



COLORADO STATE UNIVERSITY
— GLOBAL —

MIS500: FOUNDATIONS OF DATA ANALYTICS

Credit Hours: 3

Contact Hours: This is a 3-credit course, offered in accelerated format. This means that 16 weeks of material is covered in 8 weeks. The exact number of hours per week that you can expect to spend on each course will vary based upon the weekly coursework, as well as your study style and preferences. You should plan to spend 14-20 hours per week in each course reading material, interacting on the discussion boards, writing papers, completing projects, and doing research.

Faculty Information: Faculty contact information and office hours can be found on the faculty profile page.

COURSE DESCRIPTION AND OUTCOMES

Course Description:

Through this course students are provided with an introduction to the methodologies, techniques, and tools most commonly used in data analytics. These foundational methods are from the fields of statistics, operations research, and information systems. Topics include techniques and tools for visualization, inference, forecasting, optimization, simulation, and data mining. The emphasis is on exposing the student to the techniques and software tools that are used in the industry and will be used in the rest of the program.

Course Overview:

In this course you will be introduced to the field of data analytics. You will examine the lifecycle of data analytics projects and discuss the details of each stage in the lifecycle. You will study and practice several foundational tasks in the lifecycle. These tasks include statistical and visual exploration of data, univariate and multivariate analysis, categorical data analysis, linear regression prediction, and logistic regression classification. You will also explore the future trends and possibilities of the field. You will use R Studio and SAS Studio Integrated Development Environments (IDEs) as your development tools in this course.

Course Learning Outcomes:

1. Describe and evaluate the landscape of data science and analytics including their history, purpose, application in business, and skill sets needed to be a data scientist.
2. Assess the business issues that data science and analytics can address and resolve.
3. Apply various tools, coding languages, and analytics techniques for business decision making through descriptive, predictive, and prescriptive analytics.
4. Investigate how to extract, transform, integrate, load, and access large data sets, and articulate analytical conclusions and recommendations in written and visual formats.

PARTICIPATION & ATTENDANCE

Prompt and consistent attendance in your online courses is essential for your success at CSU Global Campus. Failure to verify your attendance within the first 7 days of this course may result in your withdrawal. If for some reason you would like to drop a course, please contact your advisor.

Online classes have deadlines, assignments, and participation requirements just like on-campus classes. Budget your time carefully and keep an open line of communication with your instructor. If you are having technical problems, problems with your assignments, or other problems that are impeding your progress, let your instructor know as soon as possible.

COURSE MATERIALS

Required:

- Cody, R. (2019). *A Gentle Introduction to Statistics Using SAS Studio*. ISBN-13: 9781642955323
- Dietrich, D., Heller, B., & Yang, B. (2015). *Data Science & Big Data Analytics: Discovering, Analyzing, Visualizing and Presenting Data*. ISBN-13: 9781118876138

Tools:

- Students will need access to R & R Studio
- Students will need access to SAS Studio of the SAS University Edition

NOTE: All non-textbook required readings and materials necessary to complete assignments, discussions, and/or supplemental or required exercises are provided within the course itself. Please read through each course module carefully.

COURSE SCHEDULE

Due Dates

The Academic Week at CSU Global begins on Monday and ends the following Sunday.

- **Discussion Boards:** The original post must be completed by Thursday at 11:59 p.m. MT and Peer Responses posted by Sunday 11:59 p.m. MT. Late posts may not be awarded points.
- **Critical Thinking:** Assignments are due Sunday at 11:59 p.m. MT.

WEEKLY READING AND ASSIGNMENT DETAILS

Module 1

Readings

- Chapter 1 in *Data Science & Big Data Analytics*
- Chapter 2: Section 2.1, in *Data Science & Big Data Analytics*
- Chapter 3: Sections 3.1 & 3.2 in *Data Science & Big Data Analytics*

- Luna-Reyes, L. (2018). The search for the data scientist: Creating value from data. *ACM SIGCAS Computers and Society*, 47(4), 12-16.

Discussion (25 points)

Critical Thinking (75 points)

Option #1: Explore the Iris Data Set Using R Studio

The R programming language is a very popular data science language for exploring, preparing, modelling, and evaluating data sets. Being able to program in R is a major asset in your data analytics skill toolbox. In this assignment, you will use R Studio and R to explore, statistically and visually, the built-in Iris data set.

To prepare for this Critical Thinking assignment:

1. Review the module's interactive lecture and its references.
2. Download and install R. Detailed instructions are provided in the document `R_Installation_Instructions.pdf`.
3. Download and install R Studio. Detailed instructions are provided in the document `R_Studio_Installation_Instructions.pdf`.

To complete this assignment:

1. Display the first six rows of the built-in Iris data set.

Take screenshots to demonstrate successful completion of your work. The screenshot should show the actions you took and the results you obtained. The screenshot should have the current date and time.

2. Display summary statistics for all attributes (columns) of the Iris data set.

Take screenshots to demonstrate successful completion of your work. The screenshot should show the actions you took and the results you obtained. The screenshot should have the current date and time.

3. Select any two attributes of the Iris data set. For each of your two selected attributes display:
 - The statistical mean, median, and range of the attribute.
 - The visual diagram of histogram and boxplot (box and whisker plot) of the attribute.

Take screenshots to demonstrate successful completion of your work. The screenshot should show the actions you took and the results you obtained. The screenshot should have the current date and time.

4. For the same two attributes of the Iris data set that you selected in step 3, display the correlation between these two attributes:
 - Statistically via a correlation number
 - Visually via a scatterplot diagram

Take screenshots to demonstrate successful completion of your work. The screenshot should show the actions you took and the results you obtained. The screenshot should have the current date and time.

5. Explain your work, interpret your results, and reflect on your experience:

- Explain how you completed this assignment and how you resolved the issues you faced, if any.
- Interpret the results you obtained from your actions.
- Reflect on your experience with this assignment and the lessons you learned.

To submit your response to this assignment:

- Prepare all the required screenshots.
- Prepare your explanations of work (what you did, interpretation of results, and reflection).
- Submit one Word document that:
 - is at least 4-5 pages in length (including the cover page and reference page, if any references are needed);
 - conforms to the CSU Global Writing Center;
 - includes a cover page with the number and name of the Critical Thinking option you chose;
 - does not include an abstract;
 - includes all screenshots in the same order as above;
 - includes a one-page description of what you did, interpretation of results, and reflection; and
 - ensures all figures, including screenshots and code, meet APA labeling requirements.

Option #2: Explore Air Quality Data Set Using R Studio

The R programming language is a very popular data science language for exploring, preparing, modelling, and evaluating data sets. Being able to program in R is a major asset in your data analytics skill toolbox.

