

PHYSICS 12 COURSE OUTLINE 2023/2024

Teacher: F. Dhanani, Room 311

Workbook: Physics 12 Student Notes and Problems [SNAP] (2019 Edition);
Published by Castle Rock Research Corporation

The following is a simplified breakdown of the course. In certain topics, not all of the material will necessarily be studied, while in other topics, a more in-depth exploration of the subject may be done.

**** Note:** Topics may not necessarily be covered in the order indicated.

- A. ***VECTOR KINEMATICS:** *(not in workbook)*
linear motion, projectile motion, relative motion
- B. ***VECTOR DYNAMICS:** *(not in workbook)*
Newton's Laws, 2-D forces, inclined planes
- C. ***MECHANICAL ENERGY:** *(not in workbook)*
work, power, energy, conservation of energy, efficiency
- D. **MOMENTUM: (Momentum)**
linear momentum, impulse, conservation of momentum, 2-D momentum
- E. **EQUILIBRIUM: (Forces Cause Motion)**
translational equilibrium, rotational equilibrium, torque, centre of gravity
- F. **CIRCULAR MOTION AND GRAVITATION: (Forces Cause Motion / Forces Within Fields)**
centripetal acceleration, Newton's Law of Universal Gravitation, gravitational potential energy, escape velocity
- G. **ELECTROSTATICS: (Forces Within Fields)**
electric force, Coulomb's Law, electric field, electric potential energy, electric potential difference
- H. ***CURRENT ELECTRICITY:** *(not in workbook)*
electric current, voltage, electromotive force, resistance, Ohm's Law, power, circuit diagrams, Kirchhoff's Laws, internal resistance
- I. **MAGNETISM AND ELECTROMAGNETISM: (Forces Within Fields)**
magnetic force, magnetic field, induced EMF, magnetic flux, Faraday's Law, Lenz's Law, generators, motors, back EMF, transformers, power transmission
- J. **SPECIAL RELATIVITY: (Measurement of Motion)**
postulates of special relativity, relative motion and effects (time dilation, length contraction, mass increase), equivalence of energy and mass

**These topics may only be reviewed in this course as an in-depth study of the subject has already taken place in the prerequisite courses.*