PHYS 1114, Lecture 2, January 20

Contents:

1° After administering the diagnostic math quiz, a number of announcements were made:

a. The webpage of the in-class part of this course is http://physics.okstate.edu/perk/1114/, as said on line 3 of the syllabus.

b. Starting next week, email questions about ExpertTA should be sent to Raj (Sreekul Rajagopal) at email address [sreekul@okstate.edu]. What he cannot answer, he will pass on to me. With 272 in this class, I cannot handle all email myself.

c. The Learning Assistants will have sessions in PS 210 and I hope that they will send out a Doodle Poll or something else by email for you to select the times for your 10 sessions. But more will be said next week.

d. Next week the TA office hour schedule in PS 052 will be made known. I shall be there also for office hours and returning graded work.

e. The Lab starts next week Monday–Friday: Find out your time and room from your class schedule and buy the lab manual.
Remarks about the Math Quiz:

a. Later there may sometimes be an unannounced quiz counting for some homework points. Two versions will be provided, so that in alternating rows from front to back the color is white or yellow.

b. The math quiz counts for 10 points bonus, and no points will be taken off for wrong answers. You are expected to understand how to get at least 4 answers correct. Otherwise you are behind in the math and you should catch up. Free tutoring is available in the TA help room PS 052, in the Learning Assistant sessions and in the Math Learning Center.

c. A minimum of trigonometry can be picked up as the class goes on. The rules of sines and cosines (problem 10 in the quiz) can be bypassed working with vectors, which will be introduced in lecture 4.

d. In the answer sheets for the math quiz answers for angles are given in degrees and radians. You are only expected to give only one or the other. Answers are always up to multiples of $360^\circ = 2\pi$ radians, or in fancy math notation “mod $2\pi$.”

e. In problem 10 an extra is added solving $c$ by the rule of cosines and two other methods. Also, angle $\beta$ in the figure is acute ($< 90^\circ$), but the alternative answers for the case that $\beta$ is obtuse ($> 90^\circ$) are also given in the solution, but not boxed.

This relates to the two identities $\sin(\pi - \theta) = \sin \theta$ and $\cos(\pi - \theta) = -\cos \theta$. 
3° Movie: The Tacoma Narrows Bridge Collapse

1. The bridge was planned in 1937 and built between 1937 and 1940.

2. The bridge was opened July 1, 1940, with a speech and a first parade of cars over it.

3. Soon after, some unusual behavior was seen and the decision was made to continually watch it.

4. One day, November 7, 1940, very unusual vertical oscillation was seen and the decision was made to stop all traffic from passing the bridge.

5. However, one reporter had gotten on the bridge. The sudden twisting motion made it impossible to go on. He was thrown out of the car and tried to reach a tower.

6. Temporarily the motion got smooth and he went back to save the dog. But then it got real bad.

7. He barely made it to the tower, just in time before the collapse started. The piece of the bridge with the car fell in the river.

8. The twisted motion now became a vertical motion, but more pieces of the bridge fell off.

9. The reporter was most upset, not that he lost his car, but that now he had to tell his daughter that her dog is dead.

Take-home: The Tacoma Narrows Bridge collapsed due to the physics phenomenon of resonance discussed later in the course. Also things like interchanging milligrammes and microgrammes by a doctor or pharmacist can be the difference between life and death of a patient. It is important to get the physics right in many situations in daily life.