In this assignment, you will use R Studio and R to explore, statistically and visually, the built-in Air Quality data set.

To prepare for this Critical Thinking assignment:

1. Review the module's interactive lecture and its references.
2. Download and install R. Detailed instructions are provided in the document `R_Installation_Instructions.pdf`.
3. Download and install R Studio. Detailed instructions are provided in the document `R_Studio_Installation_Instructions.pdf`.

To complete this assignment:

1. Display the first 6 rows of the built-in Air Quality data set.

Take screenshots to demonstrate successful completion of your work. The screenshots should show the actions you took and the results you obtained. The screenshot should have the current date and time.

2. Display the summary statistics for all attributes (columns) of the Air Quality data set.

Take screenshots to demonstrate successful completion of your work. The screenshots should show the actions you took and the results you obtained. The screenshot should have the current date and time.

3. Select any two attributes of the Air Quality data set. For each of your two selected attributes display:

- The statistical mean, median, and range of the attribute.
- The visual diagram of histogram and boxplot (box and whisker plot) of the attribute.

Take screenshots to demonstrate successful completion of your work. The screenshots should show the actions you took and the results you obtained. The screenshot should have the current date and time.

4. For the same two attributes of the Air Quality data set that you selected in step 3, display the correlation between these two attributes:

- statistically via a correlation number, and
- visually via a scatterplot diagram.

Take screenshots to demonstrate successful completion of your work. The screenshots should show the actions you took and the results you obtained. The screenshot should have the current date and time.

5. Explain your work, interpret your results, and reflect on your experience by doing the following.

- Explain how you completed this assignment and how you resolved the issues you faced, if any.
- Interpret the results you obtained from your actions.
- Reflect on your experience with this assignment and the lessons you learned.

To submit your response to this assignment:

- Prepare all the required screenshots.
- Prepare your explanations of work (what you did, interpretation of results, and reflection).
- Submit one Word document that:
 - is at least 4-5 pages in length (including a cover page and a reference page, if any references are needed);
 - conforms to the CSU Global Writing Center;
 - includes a cover page with the number and name of the Critical Thinking option you chose;
 - does not include an abstract;
 - includes all screenshots in the same order as above;
 - includes a one-page description of what you did, interpretation of results, and reflection; and

- ensures all figures, including screenshots and code, meet APA labeling requirements.

Module 2

Readings

- Chapter 6 in *Data Science & Big Data Analytics*
- Asay, M. (2017, August 4). How to get started with machine learning. *InfoWorld.Com*.

Discussion (25 points)

Critical Thinking (75 points)

OPTION #1: Build a Housing Multiple Linear Regression Model Using R

The Multiple Linear Regression model (MLR) captures the relationship between multiple attributes of a data set (called predictors) and an attribute of the same data set (called target). Using an MLP model, we can then predict the unknown value of the target attribute given the known values of its predictors.

In this assignment, you will use R Studio and R to build an MLR for a housing data set that is available at the University of California Irvine (UCI) Machine Learning repository.

To prepare for this Critical Thinking assignment:

1. Review the module's interactive lecture and its references.
2. If you haven't already, download and install R. Detailed instructions are provided in the document *R_Installation_Instructions.pdf*.
3. If you haven't already, download and install R Studio. Detailed instructions are provided in the document *R_Studio_Installation_Instructions.pdf*.
4. Download the "housing.data" and the "housing.names" from UCI Machine Learning Repository [here](#).

Note: The "housing.data" contains the data set and the "housing.names" explains it. Both of these files are text files and can be opened by any text editor.

5. Convert the "housing.data" into a CSV file called "housing.csv" using these steps:
 - a. Open the "housing.data" in Microsoft Excel
 - b. When the Text Import Wizard dialog appears, configure it as follows:
 - select Fixed width for file type, click Next
 - use the default field (column) width suggested by Excel, click Next
 - select General for column data format, click Finish
 - c. Save the file as CSV file called "housing.csv"

To complete this assignment:

1. Read the "housing.csv" file and assign it to data frame called "housing".
Hint: use `read.csv()` function with `header = FALSE`

Take screenshots to demonstrate successful completion of your work. The screenshot should show the actions you took and the results you obtained. The screenshot should have the current date and time.

2. Display summary statistics for all attributes (columns) of the housing data set.

Take screenshots to demonstrate successful completion of your work. The screenshot should show the actions you took and the results you obtained. The screenshot should have the current date and time.

3. Display the correlation numbers among the attributes of the housing data set at the column positions of 1, 6, 11, and 14.

Take screenshots to demonstrate successful completion of your work. The screenshot should show the actions you took and the results you obtained. The screenshot should have the current date and time.

4. Display a scatter matrix of the attributes of the housing data set at the column positions of 1, 6, 11, and 14.

Take screenshots to demonstrate successful completion of your work. The screenshot should show the actions you took and the results you obtained. The screenshot should have the current date and time.

5. Build an MLR model using the attribute of the housing data set at position 14 as the target attribute and the attributes at positions 1, 6, and 11 as the predictor.

Take screenshots to demonstrate successful completion of your work. The screenshot should show the actions you took and the results you obtained. The screenshot should have the current date and time.

6. Display a summary of the performance of your MLR model.

Take screenshots to demonstrate successful completion of your work. The screenshot should show the actions you took and the results you obtained. The screenshot should have the current date and time.

7. Explain your work, interpret your results, and reflect on your experience by doing the following.
 - Explain how you completed this assignment and how you resolved the issues you faced, if any.
 - Interpret the results you obtained from your actions.
 - Reflect on your experience with this assignment and the lessons you learned.

To submit your response to this assignment:

- Prepare all the required screenshots.
- Prepare your explanations of work (what you did, interpretation of results, and reflection).
- Submit one Word document that:
 - is at least 4-5 pages in length (including a cover page and a reference page, if any references are needed);

- conforms to the CSU Global Writing Center;
- includes a cover page with the number and name of the Critical Thinking option you chose;
- does not include an abstract;
- includes all screenshots in the same order as above;
- Includes a one-page description of what you did, interpretation of results, and reflection; and
- ensures all figures, including screenshots and code, meet APA labeling requirements.

OPTION #2: Build an Auto Mileage Multiple Linear Regression Model Using R

The Multiple Linear Regression model (MLR) captures the relationship between multiple attributes of a data set (called predictors) and an attribute of the same data set (called target). Using an MLP model, we can then predict the unknown value of the target attribute given the known values of its predictors.

In this assignment, you will use R Studio and R to build an MLR for an auto mileage data set that is available at the University of California Irvine (UCI) Machine Learning repository [here](#).

