**Research Methods 2 (Module)**

**Module: Descriptive Statistics**

**Subtopic: Descriptive Statistics  
-**descriptive statistics present information about data at-a-glance to give overall idea of results (mean, median, and mode)

**Subtopic: Histograms  
-Histogram:** type of graph used to report the number of times a group of values appear in a data set  
-**Frequency Distribution:** type of graph illustrating the distribution of how frequent value appear in the   
data set  
-**Normal Distribution:** a distribution with a characteristic smooth, bell and symmetrical-shaped curve around a single peak (IQ, height, test scores, etc.)

**Subtopic: Measures of Central Tendency  
-Mean:** average value of a data set  
-**Outliers:** extreme points distant from others in a data set  
-**Median:** the centre value in a data set when the set is arranged numerically  
-**Mode:** the value that appears most frequently in the set

**Subtopic: Measures of Variability  
-Standard deviation:** a measure of the average distance of each data point from the mean

**Module: Inferential Statistics**

**Subtopic: Inferential Statistics  
-Inferential Statistics:** statistics that allows us to sue results from samples to make inferences about overall, underlying populations

**Subtopic: Hypothesis Testing  
-T-test:** a statistical test that considers each data point from both groups to calculate the probability of getting the results by chance *if* there is in fact only one distribution underlying both groups in the experiment  
-**P-Value:** a value expressing the probability calculated by the t-test (Not significant: greater than 5% probability of obtaining the data by chance. Significant: less than 5% probability of obtaining the data by chance)   
\*p-value gives the probability that the results would have been found even if the control and experimental groups actually come from the same population   
-**Statistical Significance:** when the difference between 2 groups is due to some true difference between the properties of the 2 groups and not simply due to random variation

**Module: Observational Research**

**Subtopic: Introduction to Observational Research**-**Observational studies:** studies where scientists observe the effect of variable they’re interested in without performing any manipulation

**Subtopic: Correlation  
-Correlation:** a measure of the strength of the relationship between 2 variables  
-**Correlation Coefficient:** (r) perfect correlation if r=1, perfect negative correlation if r=-1; r=0, no correlation whatsoever (closer to +1 or -1 indicates more correlation)  
-correlation is NOT causation