sexualmisconduct.

Pregnant and Parenting Students

Under Title IX, students who are pregnant or parenting may request academic adjustments by contacting Elsie Johnson (elsiej@smu.edu) in the Office of the Dean of Students, or by calling 214-768-4564. Students seeking assistance must schedule an appointment with their professors as early as possible, present a letter from the Office of the Dean of Students, and make appropriate arrangements. Please note that academic adjustments are not retroactive and, when feasible, require advance notice to implement.

Academic Integrity

It is the philosophy of Southern Methodist University that academic dishonesty is a completely unacceptable mode of conduct and will not be tolerated in any form. All persons involved in academic dishonesty will be disciplined in accordance with University regulations and procedures. Discipline may include suspension or expulsion from the University.

Scholastic dishonesty includes but is not limited to cheating, plagiarism, collusion, the submission for credit of any work or materials that are attributable in whole or in part to another person, taking an examination for another person, any act designed to give unfair advantage to a student or the attempt to commit such acts.

Students caught being academically dishonest shall receive a grade of F for this course.

University Honor Code

When you signed your letter of intent to enroll in the MSDS program, you initialed the following statement:

“I have read and agree to abide by the SMU Honor Code available online at:
<https://www.smu.edu/StudentAffairs/StudentLife/StudentHandbook/HonorCode>”

The Honor Code is taken seriously at all levels within the university. Students that are found to have violated the honor code will be disciplined which often includes expulsion from the

university.

Plagiarism

Plagiarism is the “practice of taking someone else’s work or ideas and passing them off as one’s own” (this definition is from Google Dictionary). An example of plagiarism is as follows:

Regression is a statistical analysis assessing the association between two variables. It is used to find the relationship between two variables.

The following is NOT plagiarism:

“A regression is a statistical analysis assessing the association between two variables. It is used to find the relationship between two variables.”
[\(https://www.easycalculation.com/statistics/learn-regression.php\).](https://www.easycalculation.com/statistics/learn-regression.php)

The difference is in the punctuation and the attribution. Note that one can self-plagiarize. If you are using something that you wrote (e.g. a blog or a previously published article), please reference yourself.

DO NOT PLAGIARIZE. If you have any question as to what is and what is not plagiarism, ask your instructor. As a general rule, always use your own words and cite your source.

The consequence for being caught plagiarizing is to earn at least a zero on the identified assignment and may include earning a course grade of F and a referral to the SMU Honor Council for your Honor Code violation.

Generative AI

Generative AI may be used with appropriate attribution. You may use Generative AI tools for productivity in this course. In class, we will cover how Generative AI is used within this discipline, including how to navigate its potential uses and abuses, how and when to attribute sources, and other developing topics. When using Generative AI, follow these parameters:

- Take responsibility for the content (e.g., written and digital/interactive media assignments and project). AI can produce content that contains inaccurate information, offensive language/images, and biased or unethical representations. What you submit is your responsibility across these dimensions.
- Provide clear attribution of your sources. Any assignments that utilize Generative AI without attribution per the guidelines shared in this course can be seen as potential academic dishonesty and treated at the undergraduate level within the SMU Student Honor Code and at the graduate and professional level within the honor codes found in their respective school policies.
- At no point will any of the capstone research papers be written by Generative AI.

Best Practices for Success in the Course

Attendance. Take responsibility for your commitment. Attendance means not only being there for synchronous sessions but also participating in asynchronous work.

Citizenship. You need to be actively engaged to succeed in this class. Talking on cell phones, texting, “facebooking,” tweeting, or leisure web browsing are prohibited in class. I consider these to be a disruption (not to mention rude).

Integrity. A lot of the graded work occurs outside of class, so I expect honesty and integrity in what you submit for evaluation. Evidence of academic dishonesty will minimally result in zeros for all involved parties, and perhaps University-level disciplinary action. Don’t risk your career.

Humility. Don’t get lost! Ask questions in class. If something isn’t clear to you, it probably isn’t clear to others either. Questions may arise because I haven’t made a connection clear or have inadvertently left out an important point. Your question gives me a chance to explain more clearly. Don’t be proud or shy.