To prepare for this Critical Thinking assignment:

- Review the module's interactive lecture and its references.
- If you haven't already, download and install R. Detailed instructions are provided in the document [R_Installation_Instructions.pdf](#).
- If you haven't already, download and install R Studio. Detailed instructions are provided in the document [R_Studio_Installation_Instructions.pdf](#).
- Download the "auto-mpg.data" and the "auto-mpg.names" from UCI Machine Learning Repository [here](#).

The "auto-mpg.data" contains the data set and the "auto-mpg.names" explains it. Both of these files are text files and can be opened by any text editor.

- Convert the "auto-mpg.data" into a CSV file called "auto-mpg.csv" using these steps:
- Open the "auto-mpg.data" in Microsoft Excel
- When the Text Import Wizard dialog appears, configure it as follows:
 - select Fixed width for file type, click Next
 - use the default field (column) width suggested by Excel, click Next
 - select General for column data format, click Finish.
- Save the file as CSV file called "auto-mpg.csv"

To complete this assignment:

- Read the "autompg.csv" file and assign it to data frame called "autompg".
Hint: use `read.csv()` function with `header = FALSE`

Take screenshots to demonstrate successful completion of your work. The screenshot should show the actions you took and the results you obtained. The screenshot should have the current date and time.

- Display summary statistics for all attributes (columns) of the autompg data set.

Take screenshots to demonstrate successful completion of your work. The screenshot should show the actions you took and the results you obtained. The screenshot should have the current date and time.

- Display the correlation numbers among the attributes of the autmpg data set at the column positions of 1, 2, and 7.

Take screenshots to demonstrate successful completion of your work. The screenshot should show the actions you took and the results you obtained. The screenshot should have the current date and time.

- Display a scatter matrix of the attributes of the autmpg data set at the column positions of 1, 2, and 7.

Take screenshots to demonstrate successful completion of your work. The screenshot should show the actions you took and the results you obtained. The screenshot should have the current date and time.

- Build an MLR model using the attribute of the autmpg data set at position 1 as the target attribute and the attributes at positions 2, and 7 as the predictor.

Take screenshots to demonstrate successful completion of your work. The screenshot should show the actions you took and the results you obtained. The screenshot should have the current date and time.

- Display a summary of the performance of your MLR model.

Take screenshots to demonstrate successful completion of your work. The screenshot should show the actions you took and the results you obtained. The screenshot should have the current date and time.

- Explain your work, interpret your results, and reflect on your experience:
- Explain how you completed this assignment and how you resolved the issues you faced, if any.
- Interpret the results you obtained from your actions.
- Reflect on your experience with this assignment and the lessons you learned.

To submit your response to this assignment:

- Prepare all the required screenshots.
- Prepare your explanations of work (what you did, interpretation of results, and reflection).
- Submit one Word document that:
 - is at least 4-5 pages in length (including a cover page and a reference page, if any references are needed);
 - conforms to the CSU Global Writing Center;
 - includes a cover page with the number and name of the Critical Thinking option you chose;
 - does not include an abstract;

- includes all screenshots in the same order as above;
- Includes a one-page description of what you did, interpretation of results, and reflection; and
- ensures all figures, including screenshots and code, meet APA labeling requirements.

Module 3

Readings

- Chapters 1-4 in *A Gentle Introduction to Statistics Using SAS Studio*

Discussion (25 points)

Critical Thinking (75 points)

OPTION #1: Explore the Iris Data Set Using SAS Studio

The SAS programming language is one of the oldest and ever evolving statistical analysis programming language. The language has evolved over the years to include features for machine learning and artificial intelligence. Additionally, a new user interface for SAS programmers called SAS Studio was introduced for the efficient and productive data analytics project development.

In this assignment, you will use SAS University Edition which includes SAS Studio to explore, statistically and visually, the built-in Iris data set in the Libraries > My Libraries > SASHELP Library.

To prepare for this Critical Thinking assignment:

1. Review the module's interactive lecture and its references.
2. Download and install SAS University Edition which includes SAS Studio. Detailed instructions are provided in the document SAS Instructions Sheet.docx.
3. Alternatively, you can use the browser-based version of SAS Studios available via SAS OnDemand. Detailed instructions are provided in the document SAS OnDemand Instructions.docx.

To complete this assignment:

1. Display the content of the built-in Iris data set.

Take screenshots to demonstrate successful completion of your work. The screenshot should show the actions you took and the results you obtained. The screenshot should have the current date and time.

2. Display the default summary statistics for all attributes (columns) of the Iris data set.

Take screenshots to demonstrate successful completion of your work. The screenshot should show the actions you took and the results you obtained. The screenshot should have the current date and time.

3. Display the histogram and box plots for all attributes of the Iris data set.

Take screenshots to demonstrate successful completion of your work. The screenshot should show the actions you took and the results you obtained. The screenshot should have the current date and time.

Explain your work, interpret your results, and reflect on your experience:

- Explain how you completed this assignment and how you resolved the issues you faced, if any.
- Interpret the results you obtained from your actions.
- Reflect on your experience with this assignment and the lessons you learned.

To submit your response to this assignment:

- Prepare all the required screenshots.
- Prepare your explanations of work (what you did, interpretation of results, and reflection).
- Submit one Word document that:
 - Is at least 4-5 pages in length (including a cover page and a reference page, if any references are needed);
 - Conforms to the CSU Global Writing Center;
 - Includes a cover page with the number and name of the Critical Thinking option you chose;
 - Does not include an abstract;
 - Includes all screenshots in the same order as above;
 - Includes a one-page description of what you did, interpretation of results, and reflection; and
 - ensures that all figures, including screenshots and code, meet APA labeling requirements.

OPTION #2: Explore the Baseball Data Set Using SAS Studio

The SAS programming language is one of the oldest and ever evolving statistical analysis programming language. The language has evolved over the years to include features for machine learning and artificial intelligence. Additionally, a new user interface for SAS programmers called SAS Studio was introduced for the efficient and productive data analytics project development.

In this assignment, you will use SAS University Edition which includes Studio to explore, statistically and visually, the built-in Baseball data set in the Libraries > My Libraries > SASHELP Library.

To prepare for this Critical Thinking assignment:

1. Review the module's interactive lecture and its references.
2. Download and install SAS University Edition which includes SAS Studio. Detailed instructions are provided in the document SAS Instructions Sheet.docx.
3. Alternatively, you can use the browser-based version of SAS Studios available via SAS OnDemand. Detailed instructions are provided in the document SAS OnDemand Instructions.docx.

To complete this assignment:

1. Display the content of the built-in Baseball data set.

Take screenshots to demonstrate successful completion of your work. The screenshot should show the actions you took and the results you obtained. The screenshot should have the current date and time.

