**UNIT 5: CIRCULAR AND HARMONIC MOTION (14 DAYS)**

Upon completion of this unit, the student should be able to:

1. Define what is meant by “uniform circular motion”.
2. Define the terms period (T) and frequency (f), state their metric units, and describe how they are related.
3. Given the necessary data, calculate centripetal velocity, acceleration, and force during uniform circular motion.
4. Explain what causes acceleration during uniform circular motion.
5. Differentiate between the terms centripetal and centrifugal.
6. Define and apply the Law of Universal Gravitation and explain who formulated it.
7. Define and apply the Law of Universal Gravitation and explain who formulated it.
8. Explain why astronauts feel weightlessness when orbiting Earth.
9. Explain who determined Earth’s mass and how it was done.
10. Define what is meant by “simple harmonic motion” and give some examples.
11. Explain on what variables the oscillation of a simple pendulum depends, and construct a graph which displays the relationship of these variables for a swinging pendulum.
12. Define and apply Hooke’s Law to a spring-mass system, and construct a graph which displays the relationship among variables for a static and dynamic application of the law.
13. Name the only two types of motion in the Universe.

**Reference: Holt Physics (Serway/Faughn),Chapters 7.1 – 7.3, 11.1 – 11.2**

**Homework: Problem set handout, two textbook assignments**

**Labs: “g” on an Egg, Airplanes/Airplanes!, Simple Pendulum, Hooke’s Law, and Spring Pendulum**