Organization. Don’t procrastinate! This is a technology-driven course. Count on your computer failing or your wireless connection breaking the night before due date. Start early and give yourself a chance to succeed.

Deadlines. You will generally have a week to complete an assignment. Due dates and times will be clearly indicated. Late submissions will be penalized, but it is much better to turn in work late than not at all (or to turn in incomplete/sloppy work). Work turned in after solutions have been posted to the course website will receive no credit.

Getting help. If questions arise while doing assignments/exams, do your best to resolve these questions before the assignment is due, first by taking time to seek answers yourself, next by asking questions on the wall, and finally via email to your instructor or other students. I encourage you and expect you to seek help. For questions during exams, please email the live session instructor directly.

Collaboration. I encourage the formation of study groups and collaboration with your fellow students in tackling the assignments. Working together in groups on homework is permitted, even encouraged. However, every student should write up and complete his or her homework independently. Talking about problems with other people does help in learning, but just copying the solutions from one another doesn’t help!

Looks do matter! All assignments must be NEATLY executed and organized. You risk a zero on any assignment submitted in a sloppy manner. See submission guidelines for more detail.

Have Fun! Learning is meant to be a fun activity. While it can be difficult, time consuming, frustrating, and sometimes disappointing, always seek to find the fun in what you are doing and learning. The gratification from learning complex concepts and applying them to solve hard problems is what we are all striving to achieve. Having fun while we are learning and teaching others just makes the learning easier and friendships better.

Section Instructor Contact Information

Instructor: Jacquie Cheun-Jensen, PhD
Email: Jcheun@mail.smu.edu
Office Hours: Upon Request

Assignment Expectations and Grading Rubrics Summary

The primary work deliverables for this course are the paper drafts, the final paper, as well as an oral and poster presentation during the immersion. More details associated with all drafts and the Capstone Projects are provided in a separate document and by the instructor. All questions regarding the projects and drafts should be directed to the course instructor.

All paper drafts and the final submitted Capstone paper use the same template. The template is provided in Word format by the instructor. You are expected to use and follow without modification, the provided templates.

Group formations – All groups must be 1-2 students max

Once you have formed a group, email the professor with all students in the group cc'd.

Advisors

Advisors are REQUIRED. Advisors help guide you through your coding and modeling process. Their expertise is needed to assist in reviewing the method and results section of your paper as well. As a perk of being an advisor, their name will be on the paper and on the presentation. No more than 2 advisors per group.

Draft Rubrics and Information

Paper Draft One – Draft One is meant to provide an early-project checkpoint on the progress of teams in further defining and refining the problem statement and in solving the stated problem. In Draft One, you will continue to use the given template, and you will have made significant progress in documenting the tutorial material, related work, solution approach, and may even have some very preliminary data.

- Draft One is expected to be at least 5 (five) pages in length.
- A preliminary Abstract draft should be written with placeholder sentences for the main result and main conclusion.
- The Introduction should be 2 to 4 pages in length in the given format.
- Remember that both the Abstract and the Introduction are executive summaries of your work.
- Near-completed literature review/background section
- Draft One should include early draft sections on the algorithms or techniques being used or developed, the data and its collection methodology, the solution approach and evaluation methodology, and related results from prior publications.

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It is strongly recommended that you have someone who is not on your team read and comment on both your Abstract and Introduction section prior to your Draft One submission. Highly recommend going to the Graduate Writing Center.

Draft One should include all the tutorial sections in well-written draft form. *Your paper is targeted at a general technical audience (think – students who are just beginning the MSDS program but have not yet taken any classes in the program, except the Stats Bridge and the Programming Bridge).* Therefore, background sections on your problem domain are necessary for all readers to be able to understand your work properly.

Draft One is expected to be a draft with imperfect grammar and all that normally comes with a draft. However, it is expected to be a draft document and not simply a collection of notes. All citations should be correctly used (citations are always contained within the same sentence that they are citing, i.e., the citations come before the period ending the sentence – preferably right next to the words needing to be cited). Plagiarism in Draft One will result in a grade of ‘F’ for the course and a referral to the SMU Honors Council for an Honor Code violation.

Table 3 contains the grading rubric used for Draft One.