2. Display the default summary statistics for all attributes (columns) of the Baseball data set.

Take screenshots to demonstrate successful completion of your work. The screenshot should show the actions you took and the results you obtained. The screenshot should have the current date and time.

3. Display the histogram and box plots for all attributes of the Baseball data set.

Take screenshots to demonstrate successful completion of your work. The screenshot should show the actions you took and the results you obtained. The screenshot should have the current date and time.

Explain your work, interpret your results, and reflect on your experience:

- Explain how you completed this assignment and how you resolved the issues you faced, if any.
- Interpret the results you obtained from your actions.
- Reflect on your experience with this assignment and the lessons you learned.

To submit your response to this assignment:

- Prepare all the required screenshots.
- Prepare your explanations of work (what you did, interpretation of results, and reflection).
- Submit one Word document that:
 - is at least 4-5 pages in length (including a cover page and a reference page, if any references are needed);
 - conforms to the CSU Global Writing Center;
 - includes a cover page with the number and name of the Critical Thinking option you chose;
 - does not include an abstract;
 - includes all screenshots in the same order as above;
 - includes a one-page description of what you did, interpretation of results, and reflection; and
 - ensures all figures, including screenshots and code, meet APA labeling requirements.

Portfolio Milestone (25 points)

OPTION #1: Build a 3D Road Network Multiple Linear Regression Model Using SAS

In this Portfolio Project, you will analyze the 3D Road Network data set of the UCI Machine Learning Repository to build a multiple linear regression model using SAS Studio. The data set is available [here](#).

This data set contains satellite image processing information (e.g. longitude and latitude) about road networks in North Jutland, Denmark.

The project proceeds as follow:

- Week 3 – You will present your proposal for the project.

- Week 5 – You will complete an explanatory data analysis of the data set.
- Week 8 – You will build a multiple linear regression model from the data set.

In this first milestone, complete a one-page proposal for this project. Your proposal should include the following:

1. Your preliminary observations about the data set.
2. Your plan for conducting your analysis to build a multi linear regression model.
3. Questions you might have about this portfolio project.

Submit your assignment with a title page formatted according to the CSU Global Writing Center.

OPTION #2: Build a Wine Quality Multiple Linear Regression Model Using SAS Studio

In this Portfolio Project, you will analyze the Wine Quality data set of the UCI Machine Learning Repository to build a multiple linear regression model using SAS Studio. The data set is available here.

This data set contains red and white wine quality measurements in terms of various attributes like fixed and volatile acidity.

The project proceeds as follow:

- Week 3 – You will present your proposal for the project.
- Week 5 – You will complete an explanatory data analysis of the data set.
- Week 8 – You will build a multiple linear regression model from the data set.

In this first milestone, complete a one-page proposal for this project. Your proposal should include the following:

1. Your preliminary observations about the data set.
2. Your plan for conducting your analysis to build a multi linear regression model.
3. Questions you might have about this Portfolio Project.

Submit your assignment with a title page formatted according to the CSU Global Writing Center.

Module 4

Readings

- Chapters 5, 6, & 11 in *A Gentle Introduction to Statistics Using SAS Studio*

Discussion (25 points)

Critical Thinking (75 points)

OPTION #1: Distribution and Correlation Analysis of a CSV Imported File Using SAS Studio

An important analysis of any data analytics experiment is to analyze the distribution of individual attributes of the data set and to analyze the correlations among the attributes.

In this assignment, you will use SAS Studio to import a Comma Separated Values (CSV) file. You will then perform both distribution and correlation analysis on the imported data set.

To prepare for this Critical Thinking assignment:

1. Review the module's interactive lecture and its references.
2. If you haven't already, download and install SAS University Edition which includes SAS Studio. Detailed instructions are provided in the document SAS Instructions Sheet.docx.
3. Alternatively, if you haven't already, you can use the browser-based version of SAS Studios available via SAS OnDemand. Detailed instructions are provided in the document SAS OnDemand Instructions.docx.
4. Download the "forestfires.csv" and the "forestfires.names" from UCI Machine Learning Repository [here](#).

Note: The "forestfires.csv" contains the data set and the "forestfires.names" explains it. The "forestfires.names" is a text file and can be opened by any text editor.

To complete this assignment:

1. Import the "forestfires.csv" file into SAS Studio and name the resulting data set as "forestfires" data set.

Take screenshots to demonstrate successful completion of your work. The screenshot should show the actions you took and the results you obtained. The screenshot should have the current date and time.

2. Analyze the distribution of the "temp" attribute using these options:
 - EXPLORING DATA: Histogram
 - CHECKING FOR NORMALITY: Normal quantile-quantile plot with Add inset statistics
 - Inset Statistics: Number of observations, Skewness and Kurtosis.

Take screenshots to demonstrate successful completion of your work. The screenshot should show the actions you took and the results you obtained. The screenshot should have the current date and time.

3. Analyze the distribution of the "RH" attribute using these options:
 - EXPLORING DATA: Histogram
 - CHECKING FOR NORMALITY: Normal quantile-quantile plot with Add inset statistics
 - Inset Statistics: Number of observations, Skewness and Kurtosis.

Take screenshots to demonstrate successful completion of your work. The screenshot should show the actions you took and the results you obtained. The screenshot should have the current date and time.

4. Perform a One-Way Frequencies analysis on the categorical attribute "day" using the default options.

Take screenshots to demonstrate successful completion of your work. The screenshot should show the actions you took and the results you obtained. The screenshot should have the current date and time.

5. Perform correlation analysis on the attributes “temp” and “RH” using the following options:
 - PLOTS-Type of plot: Matrix of scatter plots with include histograms.

Take screenshots to demonstrate successful completion of your work. The screenshot should show the actions you took and the results you obtained. The screenshot should have the current date and time.

Explain your work, interpret your results, and reflect on your experience:

- Explain how you completed this assignment and how you resolved the issues you faced, if any.
- Interpret the results you obtained from your actions.
- Reflect on your experience with this assignment and the lessons you learned.

To submit your response to this assignment:

- Prepare all the required screenshots.
- Prepare your explanations of work (what you did, interpretation of results, and reflection).
- Submit one Word document that:
 - is at least 4-5 pages in length (including a cover page and a reference page, if any references are needed);
 - conforms to the CSU Global Writing Center;
 - includes a cover page with the number and name of the Critical Thinking option you chose;
 - does not include an abstract;
 - includes all screenshots in the same order as above;
 - Includes a one-page description of what you did, interpretation of results, and reflection; and
 - ensures all figures, including screenshots and code, meet APA labeling requirements.

OPTION #2: Distribution and Correlation Analysis of an Excel Imported File Using SAS Studio

An important analysis of any data analytics experiment is to analyze the distribution of individual attributes of the data set and to analyze the correlations among the attributes.

