

### **Overview**

Your assignment for this course is to complete a project that your manager has assigned to you, which entails the development of a predictive model that will support the business problem and be implemented into production. You are responsible for taking the project through the phases of CRISM-DM methodology. To do this successfully, you will need to solicit and incorporate feedback from both your peers and your instructor, as well as your own lessons learned throughout the Data Analytics program. You will also need to draw on knowledge of statistical analysis (including model building) and programming acquired from prior SNHU coursework.

The project is divided into **three milestones**, which will be submitted at various points throughout the course to scaffold learning and ensure quality final submissions. These milestones will be submitted in **Modules Two, Three, and Five**. Both capstone components should be submitted together for evaluation in **Module Nine**.

This final capstone project will be assessed somewhat differently than other courses you have taken online at SNHU. There are two separate components that will operate together to comprise the whole capstone experience and **are not** assessed separately. Your instructor will guide you through this process, keeping a running narrative of your strengths and weaknesses in relation to the course outcomes as you progress through the class. Your work is expected to meet the highest professional standards.

In this assignment, you will demonstrate your mastery of the following course outcomes:

- Conduct thorough needs assessments using statistical, analytical, and applied research techniques and consult organizational stakeholders on business requirements to offer logical and effective recommendations for data analytics initiatives.
- Design and implement advanced modeling techniques, such as predictive modeling, risk-assessment and optimization, and analytics algorithms using structured and unstructured data to provide new solutions to complex organizational issues.
- Communicate with professionalism, accuracy, and transparency using interactive and dynamic visualization tools to translate technical information and offer effective solutions to organizational stakeholders.
- Apply effective collaborative and essential project management strategies to facilitate and improve the work of diverse and multi-functional teams, streamline processes, and lead projects to successful outputs.
- Protect the integrity and privacy of data, organizations, and consumers through advanced technology solutions and ethical and legal practices in all aspects of the profession.
- Employ applied, contextual knowledge of an organization's industry to target new data opportunities that improve an organization's competitiveness, effectiveness, and longevity.

- Adapt and implement innovative methods, models, and technologies that allow for adaptability to new and unexpected changes and improve the agility of data analytics projects.
- Position data analytics as a competitive advantage to organizations by accurately communicating the cost and benefits of data analytics projects and technologies as well as the long-term benefits of data-driven decision making.

**Prompt**

In the Final Project, you will execute the CRISP-DM Evaluation Phase, where you evaluate the model and perform the three (3) steps.

1. Evaluating results
2. Reviewing the process
3. Determining the next steps

Deliverables:

1. Summarize the results with the business success criteria. Be sure to state whether you successfully met the business goal.
2. Provide the approved model(s) that meet(s) the business goal.

Review the process for any errors or omissions. Then:

1. List any possible actions that may be needed.
2. Make decisions on them, if they exist.

**Final Capstone Project Component One: Data Analytic Solution Presentation**

You will build on the data analytic solution developed in this data mining project. **While you may reflect on your prior coursework, your submission must consist only of DAT 690 coursework to avoid self-plagiarism.** Create a presentation to evaluate the plan and analyze the results. Your presentation should detail the steps taken throughout the data mining life cycle, which is CRISP-DM from Business Understanding to Deployment. Your presentation should reflect the larger context of the problem by discussing how your proposed solution represents reproducible analysis.

The format of your presentation should be fitting for your audience—in this case, your instructor and peers. **You must utilize a tool that will allow you to record your voice as you walk your audience through your visual presentation.** A visual recording is not required, but it is essential that your instructor be able to listen to your explanations and defense while viewing your presentation.

Include, but do not limit yourself to, the following sections in your complete analytic solution presentation. If there are elements of your project that are important, but not covered below, you should include them in your presentation.

