STUDENT SUCCESS CENTER
THE UNIVERSITY OF ALABAMA IN HUNTSVILLE

# ANOVA Tables

## Basic Table

*Table 1*

| **Source Of Variation** | **Sum Of Squares*** | **Degrees Of Freedom** | **Mean Square** | **F Test Statistic** | **F Critical Value** |
|---|---|---|---|---|---|
| Treatments (k) (# of population) | SSTR | k-1 (treatments-1) | SSTR/df = MSTR | MSTR/MSE (mean square of the treatments/mean square error) | Use F chart |
| Error (random variable) | SSE | $n_T$-k (population - #of treatments) | SSE/df = MSE | | |
| **Total** | **Total** | $n_T$-1 (population-1) | | | |

## ANOVA Table with Blocks

*Table 2: Use when the main category being tested has sub-categories (blocks).*

| **Source Of Variation** | **Sum Of Squares*** | **Degrees Of Freedom** | **Mean Square** | **F Test Statistic** | **F Critical Value** |
|---|---|---|---|---|---|
| Treatments | SST | k-1 | SST/k-1 = MSTR | MSTR/MSE | Use F chart |
| Blocks | SSB | b-1 | SSB/b-1 = MSB | MSB/MSE | |
| Error | SSE | (k-1)(b-1) | SSE/(k-1)(b-1) = MSE | | |
| **Total** | **SST** | **$n_T$-1** | | | |

## ANOVA Two Factor with Replication

*Table 3: Use when the 2+ main categories being tested have sub-categories.*

| **Source Of Variation** | **Sum Of Squares*** | **Degrees Of Freedom** | **Mean Square** | **F Test Statistic** | **F Critical Value** |
|---|---|---|---|---|---|
| Factor A | SSA | a-1 | SSA/a-1 = MSA | MSA/MSE | Use the F chart |
| Factor B | SSB | b-1 | SSB/b-1 = MSB | MSB/MSE | |
| Interaction | SSAB | (a-1)(b-1) | SSAB/(a-1)(b-1) = MSAB | MSAB/(a-1)(b-1) | |
| Error | SSE | ab(r-1) | SSE/ab(n-1) = MSE | | |
| **Total** | **SST** | $n_T$-1 | | | |

**Sum of squares is calculated by:** $\Sigma (x_i - \bar{x})^2$ [take each data point, subtract the sample mean from each, square each difference, and add the squared numbers]