In this assignment, you will use SAS Studio to import an Excel file. You will then perform both distribution and correlation analysis on the imported data set.

To prepare for this Critical Thinking assignment:

1. Review the module’s interactive lecture and its references.
2. If you haven’t already, download and install SAS University Edition which includes SAS Studio. Detailed instructions are provided in the document SAS Instructions Sheet.docx.
3. Alternatively, if you haven’t already, you can use the browser-based version of SAS Studios available via SAS OnDemand. Detailed instructions are provided in the document SAS OnDemand Instructions.docx.

4. Download the “Real estate valuation data set.xlsx” from UCI Machine Learning Repository here.

Note: The “Real estate valuation data set.xlsx” contains the data set. Explanation of the data set is available at the above UCI URL.

To complete this assignment:

1. Import the “Real estate valuation data set.xlsx” file into SAS Studio and name the resulting data set as “realestatevaluation” data set.

Take screenshots to demonstrate successful completion of your work. The screenshot should show the actions you took and the results you obtained. The screenshot should have the current date and time.

2. Analyze the distribution of the “X2_house_age” attribute using these options:
 - EXPLORING DATA: Histogram
 - CHECKING FOR NORMALITY: Normal quantile-quantile plot with Add inset statistics
 - Inset Statistics: Number of observations, Skewness and Kurtosis

Take screenshots to demonstrate successful completion of your work. The screenshot should show the actions you took and the results you obtained. The screenshot should have the current date and time.

3. Analyze the distribution of the “Y_house_price_of_unit_area” attribute using these options:
 - EXPLORING DATA: Histogram
 - CHECKING FOR NORMALITY: Normal quantile-quantile plot with Add inset statistics
 - Inset Statistics: Number of observations, Skewness and Kurtosis.

Take screenshots to demonstrate successful completion of your work. The screenshot should show the actions you took and the results you obtained. The screenshot should have the current date and time.

4. Perform a One-Way Frequencies analysis on the categorical attribute “X1_transaction_date” using the default options.

Take screenshots to demonstrate successful completion of your work. The screenshot should show the actions you took and the results you obtained. The screenshot should have the current date and time.

5. Perform correlation analysis on the attributes “X2_house_age” and “Y_house_price_of_unit_area” using the following options:
 - PLOTS-Type of plot: Matrix of scatter plots with include histograms

Take screenshots to demonstrate successful completion of your work. The screenshot should show the actions you took and the results you obtained. The screenshot should have the current date and time.

Explain your work, interpret your results, and reflect on your experience:

- Explain how you completed this assignment and how you resolved the issues you faced, if any.
- Interpret the results you obtained from your actions.

- Reflect on your experience with this assignment and the lessons you learned.

To submit your response to this assignment:

- Prepare all the required screenshots.
- Prepare your explanations of work (what you did, interpretation of results, and reflection).
- Submit one Word document that:
 - is at least 4-5 pages in length (including a cover page and a reference page, if any references are needed);
 - conforms to the CSU Global Writing Center;
 - includes a cover page with the number and name of the Critical Thinking option you chose;
 - does not include an abstract;
 - includes all screenshots in the same order as above;
 - Includes a one-page description of what you did, interpretation of results, and reflection; and
 - ensures all figures, including screenshots and code, meet APA labeling requirements.

Module 5

Readings

- Chapter 12 in *A Gentle Introduction to Statistics Using SAS Studio*
- Rapolu, B. (2015, September 2). *The power of analytics: Solving problems beyond finding insights*. DATAECONOMY. <http://dataeconomy.com/2015/09/the-power-of-analytics-solving-problems-beyond-finding-insights/>

Discussion (25 points)

Critical Thinking (75 points)

OPTION #1: Build a Housing Simple Linear Regression Model Using SAS Studio

Simple Linear Regression models capture the relationship between a single attribute of a data set (called predictor or independent attribute) and an attribute of the same data set (called target or dependent attribute). Once a simple linear regression model is built, we can use it to predict the unknown value of the target attribute given the known values of its single predictor attribute.

In this assignment, you will use SAS Studio to build a simple linear regression model for a housing data set that is available at the University of California Irvine (UCI) Machine Learning repository.

To prepare for this Critical Thinking assignment:

- Review the module's interactive lecture and its references.
- If you haven't already, download and install SAS University Edition which includes SAS Studio. Detailed instructions are provided in the document SAS Instructions Sheet.docx.
- Alternatively, if you haven't already, you can use the browser-based version of SAS Studios available via SAS OnDemand. Detailed instructions are provided in the document SAS OnDemand Instructions.docx.

- Download the “housing.data” and the “housing.names” from UCI Machine Learning Repository here.

Note: The “housing.data” contains the data set and the “housing.names” explains it. Both of these files are text files and can be opened by any text editor.

- Convert the “housing.data” into a CSV file called “housing.csv” using these steps:
- Open the “housing.data” in Microsoft Excel
- When the Text Import Wizard dialog appears, configure it as follows:
- select Fixed width for file type, click Next
- use the default field (column) width suggested by Excel, click Next
- select General for column data format, click Finish
- Save the file as CSV file called “housing.csv”

To complete this assignment:

- Import the “housing.csv” file into SAS Studio and name the resulting data set as “housing” data set.

Hint: Uncheck the OPTIONS: Generate SAS variable names.

Take screenshots to demonstrate successful completion of your work. The screenshot should show the actions you took and the results you obtained. The screenshot should have the current date and time.

- Build a simple linear regression model as follows:
- Dependent variable: VAR14
- Continuous variable: VAR1
- Model effects: use default settings
- OPTIONS: PLOTS: Diagnostics and Residual Plots: Display as:
Individual plots

Take screenshots to demonstrate successful completion of your work. The screenshot should show the actions you took and the results you obtained. The screenshot should have the current date and time.

- Display the results of running your model.

Take screenshots to demonstrate successful completion of your work. The screenshot should show the actions you took and the results you obtained.

- Write down the equation that relates VAR14 to VAR1.

Take screenshots to demonstrate successful completion of your work. The screenshot should show the actions you took and the results you obtained. The screenshot should have the current date and time.

Explain your work, interpret your results, and reflect on your experience:

- Explain how you completed this assignment and how you resolved the issues you faced, if any.
- Interpret the results you obtained from your actions.

- Reflect on your experience with this assignment and the lessons you learned.

To submit your response to this assignment:

- Prepare all the required screenshots.
- Prepare your explanations of work (what you did, interpretation of results, and reflection).
- Submit one Word document that:
 - is at least 4-5 pages in length (including a cover page and a reference page, if any references are needed);
 - conforms to the CSU Global Writing Center;
 - includes a cover page with the number and name of the Critical Thinking option you chose;
 - does not include an abstract;
 - includes all screenshots in the same order as above;
 - includes a one-page description of what you did, interpretation of results, and reflection; and
 - ensures all figures, including screenshots and code, meet APA labeling requirements.