1. **Introduction:** This should include the CRISP-DM Business Understanding Phase: Determine Business Objectives (problem statement, purpose, background context of the case, organization and industry information, data mining goals, central concerns, and principles of the data problem), and the CRISP-DM Data Understanding Phase: Describe your data, explore your data, and verify your data (discuss the types of data in the dataset and rationale for inclusion or exclusion, descriptive statistics analysis).
2. **Plan Definition:** This should include the CRISP-DM Data Preparation phase: Create a data analytic architecture pattern; include the details for full implementation. Details will need to address data quality, data integrity, and protection specific to the organization, industry, and problem that you are addressing. You will create visualizations representing your solutions for various stakeholders that you will need to identify. Develop a project plan detailing the involved stakeholders, the timeline, and strategies for professional and effective collaboration to be used to ensure success.
3. **Plan Implementation and Results:** The last CRISP-DM Phase is Deployment of your solution, where you apply conclusions to the business. Write the deployment plan, and detail the steps for plan monitoring and plan maintenance. Produce a final report and final presentation. Review the project, and document your experience.
4. **Conclusions and Implications:** Summarize the conclusions from your full implementation. What conclusions did you draw and how will your results impact the organization, your project, and future projects? Articulate the costs and benefits of the data analytic problem and solution created for this organization, and for this industry and potential use in other industries.
5. **Recommendations:** What new data opportunities, recommendations for alternative uses, and recommendations for future and continued use do you have? Be sure to provide brief but focused explanations of why these potential uses are valid uses of your project, and what alterations will likely need to be made.

#### **Final Capstone Project Component Two: Personal and Professional Reflection**

In the final component of your capstone, you will write an essay to discuss the process and outcomes of the project, as well as how your coursework culminated in the capstone. You may want to draw on the list of possible actions from the deployment where you identified errors and/or omissions (if any). Also discuss identified strengths, as well as problems of any other nature (e.g. systems, applications) while completing the project. Finally, in the essay you will discuss how the capstone may be useful in your career endeavors or in furthering your education.

The personal reflection in your capstone is the holistic culmination of your experience in the Data Analytics program. It is similar to a “Lessons Learned” session that takes place on a team after a project completes. In your personal reflection, you will discuss not only what you did, but also what you intended to do. What worked well and what were the challenges you faced? What would you change or approach differently to improve on your experience? As you reflect on your

time here at SNHU, you might discuss where you started, where you are currently, and where you see yourself in the future. Your personal reflection is not about the capstone, but rather your experience with the capstone project and your reflection of your knowledge, skills and abilities (KSAs).

Your project reflection should include, but is not limited to, the following:

**Ethical Considerations:**

- What ethical considerations did you make or should you have made during your project, and why?
- What is the importance of and how can you ensure data integrity, protection, and appropriate use within the context of this project and future projects?
- How has your capstone helped you create a framework for practice that promotes ethical approaches to social practices?

**Career Connection:**

- How could you best position your knowledge of data analytics as an advantage in your professional life? Why is this important? What has this project proved about the use of analytics?
- How will you apply what you have learned to your future academic and/or professional life?

**Professional Practice:**

- If you were to implement your analytic project/solution in a real company or organization, how would you approach collaborative and project management needs that you might not have had to deal with when developing your own, single project?
- Reflect upon the communication, collaboration, cross-functional and diverse teams, and leadership skills and strategies that have developed throughout this project. How will these benefit you in your professional life and what further learning and development do you see for yourself?
- Where do you see your own strengths and weaknesses in relation to the outcomes for this capstone experience?
- Which of your professional skills (e.g., reading comprehension, critical thinking and analysis, research, writing, communication) have improved the most as a result of your coursework in this program, and why?

**Personal Reflection:**

- What academic connections do you see between your capstone and your academic program?
- How has your capstone related to your overall program experience at SNHU?
- Overall, how would you characterize your capstone experience from a personal and professional perspective?

