	Mastery	Approaching Mastery	Progressing	Emerging	Incomplete
Multiple Linear Regression Written Analysis (15 pts)	Presents a cohesive written analysis that provides comprehensive and insightful answers to the following questions: ✓ Which variables/coefficients provided a non-random amount of variance to the mpg values in the dataset? ✓ Is the slope of the linear model considered to be zero? Why or why not? ✓ Does this linear model predict mpg of MechaCar prototypes effectively? Why or why not?	Presents a cohesive written analysis that answers following questions with technical accuracy, but lacks some nuance or sophistication: ✓ Which variables/coefficients provided a non-random amount of variance to the mpg values in the dataset? ✓ Is the slope of the linear model considered to be zero? Why or why not? ✓ Does this linear model predict mpg of MechaCar prototypes effectively? Why or why not?	Presents a developing written analysis that answers two of the following three questions: ✓ Which variables/coefficients provided a non-random amount of variance to the mpg values in the dataset? ✓ Is the slope of the linear model considered to be zero? Why or why not? ✓ Does this linear model predict mpg of MechaCar prototypes effectively? Why or why not?	Presents a limited written analysis that answers one of the following three questions: ✓ Which variables/coefficients provided a non-random amount of variance to the mpg values in the dataset? ✓ Is the slope of the linear model considered to be zero? Why or why not? ✓ Does this linear model predict mpg of MechaCar prototypes effectively? Why or why not?	No submission was received -OR- Submission was empty or blank -OR- Submission contains evidence of academic dishonesty
Multiple Linear Regression Model (15 pts)	Provides well-documented and commented code within an RScript that produces the following analysis: ✓ A multiple linear regression model that predicts the mpg of MechaCar prototypes using a number of categorical variables	Provides code within an RScript that produces the following analysis: ✓ Multiple single linear regression models that predict the mpg of MechaCar prototypes using a number of categorical variables -OR- Provides code within an RScript that attempts to produce the following analysis: ✓ A multiple linear regression model that predicts the mpg of MechaCar prototypes using a number of categorical variables	Provides code within an RScript that produces the following analysis: ✓ A single linear regression model that predicts the mpg of the MechaCar prototypes using one categorical variable	Provides code within an RScript that attempts to produce the following analysis: ✓ A single linear regression model that predicts the mpg of MechaCar prototypes using one categorical variable	
Summary Statistics Written Analysis (10 pts)	Presents a cohesive written analysis that provides a comprehensive answer to the following question: ✓ The design specifications for the MechaCar suspension coils dictate that the variance of the suspension coils must not exceed 100 pounds	Presents a cohesive written analysis that answers the following question: ✓ The design specifications for the MechaCar suspension coils dictate that the variance of the suspension coils must not exceed 100 pounds -per -inch. Does the current manufacturing data meet this design	Presents a developing written analysis that answers the following question: ✓ The design specifications for the MechaCar suspension coils dictate that the variance of the suspension coils must not exceed 100 pounds -per -inch. Does the current	Presents a limited written analysis that answers the following question: ✓ The design specifications for the MechaCar suspension coils dictate that the variance of the suspension coils must not exceed 100 pounds -per	

	-per -inch. Does the current manufacturing data meet this design specification? Why or why not?	specification? Why or why not?	manufacturing data meet this design specification? Why or why not?	-inch. Does the current manufacturing data meet this design specification?	
Summary Statistics Model (10 pts)	Summary statistics table includes correct results for the following items: ✓ Mean ✓ Median ✓ Variance ✓ Standard deviation	Summary statistics table includes correct results for three of the following items: ✓ Mean ✓ Median ✓ Variance ✓ Standard deviation	Summary statistics table includes correct results for two of the following items: ✓ Mean ✓ Median ✓ Variance ✓ Standard deviation	Summary Statistics table includes correct results for one of the following items: ✓ Mean ✓ Median ✓ Variance ✓ Standard deviation	
Statistical Difference Written Analysis (10 pts)	Presents a cohesive written analysis that provides a comprehensive answer to the following question: ✓ Determine if the suspension coil's pound-per-inch results are statistically different from the mean population results of 1,500 pounds-per-inch.	Presents a cohesive written analysis that answers the following question: ✓ Determine if the suspension coil's pound-per-inch results are statistically different from the mean population results of 1,500 pounds-per-inch.	Presents a developing written analysis that answers the following question: ✓ Determine if the suspension coil's pound-per-inch results are statistically different from the mean population results of 1,500 pounds-per-inch.	Presents a limited written analysis that answers the following question: ✓ Determine if the suspension coil's pound-per-inch results are statistically different from the mean population results of 1,500 pounds-per-inch.	
Statistical Difference Model (10 pts)	Provides well-documented and commented code within an RScript that uses a t-test to produce the following analysis: ✓ Determine if the suspension coil's pound-per-inch results are statistically different from the mean population results of 1,500 pounds-per-inch.	Provides code within an RScript that uses a t-test to produce the following analysis: ✓ Determine if the suspension coil's pound-per-inch results are statistically different from the mean population results of 1,500 pounds-per-inch.	Provides code within an RScript that attempts any t-test to produce the following analysis: ✓ Determine if the suspension coil's pound-per-inch results are statistically different from the mean population results of 1,500 pounds-per-inch.	Provides code within an RScript that attempts any statistical test to produce the following analysis: ✓ Determine if the suspension coil's pound-per-inch results are statistically different from the mean population results of 1,500 pounds-per-inch.	
Statistical Study Design (30 pts)	Presents a cohesive, comprehensive study design that includes the following details: ✓ The metrics you would think would be of interest to a consumer, as well as why you think they would be of interest. ✓ The question your study will ask, as well as what the null and alternative hypothesis would be to answer that question, and what	Presents a cohesive study design that includes the following details: ✓ The metrics you would think would be of interest to a consumer, as well as why you think they would be of interest. ✓ The question your study will ask, as well as what the null and alternative hypothesis would be to answer that question, and what statistical test could be used to test	Presents a developing study design that includes two of the three following details: ✓ The metrics you would think would be of interest to a consumer, as well as why you think they would be of interest. ✓ The question your study will ask, as well as what the null and alternative hypothesis would be to answer that question, and what	Presents a limited study design that includes one of the three following details: ✓ The metrics you would think would be of interest to a consumer, as well as why you think they would be of interest. ✓ The question your study will ask, as well as what the null and alternative hypothesis would be to answer that	

	statistical test could be used to test this hypothesis. ✓ Given your selected statistical test, what data should be collected for your study.	this hypothesis. ✓ Given your selected statistical test, what data should be collected for your study.	statistical test could be used to test this hypothesis. ✓ Given your selected statistical test, what data should be collected for your study.	question, and what statistical test could be used to test this hypothesis. ✓ Given your selected statistical test, what data should be collected for your study.	