

# **SAMPLE SIZE TO DETECT A SIGNIFICANT DIFFERENCE BETWEEN 2 MEANS WITH UNEQUAL SAMPLE SIZES AND VARIANCES**

## **FORMULA FOR SAMPLE SIZE PER GROUP:**

$$N = \frac{B^2 (Z_{\alpha} + Z_{\beta})^2}{(p_1 - p_2)^2} \quad \text{for 1-tailed test}$$

$$N = \frac{B^2 (Z_{\alpha/2} + Z_{\beta})^2}{(p_1 - p_2)^2} \quad \text{for 2-tailed test}$$

## **FORMULA FOR TOTAL SAMPLE SIZE (BOTH GROUP):**

$$\text{Maximum Number of Samples} = (N * 2)$$

Where,

N = Sample Size

$Z_{\alpha}$  = critical value of the Normal distribution at  $\alpha$  (confidence level)

$Z_{\alpha/2}$  = critical value of the Normal distribution at  $\alpha/2$  (confidence level)

$Z_{\beta}$  = critical value of the Normal distribution at  $\beta$  (power)

$B^2$  = Sum of Variances

$p_1$  = mean in population 1

$p_2$  = mean in population 2