STAT 3331 – Exam 2 Formula Sheet

$$y = \beta_0 + \beta_1 x + \epsilon$$
$$\hat{y} = b_0 + b_1 x$$

$$y = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \cdots + \beta_q x_q + \epsilon$$
$$\hat{y} = b_0 + b_1 x_1 + b_2 x_2 + \cdots + b_q k_q$$

$$\hat{y} = b_0 + b_1 x_1 + b_2 x_1^2$$

$$\hat{y} = b_0 + b_1 x_1 + b_2 x_2 + b_3 x_1 x_2$$

$$b_1 = \frac{\sum_{i=1}^{n}(x_i - \bar{x})(y_i - \bar{y})}{\sum_{i=1}^{n}(x_i - \bar{x})^2}$$

$$b_0 = \bar{y} - b_1 \bar{x}$$

$$SSE = \sum_{i=1}^{n}(y_i - \hat{y}_i)^2$$

$$SST = \sum_{i=1}^{n}(y_i - \bar{y})^2$$

$$SSR = \sum_{i=1}^{n}(\hat{y}_i - \bar{y})^2$$

$$r^2 = \frac{SSR}{SST} = 1 - \frac{SSE}{SST}$$

$$t = \frac{b_j}{s_{b_j}}$$

$$F = \frac{SSR/q}{SSE/(n-q-1)} = \frac{MSR}{MSE}$$

$$b_j \pm t_{\alpha/2,(n-q-1)} \times s_{b_j}$$

$$\hat{y} \pm t_{\alpha/2} \times s_{\hat{y}}$$

$$\hat{y} \pm t_{\alpha/2} \times \sqrt{s_{\hat{y}}^2 + \frac{SSE}{n-q-1}}$$

$$ln\left(\frac{\hat{p}}{1-\hat{p}}\right) = b_0 + b_1 x_1 + \cdots + b_q x_q$$

$$\hat{p} = \frac{1}{1 + e^{-(b_0 + b_1 x_1 + \cdots + b_q x_q)}}$$

$$\frac{n_{10} + n_{01}}{n_{11} + n_{10} + n_{01} + n_{00}}$$

$$\frac{n_{01}}{n_{01} + n_{00}}$$

$$\frac{n_{11}}{n_{11} + n_{01}}$$

$$\frac{n_{10}}{n_{11} + n_{10}}$$

$$\frac{n_{11}}{n_{11} + n_{10}}$$

$$\frac{2n_{11}}{2n_{11} + n_{01} + n_{10}}$$

$$\frac{n_{00}}{n_{01} + n_{00}}$$

$$\sum_{i=1}^{n} \frac{e_i}{n}$$

$$\sqrt{\sum_{i=1}^{n} \frac{e_i^2}{n}}$$

$$d_i = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$