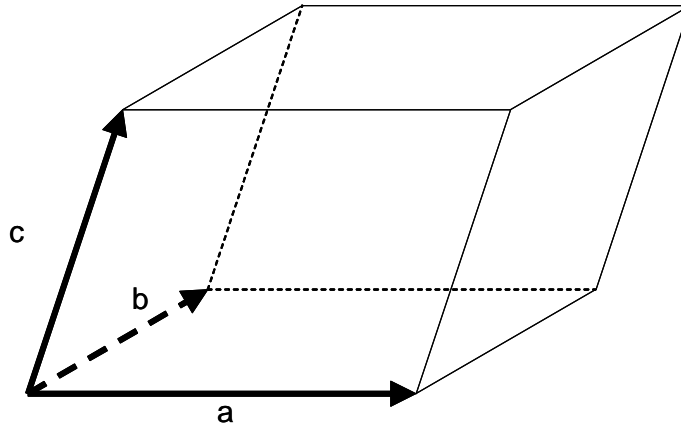


**ME 534 COMPUTER-BASED MODELING AND SIMULATION**  
**Instructor: Prof. Cagatay Basdogan**



Consider a “box” defined by three vectors **a**, **b**, and **c** as shown in the figure. The volume contained in the box can be calculated using the formula

$$V = | (a \times b) \cdot c |$$

- Using the vector definitions of “Numerical Recipes”, write a C/C++ function (i.e. subroutine) that calculates the inner (i.e. dot) product of two vectors.
- Using the vector definitions of “Numerical Recipes”, write a C/C++ function (i.e. subroutine) that calculates the cross product of two vectors.
- Write a C/C++ program that calculates the volume of a box defined by the following vectors;

$$a = [2.0, 1.0, 0.1]$$

$$b = [0.0, 0.3, -3.6]$$

$$c = [0.2, 4.6, -0.1]$$