OPTION #2: Build an Auto Mileage Simple Linear Regression Model Using SAS Studio

Simple Linear Regression models capture the relationship between a single attribute of a data set (called predictor or independent attribute) and an attribute of the same data set (called target or dependent attribute). Once a simple linear regression model is built, we can use it to predict the unknown value of the target attribute given the known values of its single predictor attribute.

In this assignment, you will use SAS Studio to build a simple linear regression model for an auto mileage data set that is available at the University of California Irvine (UCI) Machine Learning repository.

To prepare for this Critical Thinking assignment:

1. Review the module's interactive lecture and its references.
2. If you haven't already, download and install SAS University Edition which includes SAS Studio. Detailed instructions are provided in the document SAS Instructions Sheet.docx.
3. Alternatively, if you haven't already, you can use the browser-based version of SAS Studios available via SAS OnDemand. Detailed instructions are provided in the document SAS OnDemand Instructions.docx.
4. Download the "auto-mpg.data" and the "auto-mpg.names" from UCI Machine Learning Repository here.

Note: The "auto-mpg.dat" contains the data set and the "auto-mpg.names" explains it. Both of these files are text files and can be opened by any text editor.

5. Convert the "auto-mpg.data" into a CSV file called "auto-mpg.csv" using these steps:
6. Open the "auto-mpg.data" in Microsoft Excel
7. When the Text Import Wizard dialog appears, configure it as follows:
 - a. select Fixed width for file type, click Next
 - b. use the default field (column) width suggested by Excel, click Next
 - c. select General for column data format, click Finish
8. Save the file as CSV file called "auto-mpg.csv"

To complete this assignment:

9. Import the "autompg.csv" file into SAS Studio and name the resulting data set as "autompg" data set.

Hint: Uncheck the OPTIONS: Generate SAS variable names.

Take screenshots to demonstrate successful completion of your work. The screenshot should show the actions you took and the results you obtained. The screenshot should have the current date and time.

10. Build a simple linear regression model as follows:
11. Dependent variable: VAR1
12. Continuous variable: VAR2
13. Model effects: use default settings
14. OPTIONS: PLOTS: Diagnostics and Residual Plots:
 - a. Display as: Individual plots

Take screenshots to demonstrate successful completion of your work. The screenshot should show the actions you took and the results you obtained.

15. Display the results of running your model.

Take screenshots to demonstrate successful completion of your work. The screenshot should show the actions you took and the results you obtained. The screenshot should have the current date and time.

16. Write down the equation that relates VAR1 to VAR2.

Take screenshots to demonstrate successful completion of your work. The screenshot should show the actions you took and the results you obtained. The screenshot should have the current date and time.

Explain your work, interpret your results, and reflect on your experience:

17. Explain how you completed this assignment and how you resolved the issues you faced, if any.
18. Interpret the results you obtained from your actions.
19. Reflect on your experience with this assignment and the lessons you learned.

To submit your response to this assignment:

20. Prepare all the required screenshots.
21. Prepare your explanations of work (what you did, interpretation of results, and reflection).
22. Submit one Word document that:
 - is at least 4-5 pages in length (including a cover page and a reference page, if any references are needed);
 - conforms to the CSU Global Writing Center;
 - includes a cover page with the number and name of the Critical Thinking option you chose;
 - does not include an abstract;
 - includes all screenshots in the same order as above;

- Includes a one-page description of what you did, interpretation of results, and reflection; and
- ensures all figures, including screenshots and code, meet APA labeling requirements.

Portfolio Milestone (50 points)

OPTION #1: Build a 3D Road Network Multiple Linear Regression Model Using SAS Studio

In this Portfolio Project, you will analyze the 3D Road Network data set of the UCI Machine Learning Repository to build a multiple linear regression model using SAS Studio. The data set is available [here](#).

This data set contains satellite image processing information (e.g. longitude and latitude) about road networks in North Jutland, Denmark.

The project proceeds as follow:

- You have already submitted a proposal for the project.
- This week you will be completing an explanatory data analysis of the data set.
- Week 8 – You will build a multiple linear regression model from the data set.

In this second milestone, complete an explanatory data analysis for the data set in SAS Studio. Your explanatory data analysis should include the following:

1. Univariate analysis (Summary and Distribution analysis) for two of the variables of the data set. The univariate analysis must include statistics and visual analysis.

Take screenshots to demonstrate successful completion of your work. The screenshot should show the actions you took and the results you obtained. The screenshot should have the current date and time.

2. Multivariate analysis (correlation) among variables of the data set. The multivariate analysis must include statistics and visual analysis.

Take screenshots to demonstrate successful completion of your work. The screenshot should show the actions you took and the results you obtained. The screenshot should have the current date and time.

3. Explanations of work (what you did, interpretation of results, and reflection)

Submit your assignment with a title page formatted according to the CSU Global Writing Center.

OPTION #2: Build a Wine Quality Multiple Linear Regression Model Using SAS Studio

In this Portfolio Project, you will analyze the Wine Quality data set of the UCI Machine Learning Repository to build a multiple linear regression model using SAS Studio. The data set is available [here](#).

This data set contains red and white wine quality measurements in terms of various attributes like fixed and volatile acidity.

The project proceeds as follow:

- You have already submitted a proposal for the project.
- This week you will be completing an explanatory data analysis of the data set.
- Week 8 – You will build a multiple linear regression model from the data set.

In this second milestone, complete an explanatory data analysis for the data set in SAS Studio. Your explanatory data analysis should include the following:

1. Univariate analysis (Summary and Distribution analysis) for two of the variables of the data set. The univariate analysis must include statistics and visual analysis.

Take screenshots to demonstrate successful completion of your work. The screenshot should show the actions you took and the results you obtained. The screenshot should have the current date and time.

2. Multivariate analysis (correlation) among variables of the data set. The multivariate analysis must include statistics and visual analysis.

Take screenshots to demonstrate successful completion of your work. The screenshot should show the actions you took and the results you obtained. The screenshot should have the current date and time.

3. Explanations of work (what you did, interpretation of results, and reflection)

Submit your assignment with a title page formatted according to the CSU Global Writing Center.

Module 6

Readings

- Chapter 13 in *A Gentle Introduction to Statistics Using SAS Studio*

Discussion (25 points)

Critical Thinking (75 points)

OPTION #1: Build a Breast Cancer Binary Logistic Regression Model Using SAS Studio

While regression models are used to predict the value of a target variable, logistic regression models, on the other hand, are used to predict the class or classification of the target variable. When the target variable has only two possible classes (yes or no), the model is referred to as the binary logistic regression model.

