“Hypothesis testing” is a statistical method that is used in making statistical decisions using experimental data.  Hypothesis Testing is basically an assumption that we make about the population parameter.

**Key terms and concepts:**

1. **Null hypothesis:**Null hypothesis is a statistical hypothesis that assumes that the observation is due to a chance factor.  Null hypothesis is denoted by; H0: μ1 = μ2, which shows that there is no difference between the two population means.
2. **Alternative hypothesis:** Contrary to the null hypothesis, the alternative hypothesis shows that observations are the result of a real effect.
3. **Level of significance:** Refers to the degree of significance in which we accept or reject the null-hypothesis.  100% accuracy is not possible for accepting or rejecting a hypothesis, so we therefore select a level of significance that is usually 5%.
4. **Type I error:** When we reject the null hypothesis, although that hypothesis was true.  Type I error is denoted by alpha.  In hypothesis testing, the normal curve that shows the critical region is called the alpha region.
5. **Type II errors:** When we accept the null hypothesis but it is false.  Type II errors are denoted by beta.  In Hypothesis testing, the normal curve that shows the acceptance region is called the beta region.
6. [**Power**](http://www.statisticssolutions.com/academic-solutions/resources/dissertation-resources/sample-size-calculation-and-sample-size-justification/statistical-power-analysis/)**:** Usually known as the probability of correctly accepting the null hypothesis.  1-beta is called power of the analysis.
7. **One-tailed test:**When the given statistical hypothesis is one value like H0: μ1 = μ2, it is called the one-tailed test.
8. **Two-tailed test:** When the given statistics hypothesis assumes a less than or greater than value, it is called the two-tailed test.

Step to perform Hypothesis Testing:

1. The first step is to quantify the size of the apparent effect by choosing a test statistic.
2. The second step is to define a null hypothesis, which is a model of the system based on the assumption that the apparent effect is not real.
3. The third step is to compute p-value, which is the probability of seeing apparent effect if the null hypothesis is true
4. The last step is to interpret the result. If the p-value is low, the effect is said to be statistically significant, which means it is unlikely to have occurred by chance. In that case we infer that effect is more likely to appear in the larger population.