PROFESSOR: We will encounter cross products in Newtonian mechanics quite often when we deal with torques and when we deal with angular momentum. And that is certainly not the easiest part of this course.

What happens when we take a factor and we take the cross product with the same factor? A cross A. That is always 0. And the reason being that the sign of the angle between the two, the sine of theta, is always 0, because A and A are in the same direction, so theta equals 0.

If you ever encounter in Newtonian mechanics the cross product between the velocity of an object crossed with its momentum, that is always 0 because p, the momentum itself, is the mass times the velocity and so p and v have the same direction. And so theta between this factor and this factor equals 0, so sine theta equals 0, so the cross product equals 0.