**Milestones**

Milestone One: Project Summary and Analytic Plan

In **Module Two**, you will submit the introduction, assess/inventory resources, determine the business objective, and business success criteria for your selected project. This is for the Business Understanding phase of CRISP-DM. **This milestone will be graded with the Milestone One Rubric.**

Milestone Two: Data Understanding and Data Preparation

In **Module Three**, you will incorporate the Data Understanding from Milestone One and perform the Data Preparation steps for the data set you select. You will clean the data, construct data (derived data or generated records) for the merge, and reformat for your Milestone Two submission. **This milestone will be graded with the Milestone Two Rubric.**

Milestone Three: Modeling and Evaluation

In **Module Five**, you will perform the Modeling and Evaluation. Select the model and define your expected results prior to running the model. Run and rerun the model and capture your notes and outputs. Evaluate the model(s) for final selection. **This milestone will be graded with the Milestone Three Rubric.**

Capstone Component One: Data Analytic Presentation

In **Module Nine**, you will submit Capstone Component One, the data analytic presentation. It should be a complete, polished artifact reflecting the incorporation of feedback gained throughout the course. Assemble the work you have completed over all of the earlier modules—including your final draft, flowcharts, and graphical/tabular output—into a cohesive final presentation. **This submission will be graded with the Final Project Rubric.**

Capstone Component Two: Personal and Professional Reflection

In **Module Nine**, you will also submit Capstone Component Two, the personal and professional reflection. It should be a complete, polished artifact reflecting the incorporation of feedback gained throughout the course. Review the journal assignments that you have submitted throughout the term and reflect upon your capstone experience. Write a personal and professional reflection on your experience in both this course and the MS in Data Analytics program. **This submission will be graded with the Final Project Rubric.**

Deliverables	Module Due	Grading
Milestone One: Project Summary and Analytic Plan	2	Graded separately with Milestone One Rubric
Milestone Two: Data Understanding and Data Preparation	3	Graded separately with Milestone Two Rubric
Milestone Three: Modeling and Evaluation	5	Graded separately with Milestone Three Rubric
Capstone Component One: Data Analytic Presentation	9	Graded comprehensively with Final Project Rubric
Capstone Component Two: Personal and Professional Reflection	9	Graded comprehensively with Final Project Rubric

### Final Project Rubric

This rubric will be applied to both components as a whole, and no component will be assessed on its own. The “Possible Indicators of Success” are examples for you and the instructor of the types of concepts to look for to demonstrate proficiency. They are neither exhaustive nor prescriptive and should be used as guides for illustrating how your capstone embodies the outcome. All outcomes are weighted equally.

<b>Possible Indicators of Success</b>	<b>MS-DAT-01: Conduct thorough needs assessments using statistical, analytical, and applied research techniques and consult organizational stakeholders on business requirements to offer logical and effective recommendations for data analytics initiatives.</b>	<b>Proficient</b> 100%	<b>Not Proficient</b> 0%
Does the capstone demonstrate the student’s ability to recognize organizational and stakeholder information and consulting needs?			
Does the capstone demonstrate the student’s ability to conduct needs assessments using appropriate statistical, analytical, and applied research techniques?			
Does the capstone demonstrate the student’s ability to perform logical evaluations to expose needs and offer logical recommendations?			
<b>Possible Indicators of Success</b>	<b>MS-DAT-02: Design and implement advanced modeling techniques, such as predictive modeling, risk-assessment and optimization, and analytics algorithms using structured and unstructured data to provide new solutions to complex organizational issues.</b>	<b>Proficient</b> 100%	<b>Not Proficient</b> 0%
Does the capstone demonstrate the student’s ability to design advanced modeling techniques appropriate for an identified problem?			
Does the capstone demonstrate the student’s ability to implement modeling techniques to attain viable results or expose additional problems or organizational needs?			
Does the capstone demonstrate the student’s ability to partner various types of models with various types and sources of data appropriately to provide structure to complex issues?			
<b>Possible Indicators of Success</b>	<b>MS-DAT-03: Communicate with professionalism, accuracy, and transparency using interactive and dynamic visualization tools to translate technical information and offer effective solutions to organizational stakeholders.</b>	<b>Proficient</b> 100%	<b>Not Proficient</b> 0%
Does the capstone demonstrate the student’s ability to present or communicate process and solutions effectively to a broad range of audiences?			
Does the capstone demonstrate the student’s ability to implement and integrate visualization tools and techniques that offer effective data translations?			
Does the capstone demonstrate the student’s ability to articulate necessary information with professionalism, accuracy, and transparency?			

