The following is a list of topics covered in Chapter 4 of Fraleigh and Beauregard’s *Linear Algebra*. Test questions will be chosen directly from the text. This list is not meant to be comprehensive, but gives a list of several important topics. I reserve the right to ask you definitions and theorems on the tests. If I do so, then I will choose from the **bold-faced** items below.

**Chapter 4. Determinants.**

4-1. Areas, Volumes, and Cross Products. Area of a parallelogram in $\mathbb{R}^2$, determinant of a $2 \times 2$ matrix, cross product, determinant of a $3 \times 3$ matrix, area of a parallelogram in $\mathbb{R}^3$ as a cross product (Theorem 4.1.A), volume of a box in $\mathbb{R}^3$ (Theorem 4.1.B), Properties of Cross Product (Theorem 4.1).

4-2. The Determinant of a Square Matrix. minor matrix, cofactor (Definition 4.1a), determinant of a square matrix (Definition 4.1b), General Expansion by Minors (Theorem 4.2), Properties of the Determinant (Theorem 4.2.A), Determinant Criterion for Invertibility (Theorem 4.3), The Multiplicative Property of Determinants (Theorem 4.5).

4-3. Computation of Determinants and Cramer’s Rule. Computation of a determinant (page 1 of the class notes), Cramer’s Rule (Theorem 4.5), adjoint, Property of the Adjoint (Theorem 4.6), Formula for $A^{-1}$ (Corollary 4.3.A).

4-4. Linear Transformations and Determinants. $n$-box in $\mathbb{R}^n$, volume of an $n$-box (Theorem 4.7), volume change factor of a linear transformation, volume change factor for $T : \mathbb{R}^n \to \mathbb{R}^m$ (Theorem 4.9).