**Week 5 (Feb 26 – Mar 1, Lectures 9 and 10) Teaching and Learning**

**Topics**

**12.1**: The 3D Euclidean space; right-hand rule (axes orientation); distances and spheres.

**12.2**: Vectors and component forms; algebraic operations and their geometry; unit vectors and standard unit vectors; applications/examples in physics.

**12.3**: Dot products and their geometric meanings; projections and scaler components; work (physics).

**12.4**: Cross products and related geometric meanings; algebraic properties; torque. (May introduce determinants --- linear algebra is actually not a prerequisite of this course …)

**12.5**: Different algebraic forms of lines and planes in the space (parametric, vector, components); distance from a line to a plane.

(It is OK to go a bit faster than this; but aim not to be slower.)

**Assignment 5**

12.1, #16,21,26,32,33,34,58

12.2, #16,26,34,36,46,49,51

12.3, #5,17,22,25,28,29,44

12.4, #18,20,25,28,37,48

12.5, #2,24,25,28,32,38,45,46,47,59,69,73

The questions above need to be submitted; students are encouraged to attempt other questions in the same chapters if they need more exercises.

Deadline: 11:59 PM, Friday, Mar 8 --- solutions should be submitted online on Blackboard in one single PDF file.

**Quiz 2 next week (Week 6, Mar 4 – 8, in tutorials)**

Scope = 10.7 to 10.10, 11.1, 11.2; three problems (could have parts); 30 minutes.