Table 3: Draft One Grading Rubric

Component	Percentage of Draft 1 Grade
Using the Correct Template	10%
Introduction	10%
Problem Statement	20%
Literature Review has 5 more references	10%
5 pages in length	15%
Methods & EDA	20%
Other Sections Outlined	10%
Spelling and Grammar	5%
Total	100%

***If there are no in-text citations and/or reference lists in APA format, then the grade will automatically be a zero.*

Paper Draft Two – Draft Two is due after the midway point of the term. Do not delay in continuing your work on your Capstone project. Do not wait for comments on Draft One. Draft Two is expected to be a significantly more polished draft than Draft One, and it is meant to be approaching (but not quite) completed work, at least in many of its sections.

Draft Two is meant to provide a second mid-project checkpoint on the progress of teams in further defining and refining the problem statement and in solving the stated problem. In Draft Two, you will continue to use the given template, and you will have made significant progress in documenting, in well-polished prose and figures and tables, the tutorial material, related

work, solution approach, data, early results, analysis of those results, ethics, and early conclusions.

- Draft Two is expected to be at least twelve (12) pages in length.
- A preliminary Abstract draft should be well written with placeholder sentences for the main result and main conclusion if early results and conclusions have not been obtained already.
- The Introduction should be 2 to 4 pages in length in the given format.
- Draft Two should include (polished) draft sections on the algorithms or techniques being used or developed, the data being used and its collection methodology, the solution approach and evaluation methodology, related results from prior publications, your results, your analysis, ethics, and early conclusions.
- It is expected that additional work will be performed after the submission of Draft Two. This additional work will result in additional results, possibly additional algorithm development or modification, and other expansions of the work involved in solving the problem and providing evidence of solution goodness.
- Completed literature review
- Methods determined and some EDA is completed.
- Also, some discussion and application of research.

For this reason, it is expected that some sections will be incomplete, may not exist (if their existence is determined to be needed after Draft Two submission), may disappear or be merged, and the entire paper may be completely reorganized at any point in time. While Draft Two is expected to begin approaching final form, significant changes may occur after Draft Two submission. Comments from the instructor may engender such large additions or modifications.

It is strongly recommended that you have someone who is not on your team read and comment on both your Abstract and Introduction section prior to your Draft Two submission.

Draft Two should include all of the tutorial sections in well-written, nearly polished form. Your paper is targeted at a general technical audience (think – students who are just beginning the MSDS program but have not yet taken any classes in the program, except the Stats Bridge and the Programming Bridge). Therefore, background sections on your problem domain are necessary for all readers to be able to properly understand your work.

Draft Two is expected to be a draft with good grammar and all the issues that normally come with a second draft. However, it is expected to be a draft document approaching final form. All citations should be correctly used (citations are always contained within the same sentence that they are citing, i.e., the citations come before the period ending the sentence – preferably right next to the words needing to be cited). Plagiarism in Draft Two will result in a grade of ‘F’ for the course and a referral to the SMU Honors Council for an Honor Code violation.

Table 4 contains the grading rubric used for Draft Two.

Table 4: Draft Two Grading Rubric

Component	Percentage of Draft 2 Grade
Using the Correct Template	10%
Introduction	5 %
Problem Statement	10 %
Literature Review has 5 more references	10%
12 pages in length	15%
Methods & EDA	20%
Results	10%
Discussion and Conclusion	15%
Spelling and Grammar	5%
Total	100%

***If there are no in-text citations and/or reference list in APA format then the grade will automatically be a zero.*

Paper Draft Three

Draft Three is meant to be a complete and polished paper that is ready for publication. In Draft Three, you will use the given template, and you will have documented, in well-polished prose and figures and tables, the problem, the solution, and how you measure your solution's goodness that you have completed for your Capstone. Draft Three includes the completed Abstract and Introductions, literature review, methods, solution approach, data, all results, analysis of those results, discussion, ethics, and final conclusions (not just a summary of the work).

It is strongly recommended that you have someone who is not on your team read and comment on your entire paper prior to your Draft Three submission. Remember: *Your Paper is targeted at a general technical audience (think – students who are just beginning the MSDS program, but have yet to take any classes in the program).*

Draft Three is expected to be at least twenty (20) pages in length.

