

TABLE 1
PHYSICS 102 SYLLABUS FOR THE FALL TERM, 2016-2017

| Approx.. hours +-.5 hrs | Chapter | Topics Covered (Text: College Physics, Serway and Vuille Hybrid version 10 th edition) | Sections or Pages of Text Omitted 10 th . |
|-------------------------------|---------|---|--|
| 1 | 1 | INTRODUCTION. Standards of length, time and mass, dimensions of physical quantities, significant figures, coordinate systems. | - |
| 4 | 2 | MOTION IN ONE DIMENSION. Displacement, velocity, acceleration, motion with constant acceleration, free fall. | - |
| 4 | 3 | VECTORS AND TWO-DIMENSIONAL MOTION. Vectors and scalars, properties/components of a vector, projectile motion. | 3.5 |
| 4 | 4 | THE LAWS OF MOTION. Force, Newton's laws of motion, mass and weight, applications of Newton's laws, friction. | - |
| 3.5 | 5 | WORK AND ENERGY. Work, kinetic and potential energy, conservative and non-conservative forces, work-energy theorem, conservation of energy, power. | - |
| 3 | 6 | MOMENTUM AND COLLISIONS. Linear momentum and impulse, conservation of momentum, elastic (definition only) and inelastic collisions, glancing collisions. | 6.5, page 183 (elastic collision equations) |
| 3.5 | 7 | CIRCULAR MOTION AND THE LAW OF GRAVITY. Angular velocity, centripetal acceleration and force, Newton's law of gravitation. (Omit rotational motion under constant angular acceleration, consequences of Newton's law, Kepler's Laws) | 7.2 222-225 (gravitational potential energy revisited) |
| 3 | 8 | ROTATIONAL EQUILIBRIUM AND ROTATIONAL DYNAMICS. Torque and the second condition of equilibrium, center of gravity, examples of objects in equilibrium. (Omit Newton's laws for rotation, rotational kinetic energy, angular momentum.) | 8.5-8.7 |
| 3 | 9 | SOLIDS AND FLUIDS. States of matter, elastic properties of solids, density and pressure, variation of pressure with depth, buoyant force and Archimedes' principle, fluids in motion(qualitative), surface tension, capillarity | 318-321(viscous fluid flow) 9.10 |
| 1 | 10 | THERMAL PHYSICS. Thermometer and temperature scales, expansion of solids and liquids. (omit zeroth law, ideal gas, kinetic theory of gases.) | 10.1 10.4-10.5 |
| 3 | 11 | HEAT. Mechanical equivalent of heat, specific heat, calorimetry, latent heat, conduction, convection, and radiation (qualitative only). (Omit hindering heat transfer and applications.) | 11.6 |