In this assignment, you will use SAS Studio to build a binary logistic regression model for a breast cancer data set that is available at the University of California Irvine (UCI) Machine Learning repository.

To prepare for this Critical Thinking assignment:

- Review the module's interactive lecture and its references.

- If you haven't already, download and install SAS University Edition which includes SAS Studio. Detailed instructions are provided in the document SAS Instructions Sheet.docx.
- Alternatively, if you haven't already, you can use the browser-based version of SAS Studios available via SAS OnDemand. Detailed instructions are provided in the document SAS OnDemand Instructions.docx.
- Download the "breast-cancer.data" and the "breast-cancer.names" from UCI Machine Learning Repository here.

Note: The "breast-cancer.dat" contains the data set and the "breast-cancer.names" explains it. Both of these files are text files and can be opened by any text editor.

- Convert the "breast-cancer.data" into a CSV file called "breast-cancer.csv" using these steps:
 - Open the "breast-cancer.data" in Microsoft Excel
 - When the Text Import Wizard dialog appears, configure it as follows:
 - select Fixed width for file type, click Next
 - use the default field (column) width suggested by Excel, click Next
 - select General for column data format, click Finish
- Save the file as CSV file called "breast-cancer.csv"

To complete this assignment:

- Import the "breast-cancer.csv" file into SAS Studio and name the resulting data set as "breastcancer" data set.

Hint: Uncheck the OPTIONS: Generate SAS variable names.

Take screenshots to demonstrate successful completion of your work. The screenshot should show the actions you took and the results you obtained. The screenshot should have the current date and time.

- Build a binary logistic regression model as follows:
 - Response: VAR1 with Event of interest: recurrence-events
 - Classification variables: VAR2
 - Parameterization of Effects: Coding: Reference coding
 - MODEL: use default settings

Take screenshots to demonstrate successful completion of your work. The screenshot should show the actions you took and the results you obtained. The screenshot should have the current date and time.

- Display the results of running your model

Take screenshots to demonstrate successful completion of your work. The screenshot should show the actions you took and the results you obtained. The screenshot should have the current date and time.

Explain your work, interpret your results, and reflect on your experience:

- Explain how you completed this assignment and how you resolved the issues you faced, if any.
- Interpret the results you obtained from your actions.
- Reflect on your experience with this assignment and the lessons you learned.

To submit your response to this assignment:

- Prepare all the required screenshots.
- Prepare your explanations of work (what you did, interpretation of results, and reflection).
- Submit one Word document that:
 - is at least 4-5 pages in length (including a cover page and a reference page, if any references are needed);
 - conforms to the CSU Global Writing Center;
 - includes a cover page with the number and name of the Critical Thinking option you chose;
 - does not include an abstract;
 - includes all screenshots in the same order as above;
 - Includes a one-page description of what you did, interpretation of results, and reflection; and
 - ensures all figures, including screenshots and code, meet APA labeling requirements.

OPTION #2: Build a Shuttle Landing Controls Binary Logistic Regression Model Using SAS Studio

While regression models are used to predict the value of a target variable, logistic regression models, on the other hand, are used to predict the class or classification of the target variable. When the target variable has only two possible classes (yes or no), the model is referred to as the binary logistic regression model.

In this assignment, you will use SAS Studio to build a binary logistic regression model for a shuttle landing controls data set that is available at the University of California Irvine (UCI) Machine Learning repository.

To prepare for this Critical Thinking assignment:

- Review the module's interactive lecture and its references.
- If you haven't already, download and install SAS University Edition which includes SAS Studio. Detailed instructions are provided in the document SAS Instructions Sheet.docx.
- Alternatively, if you haven't already, you can use the browser-based version of SAS Studios available via SAS OnDemand. Detailed instructions are provided in the document SAS OnDemand Instructions.docx.
- Download the "shuttle-landing-control.data" and the "shuttle-landing-control.names" from UCI Machine Learning Repository.

Note: The "shuttle-landing-control.dat" contains the data set and the "shuttle-landing-control.names" explains it. Both of these files are text files and can be opened by any text editor.

- Convert the "shuttle-landing-control.data" into a CSV file called "shuttle-landing-control.csv" using these steps:

- Open the “shuttle-landing-control.data” in Microsoft Excel
- When the Text Import Wizard dialog appears, configure it as follows:
 - select Fixed width for file type, click Next
 - use the default field (column) width suggested by Excel, click Next
 - select General for column data format, click Finish.
- Save the file as CSV file called “shuttle-landing-control.csv”
- Convert the “shuttle-landing-control.data” into a CSV file called “shuttle-landing-control.csv”:
- Open the “shuttle-landing-control.data” in Microsoft Excel.
- Configure the Text Import Wizard as follows:
 - select delimited for file type
 - select Comma for Delimiters
 - Select General for column data format.
- Save the file as CSV file called “shuttle-landing-control.csv”

To complete this assignment:

- Import the “shuttle-landing-control.csv” file into SAS Studio and name the resulting data set as “shuttlelandingcontrol” data set.

Hint: Uncheck the OPTIONS: Generate SAS variable names.

Take screenshots to demonstrate successful completion of your work. The screenshot should show the actions you took and the results you obtained. The screenshot should have the current date and time.

- Build a binary logistic regression model as follows:
- Response: VAR1 with Event of interest: 1
- Classification variables: VAR7
- Parameterization of Effects: Coding: Reference coding
- MODEL: use default settings

Take screenshots to demonstrate successful completion of your work. The screenshot should show the actions you took and the results you obtained. The screenshot should have the current date and time.

- Display the results of running your model.

Take screenshots to demonstrate successful completion of your work. The screenshot should show the actions you took and the results you obtained. The screenshot should have the current date and time.

Explain your work, interpret your results, and reflect on your experience:

- Explain how you completed this assignment and how you resolved the issues you faced, if any.
- Interpret the results you obtained from your actions.
- Reflect on your experience with this assignment and the lessons you learned.

To submit your response to this assignment:

- Prepare all the required screenshots.
- Prepare your explanations of work (what you did, interpretation of results, and reflection).
- Submit one Word document that:
 - is at least 4-5 pages in length (including a cover page and a reference page, if any references are needed);
 - conforms to the CSU Global Writing Center;
 - includes a cover page with the number and name of the Critical Thinking option you chose;
 - does not include an abstract;
 - includes all screenshots in the same order as above;
 - Includes a one-page description of what you did, interpretation of results, and reflection; and
 - ensures all figures, including screenshots and code, meet APA labeling requirements.