- The Abstract should be a well-written 200-word executive summary/elevator pitch of the paper.
- The Introduction section should be a well-written 2 to 4 pages executive summary of the paper.
- The Lit. Review sections should provide the reader with sufficient information to understand the problem, its domain, and the parts that are important for your problem and your work.
- Your data should be well described including the attributes and the collection method. The solution, methodology, algorithms, etc. should be described sufficiently to allow a knowledgeable person reading the paper to be able to reproduce the results presented in the paper.

- The results should be presented in a coherent fashion. Tables and graphs should be easily readable and not require the reader to spend more than about five seconds looking at the table or figure to understand the point being made by the table or figure. The analysis should be supported by the presented results.
- The discussion needs to have the meaning of your solution and the application of your results. Present the importance of the research and the interpretation of the findings. Ethics section as well.
- The ethical discussion, assuming the work is not directed specifically towards ethics, should be at least one page in length and consider as many aspects of potential ethics issues as possible.
- The conclusions should be conclusions based upon the analysis and not either summary or analysis. All conclusions must be supported by what is presented in the paper.

The story told in Draft Three must be coherent, sequential, and without missing steps. The story must be compelling and hold the interest of the reader, particularly your instructor.

As a paper that is expected to be publishable as-is, Draft Three should be written with good grammar and correct formatting. It is expected to be a document in final form. All citations should be correctly used (citations are always contained within the same sentence that they are citing, i.e., the citations come before the period ending the sentence – preferably right next to the words needing to be cited). **Plagiarism in Draft Three will result in a grade of ‘F’ for the course and a referral to the SMU Honors Council for an Honor Code violation.**

Table 5 contains the grading rubric used for Draft Three.

Table 5: Draft Three Grading Rubric

Component	Percent of Final Paper Grade
Using the Correct Template	10%
Clear Problem Statement	10%
Abstract and Introduction	10%
Literature Review	10%
Completed Methods	10%
Completed Results	10%
Completed Discussions with Ethics	20%
Completed Conclusion	10%
Spelling & Grammar	10%

Presentation Rubrics and Information

Recording & Peer Review of Presentation

The recording of the presentation is aimed to practice the presentation prior to the Immersion. Groups should have a completed presentation, recorded and submitted to 2DS via a discussion

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post (1 per group). With the Title as the discussion name with the students in the group and a link to the recording in the post. All group members must present at Immersion and on the recording. After the recording is submitted then each student must review 4 different group presentations. Each student must respond with at least 100 words of feedback.

Table 6 contains the grading rubric used for the recording presentation.

Table 6: Recording Presentation Rubric

<u>Component</u>	<u>Percent of Final Paper Grade</u>
Used Template & Within time	20%
All required slides	20%
All group members presented	20%
Story Telling	20%
Spelling & Grammar	20%

**Each peer-reviewed presentation is worth 25% of the total peer review of the presentation grade.

Presentation at Immersion

The Presentation is an 8-10-minute slide presentation to be made at the MSDS conference held during this term. The Presentation will tell the complete story of your Capstone with the first slide being the title slide that contains the title of your Capstone work and all authors, including your advisor(s). All group members must be present in the presentation.

Table 7 contains the grading rubric used for the Presentation.

Table 7: Presentation Grading Rubric

<u>Component</u>	<u>Percent of Final Paper Grade</u>
Presented at Immersion in 8-10 minutes	50%
All required slides	10%
All group members presented	10%
Story Telling	25%
Spelling & Grammar	5%

Final Paper Rubric and Information

Final Paper Review

The paper at this point is meant to be a complete and polished paper that is ready for publication. You will use the given template, and you will have documented, in well-polished prose and figures and tables, the problem, the solution, and how you measure your solution's goodness that you have completed for your Capstone. This paper includes the completed

Course Syllabus: MSDS 6210 Capstone

Abstract, introduction, literature review, methods, solution approach, data, all results, analysis of those results, discussion, ethics, and final conclusions (not just a summary of the work).

