

Technology-enhanced Learning - Activity Plan

Name: JOSEPH CALISTUS NIHAL RAJENDRA

Grade / Course: Lesson - 1 of *General and Thermal Physics*

Length of Activity: 5 Weeks

Lesson Summary:

Mechanics is covered in this lesson. This lesson is designed to cover the basic concepts in Mechanics and how they are applied in science and day-to-day –life. It consists of following seven sessions:

Session 1: Vectors and scalars, motion in one, two and three dimensions

Session 2: Newton’s laws of motion and Centre of mass

Session 3: Work, power, conservative forces, conservation of energy, mass and energy

Session 4: Impulse and momentum; collisions; conservation of linear momentum, Angular motion and conservation of angular momentum; the compound pendulum

Session 5: Kepler’s laws, Newton’s law of gravitation, gravitational fields and gravitational potential, Principles of rocket and satellite motion

This lesson will require minimum of 5 weeks of study time. That is, for each session, you have to spend one week to study and do the activities. You are requested to work out the self-assessment questions (SAQs) given at the end of each session to test your knowledge. The questions were set to test the specific learning outcome of the sessions.

Lesson Objective:

Students who follow this course should:

- [1] Master a broad set of knowledge concerning the fundamentals in basic Newtonian Mechanics
- [2] Get the aptitude to use the knowledge in fundamental concepts in Newtonian Mechanics that can be applied in many different ways to understand and predict what nature does.
- [3] Appreciate how observation and experiment along with theory work together to continue to expand the frontiers of knowledge of the physical universe.
- [4] Be able to communicate ideas in physics with precision and clarity to both experts and non-experts.

Resources/Technology – Teacher

Online Learning Materials via Moodle

Online Resources

- <https://openstax.org/details/college-physics>
- <http://oyc.yale.edu/physics>
- <https://www.khanacademy.org/science/physics>

Resources/Technology – Students

Student Laptop setting, personal access to the Internet

Worksheet and Learning Materials Via Moodle

Online Resources

- <https://phet.colorado.edu/en/simulations/category/physics>
- <http://www.physicsclassroom.com>

Intended Curriculum Learning Outcomes

Students following this course should be able to:

- [1] Comprehend the basic concepts and principles in Newtonian Mechanics and appreciate how they are applied in science in our day-to-day life.
- [2] Develop competency in acquiring new knowledge and applying it in a variety of situations.
- [3] Apply basic mathematical tools commonly used in physics, including differential and integral calculus, vector calculus, ordinary differential equations, and linear algebra.
- [4] Develop the ability to clearly express their thinking and efficiently acquire new information from many sources.
- [5] Solve problems competently by identifying the essential parts of a problem and formulating a strategy for solving the problem. Estimate the numerical solution to a problem. Apply appropriate techniques to arrive at a solution, test the correctness of the solution, and interpret the results.
- [6] Communicate the concepts, principles and the results using effective scientific writing skills.

Instructional Activities

The instructor will review and present materials using online learning management system using Moodle. Connectivity for peer interaction, student – instructor interaction. Comments on SAQs and assisting with model answers with discussion.

Students will be given enough time to complete the lesson activities (SAQs)

Learner Assessment

Students progress would be assessed continuously throughout the course by means of several Continuous Assessment Tests (CAT) basically MCQs, and Assignments.