<b>MS-DAT-04: Apply effective collaborative and essential project management strategies to facilitate and improve the work of diverse and multi-functional teams, streamline processes, and lead projects to successful outputs.</b>	<b>Proficient</b> 100%	<b>Not Proficient</b> 0%
<i>Possible Indicators of Success</i>		
Does the capstone demonstrate the student's ability to develop effective plans to meet the needs of multiple stakeholders for improving processes and implementing appropriate solutions?		
Does the capstone demonstrate the student's ability to evaluate the needs, benefits, and challenges of diverse and multi-functional teams?		
Does the capstone demonstrate the student's ability to apply evidence-based collaborative strategies to lead successful projects and solutions within organizational contexts?		
<b>MS-DAT-05: Protect the integrity and privacy of data, organizations, and consumers through advanced technology solutions and ethical and legal practices in all aspects of the profession.</b>	<b>Proficient</b> 100%	<b>Not Proficient</b> 0%
<i>Possible Indicators of Success</i>		
Does the capstone demonstrate the student's ability to develop legally sound projects that adhere to regulations, laws, and policies that govern the use of data?		
Does the capstone demonstrate the student's ability to evaluate various aspects of the data analytics profession for potential and existing ethical issues?		
Does the capstone demonstrate the student's ability to integrate strategies, techniques, and technology to protect data integrity and privacy of information?		
Does the capstone demonstrate the student's ability to reflect on ethical and social concerns and issues related to data analytics and use?		
<b>MS-DAT-06: Employ applied, contextual knowledge of an organization's industry to target new data opportunities that improve an organization's competitiveness, effectiveness, and longevity.</b>	<b>Proficient</b> 100%	<b>Not Proficient</b> 0%
<i>Possible Indicators of Success</i>		
Does the capstone demonstrate the student's ability to expose new areas and possibilities for data analysis within various industries that potentially add organizational value?		
Does the capstone demonstrate the student's ability to target valid or reasonable opportunities for data usage?		
Does the capstone demonstrate the student's ability to translate results of data analyses to multiple contexts and uses within a particular industry?		
Does the capstone demonstrate the student's ability to highlight potential data opportunities that would position data analytics as a competitive advantage for organizations?		
<b>MS-DAT-07: Adapt and implement innovative methods, models, and technologies that allow for adaptability to new and unexpected changes and improve the agility of data analytics projects.</b>	<b>Proficient</b> 100%	<b>Not Proficient</b> 0%
<i>Possible Indicators of Success</i>		
Does the capstone demonstrate the student's ability to design data analytics projects that adapt to various applications and changes?		
Does the capstone demonstrate the student's ability to implement methods, models, and technologies in innovative, or unique ways?		

Does the capstone demonstrate the student's ability to improve the agility of data analytics projects by implementing tools and techniques that could provide long-term benefits despite changing environments, needs, or inputs?
Does the capstone demonstrate the student's ability to implement tools and techniques that provide long-term benefits despite changing environments, needs, or inputs?
<b>MS-DAT-08: Position data analytics as a competitive advantage to organizations by accurately communicating the cost and benefits of data analytics projects and technologies as well as the long-term benefits of data-driven decision making.</b>
<i>Possible Indicators of Success</i>
Does the capstone demonstrate the student's ability to effectively communicate the cost-benefit of data analytics technologies and projects to secure stakeholder support and acceptance?
Does the capstone demonstrate the student's ability to articulate the long-term value of data analytics for organizational and individual decision making?