It is strongly recommended that you have someone who is not on your team read and comment on your entire paper prior to your submission. Remember: *Your Paper is targeted at a general technical audience (think – students who are just beginning the MSDS program, but have yet to take any classes in the program).*

At this point your paper is expected to be at least twenty (20) pages in length.

- The Abstract should be a well-written 200-word executive summary/elevator pitch of the paper.
- The Introduction section should be a well-written 2 to 4 pages executive summary of the paper.
- The Lit. Review sections should provide the reader with sufficient information to understand the problem, its domain, and the parts that are important for your problem and your work.
- Your data should be well described including the attributes and the collection method. The solution, methodology, algorithms, etc. should be described sufficiently to allow a knowledgeable person reading the paper to be able to reproduce the results presented in the paper.
- The results should be presented in a coherent fashion. Tables and graphs should be easily readable and not require the reader to spend more than about five seconds looking at the table or figure to understand the point being made by the table or figure. The analysis should be supported by the presented results.
- The discussion needs to have the meaning of your solution and the application of your results. Present the importance of the research and the interpretation of the findings. Ethics section as well.
- The ethical discussion, assuming the work is not directed specifically towards ethics, should be at least one page in length and consider as many aspects of potential ethics issues as possible.
- The conclusions should be conclusions based upon the analysis and not either summary or analysis. All conclusions must be supported by what is presented in the paper.

The story told must be coherent, sequential, and without missing steps. The story must be compelling and hold the interest of the reader, particularly your instructor.

As a paper that is expected to be publishable as-is, it should be written with good grammar and correct formatting. It is expected to be a document in final form. All citations should be correctly used (citations are always contained within the same sentence that they are citing, i.e., the citations come before the period ending the sentence – preferably right next to the words needing to be cited). **Plagiarism in this paper (or in any paper) will result in a grade of 'F' for the course and a referral to the SMU Honors Council for an Honor Code violation.**

Advisors Sign-off

Your Advisors must sign off on your Final paper. This means that you can put their name on the paper.

Publishing

The final paper will be published in the SMU Data Science Review-Journal. All reviewer comments made during the review process will be addressed and corrected as appropriate. The final paper is submitted to the SMU Data Science Review-Journal.

Instructions to share your drafts with the professor

All assignments will be shared with the professor this way even drafts of presentations.

If you are starting with a local file on your machine. There is a share button in the upper right corner of the Word document. You will need to first log into your SMU office account (the same information you use to access Outlook, etc). Then you will be able to share to your OneDrive on the SMU network.

From there, log in to your Office account on a browser to share the file directly. Under the share option for your document in Office, you will have the option to share directly by SMU email. The default option is "People Specified can View" so you will have to select that box when sharing and there will be an option to specifically allow editing on that file when shared directly.

The professor must have editing privileges to provide feedback.

Tentative Timeline for Capstone

Week	Topic	Assignments
Jan 5	Welcome: Review Syllabus - Outlining your paper	Must have group and advisor chosen by Jan 12
Jan 12	Pitch your project - How to write an introduction	Research Outline Due Jan 12
Jan 19	Guest Speaker: Librarian - Lit Review vs. Annotated Bibliography	Introduction (Draft 0) Due Jan 19
Jan 26	Lit Review	
Feb 2	Nibhrat Lesson	Draft 1 Due Feb 2
Feb 9	Methods/Results	
Feb 16	Live Session: Data Ethics	
Feb 23	Discussion/Data Storytelling	
Mar 2	Data Storytelling	Draft 2 Mar 2
Mar 9	Groups to meet with the Professor to review Draft 2 and Presentations.	Presentation Recording Due Mar 6 and Peer Review Feedback Due Mar 13
Mar 16	Immersion Mar 20 & 21	Final Presentation Due Mar. 18.
Mar 23	Guest Speaker: James Williams	
Mar 30	Meet with the Professor to review Draft 3	Draft 3 Due Mar 30
Apr 6	If needed	Final Paper Due Apr 13
Apr 13	Once the Final draft of the Paper is submitted in 2DS. The Professor will review it and email you instructions on how to submit it to the journal. Submissions must be in by Apr 16	

**This is a tentative schedule; the instructor may reserve the right to change or modify as needed.

** Meeting with Advisor should happen throughout the course.