Module 7

Readings

- Chapter 14 in *A Gentle Introduction to Statistics Using SAS Studio*

Discussion (25 points)

Module 8

Readings

- Chapter 12 in *Data Science & Big Data Analytics*
- Kühn, A., Joppen, R., Reinhart, F., Röltgen, D., Von Enzberg, S., & Dumitrescu, R. (2018). Analytics canvas – A framework for the design and specification of data analytics projects. *Procedia CIRP*, 70, 162-167.
- Olhede, S., & Wolfe, P. (2018). The future of statistics and data science. *Statistics & Probability Letters*, 136, 46-50.

Discussion (25 points)

Portfolio Project (275 points)

OPTION #1: Build a 3D Road Network Multiple Linear Regression Model Using SAS Studio

In this Portfolio Project, you will analyze the 3D Road Network data set of the UCI Machine Learning Repository to build a multiple linear regression model using SAS Studio. The data set is available here.

This data set contains satellite image processing information (e.g. longitude and latitude) about road networks in North Jutland, Denmark.

The project proceeds as follow:

- Week 3 – You will present your proposal for the project.
- Week 5 – You will complete an explanatory data analysis of the data set.
- Week 8 – You will build a multiple linear regression model from the data set.

In this project, build a multiple linear regression model for the data set. Your multiple linear regression model should include the following:

1. A model built using the default model selection method (none).

Take screenshots to demonstrate successful completion of your work. The screenshot should show the actions you took and the results you obtained. The screenshot should have the current date and time.

2. A model built using any one of the model selection methods (forward, backward, or stepwise selection methods) that you chose.

Take screenshots to demonstrate successful completion of your work. The screenshot should show the actions you took and the results you obtained. The screenshot should have the current date and time.

3. Explanations of work (what you did, interpretation of results, and reflection).

Your paper should be at least 4-5 pages (including a cover page and a reference page, if any references are needed) in length and conform to the CSU Global Writing Center.

OPTION #2: Build a Wine Quality Multiple Linear Regression Model Using SAS Studio

In this Portfolio Project, you will analyze the Wine Quality data set of the UCI Machine Learning Repository to build a multiple linear regression model using SAS Studio. The data set is available [here](#).

This data set contains red and white wine quality measurements in terms of various attributes like fixed and volatile acidity.

The project proceeds as follow:

- Week 3 – You will present your proposal for the project.
- Week 5 – You will complete an explanatory data analysis of the data set.
- Week 8 – You will build a multiple linear regression model from the data set.

In this project, build a multiple linear regression model for the data set. Your multiple linear regression model should include the following:

1. A model built using the default model selection method (none).

Take screenshots to demonstrate successful completion of your work. The screenshot should show the actions you took and the results you obtained. The screenshot should have the current date and time.

2. A model built using any one of the model selection methods (forward, backward, or stepwise selection methods) that you chose.

Take screenshots to demonstrate successful completion of your work. The screenshot should show the actions you took and the results you obtained. The screenshot should have the current date and time.

3. Explanations of work (what you did, interpretation of results, and reflection)

Your paper should be at least 4-5 pages (including a cover page and a reference page, if any references are needed) in length and conform to the CSU Global Writing Center.

COURSE POLICIES

Grading Scale	
A	95.0 – 100
A-	90.0 – 94.9
B+	86.7 – 89.9
B	83.3 – 86.6
B-	80.0 – 83.2
C+	75.0 – 79.9
C	70.0 – 74.9
D	60.0 – 69.9
F	59.9 or below

Graduate Course Grading	
20%	Discussion Participation
45%	Critical Thinking Assignments
35%	Final Portfolio Project

IN-CLASSROOM POLICIES

For information on late work and incomplete grade policies, please refer to our [In-Classroom Student Policies and Guidelines](#) or the Academic Catalog for comprehensive documentation of CSU Global institutional policies.

Academic Integrity

Students must assume responsibility for maintaining honesty in all work submitted for credit and in any other work designated by the instructor of the course. Academic dishonesty includes cheating, fabrication, facilitating academic dishonesty, plagiarism, reusing /re-purposing your own work (see CSU Global Library page Citing & APA Resources, Avoiding Common Plagiarism Mistakes for percentage of repurposed work that can be used in an assignment), unauthorized possession of academic materials, and unauthorized collaboration. The CSU Global Library provides information on how students can avoid plagiarism by understanding what it is and how to use the Library and Internet resources.

Citing Sources with APA Style

All students are expected to follow the CSU Global guidelines for citing in APA format (based on the APA style manual, 7th edition) for all assignments. For details on CSU Global APA style, please review the APA resources within the CSU Global Library under the Citing & APA Resources link. A link to this resource should be provided within most assignment descriptions in your course.

Disability Services Statement

CSU Global is committed to providing reasonable accommodations for all persons with disabilities. Any student with a documented disability requesting academic accommodations should contact the Disability Resource Coordinator at 720-279-0650 and/or email ada@CSUGlobal.edu for additional information to coordinate reasonable accommodations for students with documented disabilities.

Netiquette

Respect the diversity of opinions among the instructor and classmates and engage with them in a courteous, respectful, and professional manner. All posts and classroom communication must be conducted in accordance with the student code of conduct. Think before you push the Send button. Did you say just what you meant? How will the person on the other end read the words?

Maintain an environment free of harassment, stalking, threats, abuse, insults or humiliation toward the instructor and classmates. This includes, but is not limited to, demeaning written or oral comments of an ethnic, religious, age, disability, sexist (or sexual orientation), or racist nature; and the unwanted sexual advances or intimidations by email, or on discussion boards and other postings within or connected to the online classroom. If you have concerns about something that has been said, please let your instructor know.

SAS RESOURCES AND INFORMATION ON CERTIFICATION

Information about SAS Certification

Taking SAS certification exams help you validate your skills and increase your value to an employer. You can choose SAS certifications across many subjects, including programming, data management, and analytics, to name a few. For more information on SAS certification go here: https://www.sas.com/en_us/certification.html.

All students, teachers, professors or staff associated with an academic institution qualify for 50% discount on all SAS certification exams. Please contact certification@sas.com to receive the discount code that will reduce the exam fee by 50% during the registration process.

Resources for Learning SAS

SAS Certification Prep Guides: https://www.sas.com/store/books/categories/certification-guide/cBooks-cbooks_categories-cbooks_categories_12-p1.html

Visit SAS Communities Visit our online sites to share and connect with other SAS users and build your SAS skills. Don't miss key communities including: SAS Certification, SAS Training, SAS Academy for Data Science, SAS Programming, New SAS User, SAS Analytics U and SAS Viya for Learners. <https://communities.sas.com/t5/Learn-SAS/ct-p/learn>